

**APPENDIX E**  
**Stream Specific Impact Avoidance and Minimization Assessment**

Stream Area	Latitude & Longitude	County	HQ/EV Stream	Other Stream	Crossing Type	PADEP Comment	Comment ID	Stream Area Narrative
<b>Westmoreland</b>								
SA-001	40.44023, -79.37412	Westmoreland		S-P9, S-Q51	Trenching	Evaluate the feasibility of utilizing HDD methods to cross Streams S-P9, S-Q51, and the property labeled as WE-269 on plan sheets 73 and 74 of your application. 25 Pa. Code §105.13(e)(1)(viii)	WE 11	A Trenchless Construction Feasibility Assessment (Appendix B) was conducted to evaluate the viability of using horizontal directional drill (HDD) construction method to cross Streams S-P9 and S-Q51 (Boatyard Run and an unnamed tributary to Boatyard Run, respectively), classified as non-HQ/EV, in this stream area (SA) crossing. This assessment determined that, based on current technology, use of the HDD construction method to cross these streams is not technically feasible and thus is not practicable, and therefore was not selected as the proposed construction method.
<b>Blair</b>								
SA-002	40.40503, -78.48778	Blair		S-M77	Trenching	It appears impacts can be avoided for wetlands M56 and M55 and stream S-M77 through routing the pipelines to the North. Provide a detailed analysis of alternative routes, designs and methods to avoid and minimize impacts to wetlands M56 and M55 and stream S-M77 which documents that other routes and designs would not further avoid or minimize impacts. [25 Pa. Code §§105.13(e)(1)(viii), 105.14(b)(7), 105.18a]	BL 120.j	<p>A Trenchless Construction Feasibility Assessment (Appendix B) was conducted to evaluate the viability of alternative methods, specifically HDD and conventional auger bore (CAB), to avoid and minimize impacts on Stream S-M77 (unnamed tributary to Dry Run), classified as non-HQ/EV, in this SA crossing. This assessment determined that, based on current technology, use of HDD and CAB construction methods through this SA is not technically feasible and thus is not practicable, and therefore was not selected as the proposed construction method.</p> <p>The Trenching-Alternative route (routing pipeline to the north) may potentially further avoid or minimize surface impacts to Stream S-M77. However, as this route deviation extends partially beyond the survey corridor, site-specific wetland and waterbody delineation data are not available along the entire width of this route. Based on aerial photograph and publicly-available database review, it appears this route deviation likely would, but is not confirmed to, necessitate surface disturbance to Stream S-M77. Furthermore, the alternative route deviates from the existing utility corridor (PPL Electric Utility Corporation and other overhead electric line corridor) and in turn results in an increase in permanent impacts on forested land, including impairment of forested ecosystem functions and values, watershed/water quality values, and availability of contiguous forest habitat for interior wildlife species and migratory birds protected pursuant to the Migratory Bird Treaty Act. For the aforementioned reasons, the Trenching-Alternative route was not selected as the proposed route.</p> <p>On a local scale of analysis, the Trenching-Proposed route is situated in straight alignment, and is immediately adjacent to the existing PPL Electric Utility Corporation and other overhead electric line corridor. This minimizes the length of vegetation clearing and compared to the Trenching-Alternative route, the Trenching-Proposed route avoids and minimizes new and permanent impacts on previously undisturbed land, land use encumbrance, and site-specific and contribution to Project-wide cumulative impacts on land and environmental resources, and thus was selected as the proposed route. Furthermore, the Trenching-Proposed route and associated workspace reductions were designed to avoid and minimize the areal extent of impacts on waterbody resources to the maximum extent practicable along the subject route alignment. With implementation of the Project-proposed Impact Avoidance, Minimization, and Mitigation Procedures (see Attachment 11: Enclosure E, Part 4), the remaining, unavoidable impacts to waterbodies are minor and temporary (see Attachment 11: Enclosure D and Enclosure E, Part 2).</p>
SA-003	40.40495, -78.50185	Blair		S-Q59	Trenching	It appears impacts can be avoided for stream S-Q59 through routing the pipelines to the Northwest. Provide a detailed analysis of alternative routes, designs and methods to avoid and minimize impacts to stream S-Q59 which documents that other routes and	BL 120.k	A Trenchless Construction Feasibility Assessment (Appendix B) was conducted to evaluate the viability of alternative methods, specifically HDD and CAB, to avoid and minimize impacts on Stream S-Q59 (unnamed tributary to Dry Run), classified as non-HQ/EV, in this SA crossing. This assessment determined that, based on current technology, use of HDD and CAB construction methods through this SA is not technically feasible and thus is not practicable, and therefore was not selected as the proposed construction method.

