Table 1. Fee Calculation Summary for the Pennsylvania Pipeline Project2 (PPP) – Delaware County – 5/24/2016

| **Crossing ID1** | **Resources** | **Permanent Impacts area (acre)** | **Temporary Impact area (acre)** |
| --- | --- | --- | --- |
| 1 | S-B36 | 0.123 | 0.046 |
| 2 | S-B37 | 0.666 | 0.207 |
| 3 | S-B38 |
| 4 | S-B39 |
| 5 | S-B51 | 0.020 | - |
| 6 | S-B52 |
| 7 | S-B53 |
| 8 | S-B54 |
| 9 | S-B55 |
| 10 | S-B56 | 0.106 | - |
| 11 | S-B57 |
| 12 | S-C43 | 0.153 | 0.047 |
| 13 | C21 | 0.001 | - |
| 14 | S-C42 | 0.012 | - |
| 15 | S-C39 | 0.009 | - |
| 16 | S-C40 |
| 17 | S-C41 |
| 18 | S-C44 | 0.387 | 0.082 |
| 19 | S-C45 |
| 20 | C23 | 0.276 | - |
| 21 | S-C26 | 0.008 | - |
| 22 | S-C24 | 0.115 | - |
| 23 | S-C25 |
| 24 | S-C23 | 0.161 | 0.004 |
| 25 | C10 | 0.047 | - |
| 26 | S-C15 | 0.878 | 0.054 |
| 27 | S-C16 |
| 28 | S-C17 |
| 29 | S-C18 |
| 30 | S-C19 |
| 31 | S-C20 |
| 32 | S-C21 |
| 33 | S-C22 |
| 34 | I1 | 0.014 | - |
| 35 | S-I1 | 0.717 | 0.702 |
| 36 | S-I2 |
| 37 | S-I3 |
| 38 | S-I4 |
| 39 | S-I5 | 0.179 | 0.086 |
| 40 | S-I6 |
| 41 | S-H29 | 0.176 | 0.180 |
| 42 | S-H28 | 0.181 | 0.115 |
| 43 | S-H27 | 0.190 | 0.163 |
| 44 | S-H35 | 0.214 | 0.054 |
| 45 | S-H36 |
| 46 | S-H34 | 0.188 | 0.070 |
| 47 | S-H37 | 0.337 | - |
| 48 | S-H38 |
| 49 | S-H39 | 0.273 | - |
| 50 | S-H40 | 0.330 | - |
| 51 | S-H41 |
| 52 | S-H42 | 0.174 | - |
| 53 | S-H43 | 0.677 | 0.028 |
| 54 | S-H44 |
| 55 | S-H45 |
| 56 | S-H46 |
| 57 | S-H47 | 0.006 | - |
| 58 | H41 | 0.001 | - |
| 59 | I16 | 0.023 | - |
| 60 | S-I17\* | - | - |
| 61 | S-I19\* |
| 62 | S-I20\* |
| 63 | S-I18 | 0.008 | - |
| 64 | BA5 | 0.001 | - |
| 65 | BA6 | 0.002 | - |
| 66 | I5 | 0.129 | 0.830 |
| 67 | S-I7\* | - | - |
| **TOTAL AREA4** | | 6.782 | 2.668 |
| **IMPACT FEES** | | $54,400 | $10,800 |
| **Administrative Fees3** | | | $1,750 |
| **TOTAL FEES** | | | **$66,950** |
| Notes:  1 Crossing ID is the sequential resource crossing from west to east. Some resources are grouped due to complete containment in other resources (e.g. a wetland entirely within a floodway).  2 See Project Description.  **3** Fees include the rates listed in the Chapter 105 Fee Calculation Sheet of $8,000 per acre of permanent impact and $4,000 per acre of temporary impact.  4Total Area includes the Chapter 106 floodplain impacts.  \*PADEP-Waived stream impacts are not included in impact fee calculation | | | |