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						designs would not further avoid or minimize impacts. [25 Pa. Code §§105.13(e)(1)(viii), 105.14(b)(7)]		<p>The Trenching-Alternative route (routing pipeline to northwest) may potentially further avoid or minimize surface impacts to Stream S-Q59. However, as this route deviation extends partially beyond the survey corridor, site-specific wetland and waterbody delineation data are not available along the entire width of this route. Based on aerial photograph and publicly-available database review, it appears S-Q59 extends north and this route deviation likely would not avoid or minimize the areal extent of surface disturbance to Stream S-Q59. Furthermore, this route increases the length of vegetation clearing necessary for pipeline installation and in turn increases permanent impacts on forested land, including impairment of forested ecosystem functions and values, watershed/water quality values, and availability of contiguous forest habitat for interior wildlife species and migratory birds protected pursuant to the Migratory Bird Treaty Act. For the aforementioned reasons, the Trenching-Alternative route was not selected as the proposed route.</p> <p>On a local scale of analysis, the Trenching-Proposed route is shorter in length which minimizes the length of vegetation clearing. Compared to the Trenching-Alternative route, this routing avoids and minimizes new and permanent impacts on previously undisturbed land, land use encumbrance, and site-specific and contribution to Project-wide cumulative impacts on land and environmental resources, and thus was selected as the proposed route. Furthermore, the Trenching-Proposed route and associated workspace reductions were designed to avoid and minimize the areal extent of impacts on waterbody resources to the maximum extent practicable along the subject route alignment. With implementation of the Project-proposed Impact Avoidance, Minimization, and Mitigation Procedures (see Attachment 11: Enclosure E, Part 4), the remaining, unavoidable impacts to Stream S-Q59 are minor and temporary (see Attachment 11: Enclosure D and Enclosure E, Part 2).</p>
SA-004	40.43553, -78.27827	Blair	S-M35		Trenching	It appears impacts can be avoided for stream S-M35 through routing the pipelines to the East and or South/East. Provide a detailed analysis of alternative routes, designs and methods to avoid and minimize impacts to stream S-M35 which documents that other routes and designs would not further avoid or minimize impacts. [25 Pa. Code §§105.13(e)(1)(viii), 105.14(b)(7)]	BL 120.u	<p>A Trenchless Construction Feasibility Assessment (Appendix B) was conducted to evaluate the viability of alternative methods, specifically HDD and CAB, to avoid and minimize impacts on Stream S-M35 (unnamed tributary to Pine Creek), classified as HQ, in this SA crossing. This assessment determined that, based on current technology, use of HDD and CAB construction methods through this SA is not technically feasible and thus is not practicable, and therefore was not selected as the proposed construction method. The Trenching-Proposed route is at the terminus of the larger MOC S2-0048-AP. The west-east aligned extent of this MOC is co-located with an existing utility corridor (Lancer Pipeline); however, its south-north aligned extent and terminus near Stream S-M35, is not co-located. The terminus of the MOC route is situated in straight alignment to minimize the length of the "greenfield" pipeline to the maximum extent practicable and thereafter adjoin and co-locate, in the shortest distance possible, with the nearest existing utility corridor (SPLP 8-inch Pipeline). The Trenching-Alternative (routing to the east or south) would result in an increase in "greenfield" pipeline and thus is not in compliance with state and federal co-location guidance. The Trenching-Alternative route results in an increase in the amount of new and permanent forested land fragmentation, including impairment of forested ecosystem functions and values, watershed/water quality values, and availability of contiguous forest habitat for interior wildlife species and migratory birds protected pursuant to the Migratory Bird Treaty Act. For the aforementioned reasons, the Trenching-Alternative route (or any route that further deviates from the Trenching-Proposed route to achieve a dry or drier alignment) would result in new, permanent, site-specific and contribute to significant Project-wide cumulative impacts on land, environmental, and forested resources; and thus was not selected as the proposed route. On a local scale of analysis, the Trenching-Proposed route results in shorter "greenfield" pipeline which minimizes the length of vegetation clearing. Compared to the Trenching-Alternative route, this routing avoids and minimizes new and permanent impacts on</p>

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								previously undisturbed land, land use encumbrance, and site-specific and contribution to Project-wide cumulative impacts on land and environmental resources, and thus was selected as the proposed route. Furthermore, the Trenching-Proposed route and associated workspace reductions were designed to avoid and minimize the areal extent of impacts on waterbody resources to the maximum extent practicable along the subject route alignment. With implementation of the Project-proposed Impact Avoidance, Minimization, and Mitigation Procedures (see Attachment 11: Enclosure E, Part 4), the remaining, unavoidable impacts to Stream S-M35 are minor and temporary (see Attachment 11: Enclosure D and Enclosure E, Part 2).
SA-023	40.4455, -78.3243	Blair		S-L75	Trenching	The Alternatives Analysis does not provide sufficient detail, documentation, or explanation to document that there is not practicable alternative to further avoid and minimize impacts wetlands BB124, Q60, BB125, L56, L55, L54, L46, and L48 and streams S-BB96, S-L69, S-L75, S-L74, S-L76, S-BB95, S-L77, and S-BB92. The Alternatives Analysis states that the existing 8-inch line crosses this complex, however, this is not accurate as depicted on the plans. Provide a detailed analysis, discussion, and evidence that alternative routes through and around this area, minor deviations, and construction methods would not further avoid and minimize impacts. This should include but not be limited do alternate route alignments outside of the delineation area, the use of additional HDD and conventional bore crossings, minor route adjustments and include plans, impact amounts and other evidence to support the analysis. [25 Pa. Code §§105.13(e)(1)(viii), 105.14(b)(7), 105.18a]		<p>Impacts to the watercourse of Stream S-L75 (an unnamed tributary to Frankstown Branch Juniata River), classified as non-HQ/EV, in this stream area (SA) crossing have been avoided; however, the Project results in impacts to the floodway of Stream S-L75.</p> <p>A Trenchless Construction Feasibility Analysis (Appendix B) was conducted to evaluate the viability of alternative construction methods, specifically horizontal directional drill (HDD) and conventional auger bore (CAB), to avoid and minimize impacts on Stream S-L75 and other wetlands and streams (wetlands L46 and L48 and streams S-BB96, S-L69, S-L75, S-L74) in this SA. This assessment determined that, based on current technology, use of HDD and CAB construction methods through this SA is not technically feasible and thus is not practicable, and therefore was not selected as the proposed construction method.</p> <p>The Trenching-Proposed route travels north/northeast from Juniata Valley Road where it is co-located with an existing utility corridor (PPL Electric Utilities Corporation electric transmission line corridor). The route is co-located with this existing utility corridor in accordance with state and federal co-location guidance. By definition, this route avoids new "greenfield" routing alignments to the maximum extent practicable. This routing avoids and minimizes new and permanent impacts on previously undisturbed land, land use encumbrance, and site-specific and contribution to Project-wide cumulative impacts on land, environmental, and community resources. Additionally, this routing avoids and minimizes the amount of new and permanent forested land fragmentation, including impairment of forested ecosystem functions and values, watershed/water quality values, and availability of contiguous forest habitat for interior wildlife species and migratory birds protected pursuant to the Migratory Bird Treaty Act.</p> <p>Potential realignment of this route to further avoid or minimize impacts on the floodway of Stream S-L75 is restricted due to physical and practicability constraints. The Trenching-Proposed route is constrained to the west by the complex of contiguous waterbodies and associated wetlands in which S-L75 is associated, as well as an existing transmission line corridor. Shifting the alignment to the west would result in direct impacts to the watercourse of Stream S-L75, parallel impacts (approximately 260 linear feet) to the watercourse and floodway of Stream S-L72, and impacts to wetlands, including impacts to palustrine emergent (PEM) wetland L53 and exceptional value ("EV") palustrine forested (PFO) wetland L52 (resulting in PFO cover type conversion). Alignment farther east results in a new "greenfield" routing alignment, and in turn new and permanent impacts on previously undisturbed land, land use encumbrance, and site-specific and contribution to Project-wide cumulative impacts on land and environmental resources. Additionally, this routing increases the amount of new and permanent forested land fragmentation, including impairment of forested ecosystem functions and values, watershed/water quality values, and availability of contiguous forest habitat for interior wildlife species and migratory birds protected pursuant to the Migratory Bird Treaty Act.</p>

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								<p>Compared to any alternative route that further deviates from the Trenching-Proposed route to achieve further avoidance of impacts to the floodway of Stream S-L75, the Trenching-Proposed route clearly and substantively minimizes the areal extent of unavoidable impacts on wetlands and waterbodies by narrowing the workspaces adjacent to them and crossing wetland and waterbody resources perpendicularly where practicable instead of paralleling as would potential Trenching-Alternative routes.</p> <p>This route and associated workspace reductions were designed to avoid and minimize the areal extent of impacts on wetland and waterbody resources to the maximum extent practicable along the subject Trenching-Proposed alignment. With implementation of the Project-proposed Impact Avoidance, Minimization, and Mitigation Procedures (see Attachment 11: Enclosure E, Part 4), the remaining impacts to wetlands and waterbodies are minor and temporary (see Attachment 11: Enclosure D and Enclosure E, Part 2).</p>
<b>Huntingdon</b>								
SA-005	40.35473, -77.9955	Huntingdon		S-M28	Trenching	It appears that primary impacts and secondary impacts could be avoided and minimized by locating the proposed pipelines South of stream S-M28, and if this is not practicable, minimize impacts by crossing it farther downstream/Northeast in a perpendicular fashion. Revise the application accordingly to avoid and minimize impacts, or provide a detailed analysis of alternative routes, designs and methods to avoid and minimize these impacts which documents and provides evidence that other routes and designs would not further avoid or minimize impacts. [25 Pa. Code §§105.13(e)(1)(viii), 105.14(b)(7)]	HU 157.n.	<p>A Trenchless Construction Feasibility Assessment (Appendix B) was conducted to evaluate the viability of alternative methods, specifically HDD and CAB, to avoid and minimize impacts on Stream S-M28 (unnamed tributary to Smith Run), classified as non-HQ/EV, in this SA crossing. This assessment determined that, based on current technology, use of HDD and CAB construction methods through this SA is not technically feasible and thus is not practicable, and therefore was not selected as the proposed construction method.</p> <p>The Trenching-Alternative route (routing pipeline farther to the south) may potentially further avoid or minimize surface impacts to Stream S-M28. However, as this route deviation extends partially beyond the survey corridor, site-specific wetland and waterbody delineation data are not available along the entire width of this route. Based on aerial photograph and publicly-available database review, and the braided nature of streams in the vicinity, it appears routing the pipeline farther to the south would likely at a minimum, still cross Stream S-M28, and possibly cross other waterbodies. As such, the Trenching-Alternative route would likely not completely avoid the areal extent of waterbodies crossed. Additionally, the alternative route deviates from and is not adjacent to the existing utility corridor (Teppco Northern Region 20-inch pipeline and Buckeye Bh718Co 20-inch Pipeline). This routing increases the amount of new and permanent forested land fragmentation, including impairment of forested ecosystem functions and values, watershed/water quality values, and availability of contiguous forest habitat for interior wildlife species and migratory birds protected pursuant to the Migratory Bird Treaty Act. For the aforementioned reasons, routing the pipeline farther to the south would not necessarily reduce impacts on waterbodies and would result in new, permanent, site-specific and contribute to significant Project-wide cumulative impacts on land, environmental, and forested resources; and thus this routing was deemed not practicable.</p> <p>Given routing the pipeline further to the south is not practicable, the second Trenching-Alternative route, crossing Stream S-M28 farther downstream/northeast in a perpendicular fashion, was assessed. This route, although partially co-located with the existing utility corridor (Teppco Northern Region 20-inch pipeline and Buckeye Bh718Co 20-inch Pipeline), would result in a second crossing of Stream S-M28 and represents an increase in impacts to this waterbody compared to the Trenching-Proposed route which only crosses Stream S-M28 in one location. For this reason, the second Trenching-Alternative route was deemed not practicable and was not selected as the proposed route.</p> <p>The Trenching-Proposed route is situated in straight alignment to minimize the length of vegetation</p>

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								clearing. Compared to the Trenching-Alternative route, this routing avoids and minimizes new and permanent impacts on previously undisturbed land, land use encumbrance, and site-specific and contribution to Project-wide cumulative impacts on land and environmental resources, and thus was selected as the proposed route. Furthermore, the Trenching-Proposed route and associated workspace reductions represent the most minimal impacts to waterbodies and other resources at this location. Stream S-M28 is within and parallel with the existing utility corridor at this location. To avoid direct impacts along the length of Stream S-M28 and direct impacts to Streams S-M22 and S-M27 and Wetlands M18, M19, and M20 that would be realized by co-locating the pipeline, the Trenching-Proposed route was chosen because it is situated an adequate distance south of the existing utility corridor, yet still adjacent to the utility corridor. However, the Trenching-Proposed route is not shifted so far south that it would likely result in additional impacts to other waterbodies and would result in new and permanent forested land fragmentation. The Trenching-Proposed route avoids and minimizes impacts on waterbody resources to the maximum extent practicable in the subject alignment, and thus was selected as the proposed route. With implementation of the Project-proposed Impact Avoidance, Minimization, and Mitigation Procedures (see Attachment 11: Enclosure E, Part 4), the remaining, unavoidable impacts to Stream S-M28 are minor and temporary (see Attachment 11: Enclosure D and Enclosure E, Part 2).