**Table 2. Wetland Impact Summary for the Pennsylvania Pipeline Project (PPP) – Delaware County – 5/24/2016**

| **Wetland ID** | **USFWS Cowardin Classification2** | **Coordinates** | **12-Digit HUC Code** | **Crossing Method1,3** | **Length of Centerline Crossing (feet)4** | **PADEP Permanent Impact5** | **PADEP Temporary Impact6** | **PADEP & USACE Permanent Loss7** | **Conversion Impact (acre)8** | **Exceptional Value** | **Site Plan/E&S Plan/HDD Sheet Number** | **Permit** | **USACE District** | **USACE Section 10/404 Activity** | **Fee Crossing Reference Number** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| BA5 | PFO | -75.4103, 39.8466 | 020402020605 | HDD | 6 | 0.001 | - | - | - | n/a | 22/6.34  PA-DE-0104.0023-RR & -16 | Individual | Philadelphia | Non-jurisdictional | 64 |
| BA6 | PFO | -75.4107, 39.8465 | 020402020605 | HDD | 26 | 0.002 | - | - | - | n/a | 22/6.34  PA-DE-0104.0023-RR & -16 | Individual | Philadelphia | Non-jurisdictional | 65 |
| C10 | PEM | -75.4468, 39.9053 | 020402020605 | HDD / Clearing Only | 51 | 0.043 | - | - | - | n/a | 11/6.16  PA-DE-0074.0000-RD & -16 | Individual | Philadelphia | Activity in WOUS | 25 |
| PSS | -75.4468, 39.9053 | 020402020605 | HDD | 51 | 0.004 | - | - | - | n/a | 11/6.16  PA-DE-0074.0000-RD & -16 | Individual | Philadelphia | Non-jurisdictional | 25 |
| C21 | PFO | -75.4642, 39.9214 | 020402020605 | HDD | 14 | 0.001 | - | - | - | n/a | 13/6.12  PA-DE-0046.0000-RD & -16 | Individual | Philadelphia | Non-jurisdictional | 13 |
| C23 | PEM | -75.4566, 39.9107 | 020402020605 | Open Cut | 243 | 0.276 | - | - | - | Wild Trout | 20/6.14 | Individual | Philadelphia | Activity in WOUS | 20 |
| H41 | PEM | -75.3993, 39.8542 | 020402020605 | Open Cut | - | 0.001 | - | - | - | n/a | 22/6.31 | Individual | Philadelphia | Activity in WOUS | 58 |
| I1 | PEM | -75.4320, 39.8945 | 020402020605 | HDD | 200 | 0.014 | - | - | - | n/a | 22/6.2  PA-DE-0100.0000-RR & -16 | Individual | Philadelphia | Non-jurisdictional | 34 |
| I5 | PEM | -75.4139, 39.8460 | 020402020605 | Open Cut / Temporary Matting | 113 | 0.129 | 0.830 | - | - | n/a | 23/6.34 | Individual | Philadelphia | Activity in WOUS | 66 |
| I16 | PEM | -75.4039, 39.8491 | 020402020607 | HDD | 58 | 0.004 | - | - | - | n/a | 21/6.32  PA-DE-0104.0023-RR & -16 | Individual | Philadelphia | Non-jurisdictional | 59 |
| PFO | -75.4035, 39.8485 | 020402020607 | HDD | 274 | 0.019 | - | - | - | n/a | 21/6.32  PA-DE-0104.0023-RR & -16 | Individual | Philadelphia | Non-jurisdictional | 59 |
|  | | | **9 Wetlands** | **4 Temp. Crossings** | **1,036 feet**  **0.196 miles** | **0.494 acres** | **0.830 acres** | **0 acre** | **0 acre** |  | | | | | |

Notes:

1 All open cut wetlands will also require a temporary road crossing (using wetland matting) placed on the travel lane within the workspace limits. HDD areas will not be traveled through unless “Travel Only” is indicated. Travel Only areas are HDD crossings where travel through with equipment is necessary to facilitate installation. Wetland matting will be placed along the Travel Only lane in these cases and the impact is presented in the Permanent and Temporary Impact columns. “Clearing Only” areas are areas between HDD exit and entry points where clearing of the trees is planned to maximize aerial inspection of the line to meet Department of Transportation regulations. “Temporary Matting” is the crossing method used when wetlands are crossed by temporary access roads.

2 Field classification based on Cowardin et al. 1979. PEM = palustrine emergent wetland, PSS = palustrine scrub-shrub wetland, PFO = palustrine forested wetland.

3 Additional crossing details can be found in Attachment 12 which includes the Project’s Erosion and Sediment Control Plan; Additional site-specific drawings (HDD, bore, and site-specific open-cut) can be found in Attachment 7.

4 A zero length of centerline crossing indicates the wetland is located in the construction right-of-way but is not directly crossed by the pipeline centerlines.

5 Permanent impacts are those areas affected by a water obstruction or encroachment that consist of both direct and indirect impacts that result from the placement or construction of a water obstruction or encroachment and include areas necessary for the operation and maintenance of the water obstruction or encroachment located in, along or across, or projecting into the wetland. Permanent disturbance impacts at HDD crossings are calculated on the width of the pipes multiplied by the length of the wetland crossing.