SA-015	40.39592, -78.12911	Huntingdon		S-Y3	Trenching	It appears that secondary impact to stream S-Y3 could be avoided and minimized by lengthening the HDD location and beginning it further to the East and lengthening the "Permanent Easement (no surface disturbance)". Revise the application accordingly to avoid and minimize impacts, or provide a detailed analysis of alternative routes, designs and methods to avoid and minimize these impacts which documents and provides evidence that other routes and designs would not further avoid or minimize impacts. [25 Pa. Code §§105.13(e)(1)(viii), 105.14(b)(7)]	HU 157.g.	<p>The ROW was designed to be located on the north side of the existing Lancer Pipeline utility corridor. It was chosen to parallel this existing utility easement and thus it is in compliance with state and federal co-location guidance. By definition, this route avoids new "greenfield" routing alignments to the maximum extent practicable. This routing avoids and minimizes new and permanent impacts on previously undisturbed land, land use encumbrance, and site-specific and contribution to Project-wide cumulative impacts on land and environmental resources. Additionally, this routing avoids and minimizes the amount of new and permanent forested land fragmentation, including impairment of forested ecosystem functions and values, watershed/water quality values, and availability of contiguous forest habitat for interior wildlife species and migratory birds protected pursuant to the Migratory Bird Treaty Act.</p> <p>The proposed HDD avoids impacts to several wetlands (Wetlands Y1, Y2, Y3 and Y4). This HDD location has terrain challenges. In the immediate vicinity of Stream S-Y3, the workspace is flatter and provides a safer location and much safer conditions for the drilling equipment and personnel. At this location, the drill workspace is limited by the forested wetland (Wetland Y4) on the west side and steep terrain on the east side. The workspace which would result in temporary impacts to Stream S-Y3 will only be used if it is determined necessary, by the contractor in the field, to complete construction in this location. The workspace was designed to avoid and minimize the areal extent of impacts on Stream S-Y3 to the maximum extent practicable while still providing the safe workspace conditions but most importantly, avoiding impacts (cover type conversion) to more regionally significant resources, including scrub-shrub wetlands (Wetlands Y2 and Y3) and forested wetlands (Wetlands Y1 and Y4). Although Stream S-Y3 will likely be temporarily impacted by the Project, with implementation of the Project-proposed Impact Avoidance, Minimization, and Mitigation Procedures (see Attachment 11: Enclosure E, Part 4), the remaining, unavoidable impacts to this waterbody are minor and temporary (see Attachment 11: Enclosure D and Enclosure E, Part 2).</p>
SA-016	40.440565, -78.33297	Huntingdon		S-BB106, S-M4, and S-K85	Trenching	The Alternatives Analysis in Route Variation 6 identifies that the pipeline has been re-routed to avoid installation of the pipes paralleling down the middle of the stream.	HU 157.e.	This response addresses situations where the right-of-way parallels waterbodies. Because the right-of-way route crosses Stream S-K85 in a perpendicular alignment, thus minimizing impacts to this waterbody to the maximum extent practicable, alternative routes were not considered for this alignment. Furthermore, right-of-way modifications have been made to avoid impacts Streams S-L48,

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						<p>Other stream impacts are proposed where the proposed pipes will parallel down the stream channel, where the stream flows in and along the pipes and ROW, and where streams begin within the proposed ROW; however, no information has been provided on why these impacts cannot be avoided and/or minimized through route changes. It appears that many of these areas can have impacts further avoided and minimized. Revise the application accordingly to avoid and minimize impacts, or provide a detailed analysis of alternative routes, designs, and methods to avoid and minimize impacts and which documents and provides evidence that other routes and designs would not further avoid or minimize impacts for the following streams: S-M2, S-L16, S-L15, S-L13, S-L21, S-L51, S-L52, S-L53, S-Y19, S-JH2, S-BB106, S-L48, S-L42 within wetland L24, S-L25, S-M17, S-L34, S-M9, M11, S-K82, and S-K85 S-M18, S-M20, S-M4, S-BB97, S-M22, S-K89, and S-K8. [25 Pa. Code §§105.14(b)(7), 105.14(b)(4), 105.14(b)(11), 105.15(a)]</p>		<p>S-L25, S-L34, and S-M22 and as such, alternative routes which could further avoid or minimize impacts to these waterbodies were not necessary. Analyses regarding alternate routes for several of the streams listed in this comment are part of, and therefore have been addressed, in the Crossing Area (CA) Alternatives Analysis (Appendix D) and as such, are not addressed herein. Streams addressed in the CA Analysis include: Stream S-M2 (see CA-242); Stream S-L16 (see CA-247); Streams S-L13 and S-L15 (see CA-250); Stream S-L21 (see CA-245); Streams S-L51, S-L52, and S-L53 (see CA-214); Streams S-Y19 and S-JH2 (see CA-219); Stream S-L42 (see CA-223); Stream S-M17 (see CA-226); Streams S-M9 and S-M11 (see CA-234); Stream S-K82 (see CA-255); Streams S-M18 and S-M20 (see CA-225); Stream S-BB97 (see CA-234); Stream S-K89 (see CA-253) and Stream S-K8 (see CA-280). The remaining waterbodies to be addressed include Streams S-BB106 and S-M4 and alternative routes considered to minimize paralleling these waterbodies are provided herein.</p> <p>Stream S-BB106 – The Trenching-Alternative routes (routing to the north or south) to avoid installation of the pipeline parallel to Stream S-BB106 (unnamed tributary to Little Trough Creek), classified as non-HQ/EV, may potentially further avoid or minimize surface impacts to waterbodies. However, as the route deviations extend entirely beyond the survey corridor, site-specific wetland and waterbody delineation data are not available along the routes. Based on aerial photograph and publicly-available database review, as well as resource continuation lines noted during the in-field delineation, it appears the route deviations would at a minimum, likely still need to cross Stream S-BB106. Given the alignment of the stream, alternative routes would likely not completely avoid paralleling the stream.</p> <p>The Trenching-Proposed route which parallels Stream S-BB106 is not co-located with an existing utility corridor. Although this “greenfield” route is not in accordance with state and federal co-location guidance, this route is part of the larger MOC S2-0014-AP, which necessarily deviates from the nearest existing corridor (Teppco Northern Region 20-inch pipeline and Buckeye Bh718Co 20-inch Pipeline) to avoid existing commercial and residential developed areas. Accordingly, co-location with the nearest existing corridor was considered not practicable due to these subject routing constraints.</p> <p>On a local scale of analysis, the Trenching-Proposed route generally is situated in straight alignment with the proximate portions of the deviation route, and thus minimizes the length of the “greenfield” pipeline to the maximum extent practicable. Whereas, alternative routes would not be situated in straight alignment, and thus would increase the length of the “greenfield” pipeline. The alternative routes (or any route that further deviates from the Trenching-Proposed route to achieve a dry or drier alignment) would increase the amount of new and permanent forested land fragmentation, including impairment of forested ecosystem functions and values, watershed/water quality values, and availability of contiguous forest habitat for interior wildlife species and migratory birds protected pursuant to the Migratory Bird Treaty Act; and thus were not selected as the proposed route.</p> <p>The Trenching-Proposed route results in shorter “greenfield” pipeline compared to alternative routes, and therefore minimizes new and permanent impacts on previously undisturbed land, land use encumbrance, and site-specific and contribution to Project-wide cumulative impacts on land and environmental resources, and thus was selected as the proposed route. The Trenching-Proposed route and associated workspace reductions were designed to avoid and minimize the areal extent of impacts on waterbody resources to the maximum extent practicable along the subject route alignment. With implementation of the Project-proposed Impact Avoidance, Minimization, and</p>

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								<p>Mitigation Procedures (see Attachment 11: Enclosure E, Part 4), the remaining, unavoidable impacts to Stream S-BB106 are minor and temporary (see Attachment 11: Enclosure D and Enclosure E, Part 2).</p> <p>Stream S-M4 – The Trenching-Alternative routes (routing to the north or south) to avoid installation of the pipeline parallel to Stream S-M4 (unnamed tributary to Fort Run), classified as non-HQ/EV, may potentially further avoid or minimize surface impacts to waterbodies. However, as the route deviations extend partially beyond the survey corridor, site-specific wetland and waterbody delineation data are not available along the full width of the route. Based on aerial photograph and publicly-available database review, as well as resource continuation lines noted during the in-field delineation, it appears the route deviations would at a minimum, likely still need to cross Stream S-M4. Given the alignment of the stream, alternative routes would likely not completely avoid paralleling the stream or the areal extent of waterbodies crossed.</p> <p>Furthermore, alternative routes deviate from and are not co-located with the existing utility corridor (SPLP 8-inch Pipeline), and thus are not in compliance with state and federal co-location guidance. By definition, alternative routes result in a new “greenfield” routing alignment, and in turn new and permanent impacts on previously undisturbed land, land use encumbrance, and site-specific and contribution to Project-wide cumulative impacts on land and environmental resources. Alternative routes would also increase the amount of new and permanent forested land fragmentation, including impairment of forested ecosystem functions and values, watershed/water quality values, and availability of contiguous forest habitat for interior wildlife species and migratory birds protected pursuant to the Migratory Bird Treaty Act. Because Trenching-Alternative routes would likely not minimize impacts on waterbody resources and would result in new, permanent, site-specific and contribute to significant Project-wide cumulative impacts on land, environmental, and forested resources, the routes were not selected as the proposed route.</p> <p>The Trenching-Proposed route is co-located with the existing utility corridor (SPLP 8-inch Pipeline) in accordance with state and federal co-location guidance. This routing avoids and minimizes new and permanent impacts on previously undisturbed land, land use encumbrance, and site-specific and contribution to Project-wide cumulative impacts on land and environmental resources; and thus was selected as the proposed route. With implementation of the Project-proposed Impact Avoidance, Minimization, and Mitigation Procedures (see Attachment 11: Enclosure E, Part 4), the remaining, unavoidable impacts to Stream S-M4 are minor and temporary (see Attachment 11: Enclosure D and Enclosure E, Part 2).</p>

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<b>Juniata</b>								
SA-006	40.29752, - 77.67417	Juniata		S-K55, S- K58	Trenching	<p>It appears that impacts to streams S-K58, S-K55, and S-K65 could be minimized by locating the pipelines further north within the proposed ROW and also cross streams at closer to right angles. Revise the application accordingly to avoid and minimize impacts, or provide a detailed analysis of alternative routes, designs and methods to avoid and minimize these impacts which documents and provides evidence that other routes and designs would not further avoid or minimize impacts. [25 Pa. Code §§105.13(e)(1)(viii), 105.14(b)(7)]</p>	JU 101.j.	