6Temporary impacts are those areas affected during the construction of a water obstruction or encroachment that consists of both direct and indirect impacts located in, along or across, or projecting into a watercourse, floodway or body of water that are restored upon completion of construction. This does not include areas that will be maintained as a result of the operation and maintenance of the water obstruction or encroachment located in, along or across, or projecting into the wetland. These areas consist of additional temporary workspaces and temporary access roads.

7 Loss of wetland acreages due to permanent fill.

8 For PSS located in the permanent and temporary disturbance areas, these areas will be replanted with wetland shrubs in accordance with the wetland restoration and mitigation plan (Attachment 18).  PFO located in temporary disturbance areas will be replanted with wetland tree species in accordance with the wetland restoration and mitigation plan (Attachment 18).  PFO located in the permanent ROW will be restored to the wetland condition, however PFO habitat is expected to be permanently converted to PEM habitat in these areas.

**Table 3. Waterbody Impact Summary for the Pennsylvania Pipeline Project (PPP) – Delaware County – 5/24/2016**

| **Stream ID** | **Stream Name** | **Coordinates** | **Flow Regime** | **Bank to Bank Width (feet)** | **Length of Centerline Stream Crossing at HDD/Bore1** | **Stream Disturbance Length in ROW (feet)2** | | | **Crossing Method3,4** | **Stream Permanent Impact (square feet)5** | **Stream Temporary Impact (square feet)5** | **PADEP Permanent Floodway Impact (acre)6** | **PADEP Temporary Floodway Disturbance (acre)7** | **Ch. 93 Designated Use8** | **PAFBC Stream Designation9** | **Site Plan/E&S Plan/HDD Sheet Number** | **Permit10** | **USACE District** | **USACE Section 10/404 Activity** | **Fee Crossing Reference Number** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Perm.** | **Temp.** | **Total** |
| S-B36 | UNT to Chester Creek | -75.5020, 39.9437 | Ephemeral | 4 | - | *29* | *-* | 29 | Dry Crossing | 116 | - | 0.123 | 0.046 | Drains to TSF | Drains to STS, ATW | 2/6.03 | Individual | Philadelphia | Activity in WOUS | 1 |
| S-B37 | UNT to Chester Creek | -75.4981, 39.9421 | Ephemeral | 6 | - | *283* | *-* | 283 | Dry Crossing | 1,698 | - | 0.666 | 0.207 | Drains to TSF | Drains to STS, ATW | 2/6.03 | Individual | Philadelphia | Activity in WOUS | 2 |
| S-B38 | UNT to Chester Creek | -75.4974, 39.9418 | Perennial | 10 | - | *51* | *-* | 51 | Dry Crossing | 510 | - | Drains to TSF | Drains to STS, ATW | 2/6.04 | Individual | Philadelphia | Activity in WOUS | 3 |
| S-B39 | UNT to Chester Creek | -75.4972, 39.9421 | Ephemeral | 2 | - | *-* | *-* | - | Floodway Crossing | - | - | Drains to TSF | Drains to STS, ATW | 2/6.04 | Individual | Philadelphia | Activity in WOUS | 4 |
| S-B51 | UNT to Chester Creek | -75.4945, 39.9407 | Ephemeral | 1 | - | *-* | *-* | - | HDD Floodway | - | - | 0.020 | - | Drains to TSF | Drains to STS, ATW | 3/6.04  PA-DE-0016.0000-RD & -16 | Individual | Philadelphia | Non-jurisdictional | 5 |
| S-B52 | UNT to Chester Creek | -75.4943, 39.9408 | Intermittent | 1.5 | 1.5 | *3* | *-* | 3 | HDD | 4.5 | - | Drains to TSF | Drains to STS, ATW | 3/6.04  PA-DE-0016.0000-RD & -16 | Individual | Philadelphia | Non-jurisdictional | 6 |
| S-B53 | UNT to Chester Creek | -75.4940, 39.9407 | Intermittent | 2 | - | *-* | *-* | - | HDD Floodway | - | - | Drains to TSF | Drains to STS, ATW | 3/6.04  PA-DE-0016.0000-RD & -16 | Individual | Philadelphia | Non-jurisdictional | 7 |
| S-B54 | UNT to Chester Creek | -75.4942, 39.9405 | Perennial | 2 | 2 | *3* | *-* | 3 | HDD | 6 | - | Drains to TSF | Drains to STS, ATW | 3/6.04  PA-DE-0016.0000-RD & -16 | Individual | Philadelphia | Non-jurisdictional | 8 |