<p>A Trenchless Construction Feasibility Assessment (Appendix B) was conducted to evaluate the viability of alternative methods, specifically HDD and CAB, to avoid and minimize impacts on Streams S-K55, S-K58, and S-K65 (unnamed tributaries to Tuscarora Creek), classified as non-HQ/EV, in this SA crossing. This assessment determined that, based on current technology, use of HDD and CAB construction methods through this SA is not technically feasible and thus is not practicable, and therefore was not selected as the proposed construction method. The Trenching-Alternative route (routing pipeline further to the north) extends almost entirely beyond the survey corridor, site-specific wetland and waterbody delineation data are not available along almost the entire width of this route. Based on aerial photograph and publicly-available database review, as well as resource continuation lines noted during the in-field delineation and the braided nature of delineated streams in the stream locations, it appears this route deviation likely does not further reduce the areal extent of waterbodies crossed. Furthermore, this route deviates from and is not co-located with the existing utility corridor (SPLP 8-inch Pipeline), and thus is not in compliance with state and federal co-location guidance. By definition, this route results in a new "greenfield" routing alignment, and in turn new and permanent impacts on previously undisturbed land, land use encumbrance, and site-specific and contribution to Project-wide cumulative impacts on land and environmental resources. This routing would also increase the amount of new and permanent forested land fragmentation, including impairment of forested ecosystem functions and values, watershed/water quality values, and availability of contiguous forest habitat for interior wildlife species and migratory birds protected pursuant to the Migratory Bird Treaty Act. Because the Trenching-Alternative route would likely not minimize impacts on waterbody resources and would result in new, permanent, site-specific and contribute to significant Project-wide cumulative impacts on land, environmental, and forested resources, it was not selected as the proposed route. The Trenching-Proposed route is co-located with the existing utility corridor (SPLP 8-inch Pipeline) in accordance with state and federal co-location guidance. This routing avoids and minimizes new and permanent impacts on previously undisturbed land, land use encumbrance, and site-specific and contribution to Project-wide cumulative impacts on land and environmental resources. The Trenching-Proposed route avoids or minimizes impacts on waterbody resources to the maximum extent practicable in the subject alignment, and thus was selected as the proposed route. With implementation of the Project-proposed Impact Avoidance, Minimization, and Mitigation Procedures (see Attachment 11: Enclosure E, Part 4), the remaining, unavoidable impacts to waterbodies are minor and temporary (see Attachment 11: Enclosure D and Enclosure E, Part 2).</p>



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<b>York</b>								
SA-007	40.19735, - 76.80554	York		S-H58	Trenching	<p>At Aquatic Resource crossing at S-H58 on E&amp;S Plan sheet ES-4.20, this impact is not depicted on the impact table or site plans. Provide the impact information on the table and in the EA and project description and detail plans of the crossing. Also provide an alternative analysis detailing what measures were taken to avoid the impact. [25 Pa. Code Sections 105.15(a)(1), 105.14(b)(4), 105.14(b)(7), 105.13(e)(1)(i), 105.13(e)(1)(iii), 105.13(e)(1)(iv), 105.13(e)(1)(viii), 105.13(e)(1)(ix), and 105.13(e)(1)(x)]</p>	YO 7.b	<p>A Trenchless Construction Feasibility Assessment (Appendix B) was conducted to evaluate the viability of alternative methods, specifically HDD and CAB, to avoid and minimize impacts on Streams S-H58 (unnamed tributary to the Susquehanna River), classified as non-HQ/EV, in this SA crossing. This assessment determined that, based on current technology, use of HDD and CAB construction methods through this SA is not technically feasible and thus is not practicable, and therefore was not selected as the proposed construction method.</p> <p>However, the assessment determined HDD construction method was technically feasible to cross the Susquehanna River which is located east/northeast of Stream S-H58. The HDD of the Susquehanna River will avoid this significant resource. The HDD of the River will proceed from the west to east; therefore, an HDD pullback area is necessary along the west side of the River. Stream S-H58 is located along the west side of the River and extends from the River in a southwesterly direction. Given the alignment of Stream S-H58 and other constraints associated with siting adequate space for the Susquehanna River HDD pullback area (Interstate Highway 76, palustrine scrub-shrub [PSS] wetlands, and forested lands to the northwest and extensive palustrine forested [PFO] wetlands and other forested lands to the southwest) the Trenching-Proposed route and the proposed location of the HDD pullback area were designed to avoid and minimize the areal extent of impacts on wetland, waterbody, and forested (wetland and upland) resources to the maximum extent practicable along the subject route alignment.</p> <p>The Trenching-Proposed route and HDD pullback area generally are situated perpendicular to Stream S-H58 to minimize unavoidable temporary impacts to the maximum extent practicable. The Trenching-Proposed route and HDD pullback area were specifically located to avoid potential significant impacts to PFO wetlands to the south which surround Stream S-H58. PSS and PEM wetlands are also present within the forested wetland. The PFO, PSS, and PEM wetlands form a wetland system which buffers Stream S-H58. In avoiding impacts to the wetland system that buffers Stream S-H58, the Trenching-Proposed route results in further minimization of impacts to this stream. The Trenching-Proposed route and HDD pullback area avoid impacts to PSS wetlands north of and adjacent to Stream S-H58, resulting in further reduction of impacts to aquatic resources on a whole such that this routing results in the greatest minimization of impacts to the amount of wetland ecosystem functions and values as well as watershed/water quality values. Lastly, SPLP located the HDD pullback area to maximize use of existing open upland area east of Stream S-H58 and to minimize the amount of new and permanent forested land impacts, including impairment of forested ecosystem functions and values, watershed/water quality values, and availability of contiguous forest habitat for interior wildlife species and migratory birds protected pursuant to the Migratory Bird Treaty Act.</p> <p>For the above reasons, the Trenching-Proposed route avoids and minimizes impacts on wetland and waterbody resources and other (non-wetland) resources to the maximum extent practicable in the subject alignment, and thus was selected as the proposed route. With implementation of the Project-proposed Impact Avoidance, Minimization, and Mitigation Procedures (see Attachment 11: Enclosure E, Part 4), the remaining, unavoidable impacts to waterbodies are minor and temporary (see Attachment 11: Enclosure D and Enclosure E, Part 2).</p>