| S-B55 | UNT to Chester Creek | -75.4947, 39.9405 | Ephemeral | 2 | 2 | *3* | *-* | 3 | HDD | 6 | - | Drains to TSF | Drains to STS, ATW | 3/6.04  PA-DE-0016.0000-RD & -16 | Individual | Philadelphia | Non-jurisdictional | 9 |
| S-B56 | UNT to Chester Creek | -75.4904, 39.9401 | Intermittent | 4 | - | *-* | *-* | - | Floodway Crossing | - | - | 0.106 | - | Drains to TSF | Drains to STS, ATW | 3/6.05 | Individual | Philadelphia | Activity in WOUS | 10 |
| S-B57 | UNT to Chester Creek | -75.4906, 39.9402 | Ephemeral | 1 | - | *-* | *-* | - | Floodway Crossing | - | - | Drains to TSF | Drains to STS, ATW | 3/6.05 | Individual | Philadelphia | Activity in WOUS | 11 |
| S-C15 | UNT to Chester Creek | -75.4444, 39.9032 | Ephemeral | 2 | - | *-* | *-* | - | Floodway Crossing | - | - | 0.878 | 0.054 | Drains to TSF | Drains to STS, ATW | 11/6.17 | Individual | Philadelphia | Activity in WOUS | 26 |
| S-C16 | UNT to Chester Creek | -75.4454, 39.9042 | Perennial | 8 | - | *57* | *-* | 57 | Dry Crossing | 456 | - | Drains to TSF | Drains to STS, ATW | 11/6.17 | Individual | Philadelphia | Activity in WOUS | 27 |
| S-C17 | UNT to Chester Creek | -75.4460, 39.9042 | Perennial | 16 | - | *-* | *-* | - | Floodway Crossing | - | - | Drains to TSF | Drains to STS, ATW | 11/6.17 | Individual | Philadelphia | Activity in WOUS | 28 |
| S-C18 | UNT to Chester Creek | -75.4455, 39.9037 | Perennial | 7 | - | *-* | *-* | - | Floodway Crossing | - | - | Drains to TSF | Drains to STS, ATW | 11/6.17 | Individual | Philadelphia | Activity in WOUS | 29 |
| S-C19 | UNT to Chester Creek | -75.4444, 39.9030 | Ephemeral | 9 | - | *-* | *-* | - | Floodway Crossing | - | - | Drains to TSF | Drains to STS, ATW | 11/6.17 | Individual | Philadelphia | Activity in WOUS | 30 |
| S-C20 | UNT to Chester Creek | -75.4442, 39.9030 | Ephemeral | 2 | - | *-* | *-* | - | Floodway Crossing | - | - | Drains to TSF | Drains to STS, ATW | 11/6.17 | Individual | Philadelphia | Activity in WOUS | 31 |
| S-C21 | UNT to Chester Creek | -75.4455, 39.9038 | Ephemeral | 3 | - | *-* | *-* | - | Floodway Crossing | - | - | Drains to TSF | Drains to STS, ATW | 11/6.17 | Individual | Philadelphia | Activity in WOUS | 32 |
| S-C22 | UNT to Chester Creek | -75.4448, 39.9042 | Intermittent | 7 | - | *-* | *-* | - | Floodway Crossing | - | - | Drains to TSF | Drains to STS, ATW | 11/6.17 | Individual | Philadelphia | Activity in WOUS | 33 |
| S-C23 | UNT to Chester Creek | -75.4469, 39.9054 | Perennial | 10 | 10 | *81* | *-* | 81 | HDD/ Clearing Only | 810 | - | 0.161 | 0.004 | Drains to TSF | Drains to STS, ATW | 11/6.16  PA-DE-0074.0000-RD & -16 | Individual | Philadelphia | Non-jurisdictional | 24 |
| S-C24 | UNT to Chester Creek | -75.4480, 39.9067 | Ephemeral | 2 | 2 | *17* | *-* | 17 | HDD/ Clearing Only | 40 | - | 0.115 | - | Drains to TSF | Drains to STS, ATW | 10/6.16  PA-DE-0074.0000-RD & -16 | Individual | Philadelphia | Non-jurisdictional | 22 |
| S-C25 | UNT to Chester Creek | -75.4480, 39.9065 | Ephemeral | 1 | 1 | *1* | *-* | 1 | HDD/ Clearing Only | 4 | - | Drains to TSF | Drains to STS, ATW | 10/6.16  PA-DE-0074.0000-RD & -16 | Individual | Philadelphia | Non-jurisdictional | 23 |
| S-C26 | UNT to Rocky Run | -75.4505, 39.9077 | Ephemeral | 4 | 4 | *3* | *-* | 3 | HDD | 12 | - | 0.008 | - | Drains to HQ-CWF | Drains to TNR | 10/6.16  PA-DE-0074.0000-RD & -16 | Individual | Philadelphia | Non-jurisdictional | 21 |
| S-C39 | UNT to Chester Creek | -75.4595, 39.9155 | Ephemeral | 2 | - | *-* | *-* | - | HDD Floodway | - | - | 0.009 | - | Drains to TSF | Drains to STS, ATW | 9/6.13  PA-DE-0046.0000-RD & -16 | Individual | Philadelphia | Non-jurisdictional | 15 |
| S-C40 | UNT to Chester Creek | -75.4595, 39.9156 | Intermittent | 3 | 3 | *3* | *-* | 3 | HDD | 9 | - | Drains to TSF | Drains to STS, ATW | 9/6.13  PA-DE-0046.0000-RD & -16 | Individual | Philadelphia | Non-jurisdictional | 16 |
| S-C41 | UNT to Chester Creek | -75.4595, 39.9159 | Ephemeral | 2.5 | - | *-* | *-* | - | HDD Floodway | - | - | Drains to TSF | Drains to STS, ATW | 9/6.13  PA-DE-0046.0000-RD & -16 | Individual | Philadelphia | Non-jurisdictional | 17 |
| S-C42 | UNT to Chester Creek | -75.4637, 39.9206 | Intermittent | 5 | 5 | *3* | *-* | 3 | HDD | 15 | - | 0.012 | - | Drains to TSF | Drains to STS, STW | 8/6.12  PA-DE-0046.0000-RD & -16 | Individual | Philadelphia | Non-jurisdictional | 14 |
| S-C43 | UNT to Chester Creek | -75.4700, 39.9274 | Ephemeral | 1 | - | *50* | *-* | 50 | Dry Crossing | 50 | - | 0.153 | 0.047 | Drains to TSF | Drains to STS, ATW | 6/6.1 | Individual | Philadelphia | Activity in WOUS | 12 |
| S-C44 | Rocky Run | -75.4570, 39.9102 | Perennial | 20 | - | *50* | *-* | 50 | Dry Crossing | 110 | - | 0.142 | 0.035 | HQ-CWF | TNR | 10/6.14 | Individual | Philadelphia | Activity in WOUS | 18 |
| S-C45 | UNT to Rocky Run | -75.4568, 39.9122 | Intermittent | 5 | - | *-* | *-* | - | Floodway Crossing | - | - | Drains to HQ-CWF | Drains to TNR | 9/6.14 | Individual | Philadelphia | Activity in WOUS | 19 |
| S-H27 | UNT to Crum Run | -75.4194, 39.8843 | Perennial | 12 | - | *54* | *-* | 54 | Dry Crossing | 648 | - | 0.190 | 0.163 | Drains to TSF | n/a | 15/6.23 | Individual | Philadelphia | Activity in WOUS | 43 |
| S-H28 | Crum Run | -75.4198, 39.8861 | Perennial | 15 | - | *53* | *-* | 53 | Dry Crossing | 795 | - | 0.181 | 0.115 | TSF | n/a | 14/6.23 | Individual | Philadelphia | Activity in WOUS | 42 |
| S-H29 | Chrome Run | -75.4239, 39.8884 | Perennial | 18 | - | *52* | *-* | 52 | Dry Crossing | 936 | - | 0.163 | 0.165 | TSF | n/a | 14/6.22 | Individual | Philadelphia | Activity in WOUS | 41 |
| S-H34 | UNT to Chester Creek | -75.4124, 39.8737 | Intermittent | 8 | - | *88* | *-* | 88 | Dry Crossing | 704 | - | 0.188 | 0.070 | Drains to TSF | Drains to STS, ATW | 17/6.26 | Individual | Philadelphia | Activity in WOUS | 46 |
| S-H35 | UNT to Chester Creek | -75.4135, 39.8803 | Perennial | 7 | - | *51* | *-* | 51 | Dry Crossing | 357 | - | 0.214 | 0.054 | TSF | Drains to STS, ATW | 16/6.24 | Individual | Philadelphia | Activity in WOUS | 44 |
| S-H36 | UNT to Chester Creek | -75.4131, 39.8803 | Intermittent | 3 | - | *36* | *-* | 36 | Dry Crossing | 108 | - | Drains to TSF | Drains to STS, ATW | 16/6.24 | Individual | Philadelphia | Activity in WOUS | 45 |
| S-H37 | Chester Creek | -75.4111, 39.8700 | Perennial | 100 | 121 | *3* | *-* | 3 | HDD | 363 | - | 0.337 | - | TSF | n/a | 17/6.27  PA-DE-0104.0008-WX & -16 | Individual | Philadelphia | Non-jurisdictional | 47 |
| S-H38 | UNT to Chester Creek | -75.4117, 39.8700 | Intermittent | 8 | - | *-* | *-* | - | HDD Floodway | - | - | Drains to TSF | Drains to STS, ATW | 17/6.27  PA-DE-0104.0008-WX & -16 | Individual | Philadelphia | Non-jurisdictional | 48 |
| S-H39 | UNT to Chester Creek | -75.4104, 39.8687 | Ephemeral | 8 | - | *160* | *-* | 160 | HDD/ Clearing Only | 1,280 | - | 0.273 | - | Drains to TSF | Drains to STS, ATW | 18/6.27  PA-DE-0104.0008-WX & -16 | Individual | Philadelphia | Non-jurisdictional | 49 |
| S-H40 | UNT to Chester Creek | -75.4080, 39.8670 | Ephemeral | 5.5 | - | *9* | *-* | - | HDD Floodway/ Clearing Only | 49.5 | - | 0.330 | - | Drains to WWF | Drains to STS, ATW | 18/6.28  PA-DE-0104.0008-WX & -16 | Individual | Philadelphia | Non-jurisdictional | 50 |
| S-H41 | Chester Creek | -75.4069, 39.8659 | Perennial | 100 | 410 | *3* | *-* | 3 | HDD | 1,230 | - | WWF | ATW | 18/6.28  PA-DE-0104.0008-WX & -16 | Individual | Philadelphia | Non-jurisdictional | 51 |
| S-H42 | UNT to Chester Creek | -75.4031, 39.8627 | Ephemeral | 6 | - | *-* | *-* | - | HDD Floodway | - | - | 0.174 | - | Drains to WWF | Drains to STS, ATW | 19/6.29  PA-DE-0104.0008-WX & -16 | Individual | Philadelphia | Non-jurisdictional | 52 |