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Berks								
SA-009	40.28666, -76.03136	Berks		S-B43	Trenching	<p>It appears that locating the proposed pipelines to the East would avoid impacts to stream S-B43. Revise the application accordingly to avoid and minimize impacts, or provide a detailed analysis of alternative routes, designs and methods to avoid and minimize these impacts which documents and provides evidence that other routes and designs would not further avoid or minimize impacts. [25 Pa. Code §§105.13(e)(1)(viii), 105.14(b)(7)]</p>	BE 112.k	<p>A Trenchless Construction Feasibility Assessment (Appendix B) was conducted to evaluate the viability of proposed construction methods, specifically HDD and CAB, to avoid and minimize impacts on Streams S-B43 (unnamed tributary to Cacoosing Creek), classified as non-HQ/EV, in this SA crossing. This assessment determined that, based on current technology, use of HDD and CAB construction methods through this SA is not technically feasible and thus is not practicable, and therefore was not selected as the proposed construction method. The Trenching-Proposed route is part of the larger route which parallels an existing utility corridor (overhead electric transmission lines) and thereafter becomes a “greenfield” routing alignment, particularly at the location of Stream S-B43. This “greenfield” component of the Trenching-Proposed route maximizes use of open land (e.g., cropland, rangeland) while minimizing impacts on community resources before it is co-located with another existing utility corridor (SPLP 8-inch Pipeline). On a local scale of analysis (in the vicinity of Stream S-B43), the Trenching-Proposed route is situated in straight alignment, and thus minimizes the length of the “greenfield” pipeline to the maximum extent practicable. Thus compared to the Trenching-Alternative route (locating the pipeline to the east), this routing avoids and minimizes new and permanent impacts on land use encumbrance, and site-specific and contribution to Project-wide cumulative impacts on land resources. For the above reasons, compared to the Trenching-Alternative route, the Trenching-Proposed route is considered a practicable route which is part of a larger route that avoids and minimizes new and permanent site-specific and contribution to significant Project-wide cumulatively impacts on land, environmental, and community resources to the maximum extent practicable; and thus was selected as the proposed route. With implementation of the Project-proposed Impact Avoidance, Minimization, and Mitigation Procedures (see Attachment 11: Enclosure E, Part 4), the remaining, unavoidable impacts to Stream S-B43 are minor and temporary (see Attachment 11: Enclosure D and Enclosure E, Part 2).</p>
SA-010	40.20407, -75.9175	Berks		S-H21	Trenching	<p>It appears that impacts and secondary impacts could be avoided and minimized by locating the proposed temporary ROW and AWS which surround stream S-H21 to the South and East. Revise the application accordingly to avoid and minimize impacts, or provide a detailed analysis of alternative routes, designs and methods to avoid and minimize these impacts which documents and provides evidence that other routes and designs would not further avoid or minimize impacts. [25 Pa. Code §§105.13(e)(1)(viii), 105.14(b)(7)]</p>	BE 112.z	<p>Direct impacts to Stream S-H21, an unnamed tributary to Rock Run, classified as a non-HQ/EV, in this SA crossing will be avoided because the stream will not be trenched but instead will be crossed via CAB as part of the CAB of Interstate Highway 176 (I-176). Locating the proposed temporary right-of-way and additional temporary workspace to the south and east to minimize temporary impacts to Stream S-H21 is not practicable. The right-of-way and additional workspace was designed to be located on the north side of two existing Sunoco pipelines to provide adequate separation from the existing pipelines to the south. Although the temporary right-of-way and additional temporary work space need to be located along the north side of the permanent right-of-way, they have been located to provide a buffer around Stream S-H21 to avoid and minimize impacts to this waterbody. Additionally, tree clearing will be necessary for line of sight up to the edge of I-176; therefore the nominal impacts to Stream S-H21 are necessary. In addition, a Pennsylvania Department of Transportation storm sewer that runs parallel to the interstate will need to be potholed during construction. In an effort to reduce impacts to Stream S-H21, the temporary right-of-way and additional temporary workspace was reduced as much as possible, while allowing the ability to cross the stream and use the additional temporary workspace for construction access. The additional temporary workspace will only be used if it is determined necessary, by the contractor in the field, to complete construction in this area.</p>

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SA-011	40.1886, -75.89107	Berks		S-Q90	Trenching	<p>The proposed pipelines and ROW deviates from the existing ROW from west of stream S-Q90 to just west of wetland W35. However, this will result in new reaches of stream and forest clearing. Revise the alternatives analysis to discuss and analyze alternative routes to avoid and minimize impacts to streams and wetlands, including but not limited to paralleling and overlapping the existing pipeline and maintenance corridor and use of trenchless technology to maintain riparian habitat.. Revise the application accordingly to avoid and minimize impacts, or provide a detailed analysis of alternative routes, designs and methods to avoid and minimize these impacts which documents and provides evidence that other routes and designs would not further avoid or minimize impacts. [25 Pa. Code §§105.13(e)(1)(viii), 105.14(b)(7), 105.18a(a)]</p>	BE 112.bb	<p>A Trenchless Construction Feasibility Assessment (Appendix B) was conducted to evaluate the viability of alternative methods, specifically HDD and CAB, to avoid and minimize impacts on Stream S-A90 (unnamed tributary to Hay Creek), classified as non-HQ/EV, in this SA crossing. This assessment determined that, based