| S-H43 | Baldwin Run | -75.4006, 39.8575 | Perennial | 20 | 40 | *54* | *-* | 54 | HDD/ Clearing Only | 1,080 | - | 0.317 | - | WWF | n/a | 20/6.3  PA-DE-0104.0025-RD & -16 | Individual | Philadelphia | Non-jurisdictional | 53 |
| S-H44 | UNT to Baldwin Run | -75.4001, 39.8573 | Ephemeral | 4 | 4 | *41* | *-* | 41 | HDD/ Clearing Only | 164 | - | Drains to WWF | n/a | 20/6.3  PA-DE-0104.0025-RD & -16 | Individual | Philadelphia | Non-jurisdictional | 54 |
| S-H45 | UNT to Baldwin Run | -75.4002, 39.8567 | Intermittent | 6 | - | *-* | *-* | - | HDD Floodway | - | - | Drains to WWF | n/a | 20/6.3  PA-DE-0104.0025-RD & -16 | Individual | Philadelphia | Activity in WOUS | 55 |
| S-H46 | UNT to Baldwin Run | -75.4000, 39.8564 | Ephemeral | 3 | - | *-* | *-* | - | HDD Floodway | - | - | WWF | n/a | 20/6.3  PA-DE-0104.0025-RD & -16 | Individual | Philadelphia | Activity in WOUS | 56 |
| S-H47 | UNT to Chester Creek | -75.3989, 39.8543 | Ephemeral | 8 | - | *-* | *-* | - | Floodway Crossing | - | - | 0.006 | - | Drains to WWF | Drains to STS, ATW | 20/6.31 | Individual | Philadelphia | Activity in WOUS | 57 |
| S-I1 | UNT to Chester Creek | -75.4317, 39.8944 | Ephemeral | 2 | - | *14* | *-* | 14 | HDD Floodway/ Temporary Bridge | 28 | - | 0.370 | 0.281 | Drains to TSF | Drains to STS, ATW | 13/6.2  PA-DE-0100.0000-RD & -16 | Individual | Philadelphia | Non-jurisdictional | 35 |
| S-I2 | UNT to Chester Creek | -75.4312, 39.8939 | Perennial | 7 | 7 | *141* | *-* | 141 | HDD/ Temporary Bridge | 987 | - | TSF | Drains to STS, ATW | 13/6.2  PA-DE-0100.0000-RD & -16 | Individual | Philadelphia | Non-jurisdictional | 36 |
| S-I3 | UNT to Chester Creek | -75.4314, 39.8942 | Ephemeral | 2 | - | *-* | *-* | - | HDD Floodway | - | - | Drains to TSF | Drains to STS, ATW | 13/6.2  PA-DE-0100.0000-RD & -16 | Individual | Philadelphia | Non-jurisdictional | 37 |
| S-I4 | Chester Creek | -75.4312, 39.8932 | Perennial | 70 | - | *-* | *-* | - | HDD Floodway | - | - | TSF | STS, ATW | 13/6.2  PA-DE-0100.0000-RD & -16 | Individual | Philadelphia | Non-jurisdictional | 38 |
| S-I5 | UNT to Chester Creek | -75.4293, 39.8919 | Intermittent | 6 | - | *52* | *-* | - | Dry Crossing | 312 | - | 0.179 | 0.086 | Drains to TSF | Drains to STS, ATW | 13/6.21  S-I5-S-I6-C-101 | Individual | Philadelphia | Activity in WOUS | 39 |
| S-I6 | UNT to Chester Creek | -75.4293, 39.8920 | Ephemeral | 5 | - | *63* | *-* | - | Dry Crossing | 315 | - | Drains to TSF | Drains to STS, ATW | 13/6.21  S-I5-S-I6-C-101 | Individual | Philadelphia | Activity in WOUS | 40 |
| S-I7 | UNT to Baldwin Run | -75.4181, 39.8452 | Ephemeral | 1 | - | *1* | *-* | 1 | Twin Oaks Pump Station –Floodway Only | 1 | - | 0.903 | - | Drains to WWF | n/a | 23/6.35 | PADEP- waived | Philadelphia | Activity in WOUS | 67 |
| S-I17 | UNT to Baldwin Run | -75.4049, 39.8480 | Ephemeral | 4 | - | *-* | *-* | - | HDD Floodway | - | - | 0.022 | - | Drains to WWF | n/a | 21/6.33  PA-DE-0104.023-RR & -16 | PADEP- waived | Philadelphia | Non-jurisdictional | 60 |
| S-I19 | UNT to Baldwin Run | -75.4051, 39.8483 | Ephemeral | 5 | - | *-* | *-* | - | HDD Floodway | - | - | Drains to WWF | n/a | 21/6.33  PA-DE-0104.023-RR & -16 | PADEP- waived | Philadelphia | Non-jurisdictional | 61 |
| S-I20 | UNT to Baldwin Run | -75.4057, 39.8481 | Ephemeral | 3 | - | *-* | *-* | - | HDD Floodway | - | - | Drains to WWF | n/a | 21/6.33  PA-DE-0104.023-RR & -16 | PADEP- waived | Philadelphia | Non-jurisdictional | 62 |
| S-I18 | UNT to Baldwin Run | -75.4057, 39.8476 | Perennial | 13 | 13 | *3* | *-* | 3 | HDD | 39 | - | 0.008 | - | Drains to WWF | n/a | 22/6.33  PA-DE-0104.023-RR & -16 | Individual | Philadelphia | Non-jurisdictional | 63 |
|  | | | | | | | **58 Streams** | | **35 Temp. Crossings** | **13,243 sq. ft.**  **0.304 acres** | **0 sq. ft.**  **0 acre** | **6.248 acres** | **1.327 acres** |  | | | | | | |

Notes:

Many streams share a FEMA NFHL 100-year floodway or PADEP 50-foot buffer, these features have been grouped accordingly when cells are merged cells.

All direct stream impacts are temporary and the stream bank, bed, and channel will be restored to the pre-construction grades in accordance with the procedures of the Erosion and Sediment Control Plan.

1 Pipe length crossing the stream from bank to bank at HDDs and bores. May not always be the same as the bank to bank width which represents the stream width as measured in the field.

2 Length of stream traversing limits of disturbance. A “-“ length indicates the stream is adjacent to the construction workspaces and only the floodway extends into the construction workspaces. The disturbance length has been supplied to show the impact to the waterbody within the 50 foot permanent ROW and the temporarily impacted areas for construction, except at HDD crossing where the permanent impacts are limited to the width of the pipelines (3 feet)

3 All streams in the above table that will be crossed with a “Dry Crossing” will also require a temporary bridge crossing. “Open Cut Floodway” will require a travel lane across the floodway, but no matting or bridge will be used.

4 Crossing Methods: Dry Crossing designates a dry “dam-and pump” or “dam-and flume” or other method which conveys stream flow around the in-stream workspace for a relatively dry trenched work area. Horizontal Directional Drill (HDD) avoids all surface impacts and involves drilling below the stream; however, a travel lane across the stream may be required during construction in some cases and is noted by “Travel Lane” or “Clearing Only”. Additional crossing details can be found in Attachment 12 which includes the Project’s Erosion and Sediment Control Plan; Additional site-specific drawings (HDD, bore, and site-specific open-cut) can be found in Attachment 7.

5 For non-HDD crossings based on Bank to Bank Width multiplied by the Length in the ROW for perm and temp workspaces. At HDD and bore crossings, this is based on 3 feet (width of the two pipes) represented in the Length in ROW column multiplied by the Length of Centerline Stream Crossing at HDD column.

6 Permanent impacts are those areas affected by a water obstruction or encroachment that consist of both direct and indirect impacts that result from the placement or construction of a water obstruction or encroachment and include areas necessary for the operation and maintenance of the water obstruction or encroachment located in, along or across, or projecting into the floodway. Permanent impacts as HDD crossings are calculated on the width of the bore (3 feet) multiplied by the length of crossing.

7 Temporary impacts are those areas affected during the construction of a water obstruction or encroachment that consists of both direct and indirect impacts located in, along or across, or projecting into a watercourse, floodway or body of water that are restored upon completion of construction. This does not include areas that will be maintained as a result of the operation and maintenance of the water obstruction or encroachment located in, along or across, or projecting into the floodway. These areas consist of additional temporary workspaces and temporary access roads.

8 Based on Pennsylvania Data File Access (PASDA) “Designated Use” GIS shapefile (2014, from The PA Geospatial Data Clearinghouse).

9 PAFBC Designations: ATW = Approved Trout Water; STS = Stocked Trout Stream; TNR = Trout Natural Reproduction

10 Streams that are PADEP-Waived drain less than 100 acres at the point of intersection.

Table 4. Chapter 106 Floodplain Impacts on the Pennsylvania Pipeline Project (PPP) – Delaware County – 5/24/2016

| **Stream ID1** | **Stream Name** | **Coordinates** | **Crossing Method2** | **Permanent Floodplain Disturbance (acre) 3, 5** | **Temporary Floodplain Disturbance (acre) 4, 5** | **Total Floodplain**  **Disturbance (acre)** | **Site Plan Sheet Number** | **Permit** | **USACE District** | **USACE Section 10/404 Activity** | **Fee Crossing Reference Number** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| S-C44 | Rocky Run | -75.4570, 39.9102 | Open Cut | *0.245* | *0.047* | 0.292 | 10 | Individual | Philadelphia | Non-jurisdictional | 18 |
| S-H29 | Chrome Run | -75.4239, 39.8884 | Open Cut | *0.013* | *0.015* | 0.028 | 14 | Individual | Philadelphia | Non-jurisdictional | 41 |
| S-H43 | Baldwin Run | -75.4006, 39.8575 | HDD / Clearing Only | *0.360* | *0.028* | 0.388 | 20 | Individual | Philadelphia | Non-jurisdictional | 53 |
| S-I4 | Chester Creek | -75.4312, 39.8932 | HDD / Open Cut | *0.347* | *0.421* | 0.768 | 13 | Individual | Philadelphia | Non-jurisdictional | 38 |
|  | | | **4 Floodplains** | ***0.965 acres*** | ***0.511 acres*** | **1.476 acres** |  | | | | |

Notes:

100-Year Floodplain data is from the FEMA National Flood Hazard Layer (NFHL) geographic dataset, downloaded 7/2015, available at: http://www.floodmaps.fema.gov/NFHL/status.shtml

The Floodplain Fringe layer was developed by “erasing” (i.e. removing) the Section 105 areas from the entirety of the 100-year floodplain data. The above acreages represent the floodplain fringe impacts not covered by the Section 105 calculations.

1 These are the identified streams closest to the extents of the NFHL data. These areas have been named and grouped for easier review and analysis.

2 Crossing Methods: Open Cut is conventional construction technique in uplands and Horizontal Directional Drill (HDD) involves drilling below the floodplain; however, a travel lane across the stream may be required during construction. Typicals of these crossing methods can be found within Attachment 12 (Erosion and Sediment Control Plan).

3 Permanent disturbances are those areas of floodplain impact within the proposed permanent utility ROW. Permanent impacts as HDD crossings are calculated on the width of the bore (3 feet) multiplied by the length of crossing.

4 Temporary disturbances are those areas affected during the construction of a water obstruction or encroachment that consists of both direct and indirect impacts located in, along or across, or projecting into a watercourse, floodway or body of water that are restored upon completion of construction. This does not include areas that will be maintained as a result of the operation and maintenance of the water obstruction or encroachment located in, along or across, or projecting into the floodway. These areas consist of additional temporary workspaces and temporary access roads.

5 Permanent and temporary impact totals in Table 1 have been added to the Section 105 impact totals for streams with the same stream ID.