on current technology, use of HDD and CAB construction methods through this SA is not technically feasible and thus is not practicable, and therefore was not selected as the proposed construction method. The Trenching-Proposed route deviates from the existing utility corridor (SPLP 8-inch Pipeline) and results in surface impacts to only one waterbody, Stream S-Q90, an unnamed tributary to Hay Creek, classified as a non-HQ-EV. The only other aquatic resources traversed by the route include a separate unnamed tributary to Hay Creek (Stream S-Q89) and forested wetlands (Wetland Q80), both of which will be crossed using conventional auger bore (CAB) method to avoid direct impacts to this waterbody and wetland, especially avoiding palustrine forested (PFO) wetland cover type conversion. The Trenching-Proposed route is part of the larger MOC S3-0070-AP, which necessarily deviates from the nearest existing utility corridor to avoid archaeological resources and more significant wetland and waterbody impacts. Specifically, the Trenching-Proposed route avoids impacts to significant resources, including: Archaeological Site 36BK0926; Wetland A32 (palustrine emergent [PEM]), Wetland 300 (palustrine emergent [PEM]), Wetland 34 (PEM); Streams S-A52, S-A53, and S-A54 (unnamed tributaries to Hay Creek); and the wetland complex that spans approximately 1,000 linear feet of the existing utility corridor which is comprised of PFO, palustrine scrub-shrub (PSS), and PEM components of Wetlands A-34 and A-35. Accordingly, the Trenching-Proposed route, in lieu of the Trenching-Alternative route (co-locating with existing utility corridor), significantly avoids and minimizes impacts on wetland and waterbody resources as well as avoids PFO and PSS wetland cover type conversion, and thus was selected as the proposed route. The Trenching-Proposed route and associated workspace reductions were designed to avoid and minimize the areal extent of impacts on Stream S-Q90 to the maximum extent practicable along the subject route alignment. With implementation of the Project-proposed Impact Avoidance, Minimization, and Mitigation Procedures (see Attachment 11: Enclosure E, Part 4), the remaining, unavoidable impacts to wetlands and waterbodies are minor and temporary (see Attachment 11: Enclosure D and Enclosure E, Part 2). Lastly, although the Trenching-Proposed route is not co-located and involves "greenfield" impacts, the route was sited to minimize forested land fragmentation by closely paralleling Morgantown Road for approximately 34 percent of the route and by routing in existing open lands for approximately 23 percent of the route.</p>
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<b>Cambria</b>							
SA-018	40.442773, -78.596314	Cambria		S-M94	Trenching	The proposed right-of-way appears to turn into wetlands BB148 and S-M94. Discuss alternatives that were considered that necessitated this alignment. 25 Pa. Code §105.13(e)(1)(viii)	CA 22.k  The Trenching-Proposed route crosses Stream S-M94 (unnamed tributary to Little Conemaugh River), classified as non-HQ/EV, in this SA crossing. Although the Trenching-Proposed route is not co-located with an existing utility corridor and therefore represents a “greenfield” route, this route is part of the larger MOC S2-0042-Rev2-AP, which necessarily deviates from the nearest existing corridor (overhead electric transmission lines) to avoid the AMFIRE Mine property, specifically the pits the mine has planned in its southern extent, necessitating a routing that extends around the northern perimeter of the mine. The eastern segment of this route around the mine perimeter appears to turn into Stream S-M94 and Wetland BB148. Routing the alignment to the east to avoid impacts to Wetland BB148 was considered as a Trenching-Alternative route. However, due to topographic constraints, routing further to the east and away from Wetland BB148 would place the route parallel with and on a steep hillside slope. Furthermore, based on aerial photograph and topographic map review, Stream S-BB106 extends to the east and the Trenching-Alternative route would still result in surface impacts to Stream S-BB106. Given the alternative route is not practicable from a construction perspective and it would not avoid or minimize the areal extent of impacts on Stream S-BB106, the Trenching-Alternative route was not selected as the proposed route. Given the constraints associated with this routing, the Trenching-Proposed route was selected as the proposed route. Although the Trenching-Proposed route results in surface impacts to Wetland BB148 and Stream S-M94, the route was reduced in width to minimize impacts on wetland and waterbody resources to the maximum extent practicable along the subject alignment. With implementation of the Project-proposed Impact Avoidance, Minimization, and Mitigation Procedures (see Attachment 11: Enclosure E, Part 4), the remaining, unavoidable impacts to wetlands and waterbodies are minor and temporary (see Attachment 11: Enclosure D and Enclosure E, Part 2).
<b>Washington</b>							
SA-019	40.230734, -80.160569	Washington		S124	Trenching	The proposed crossing of UNT to Little Chartiers Creek (Stream S124) appears to run directly in, or close to the channel in a parallel manner. Discuss what necessitates crossing in this manner. Additionally, provide a detailed plan view and representative cross sections that clearly shows the proposed pipeline and ordinary high water mark of the watercourse at this location. 25 Pa. Code §105.13(e)(1)(viii)	WA 23.g.  The Trenching-Proposed route crosses Stream 124 (unnamed tributary to Chartiers Creek), classified as non-HQ/EV, in this SA crossing. Although this route results in surface impacts in a parallel manner to Stream S124, the Trenching-Proposed route is co-located with an existing utility corridor (SPLP 12-inch Pipeline) and is in accordance with state and federal co-location guidance. By definition, this route avoids new “greenfield” routing alignments to the maximum extent practicable. This routing avoids and minimizes new and permanent impacts on previously undisturbed land, land use encumbrance, and site-specific and contribution to Project-wide cumulative impacts on land, environmental, and community resources. Additionally, this routing avoids and minimizes the amount of new and permanent forested land fragmentation, including impairment of forested ecosystem functions and values, watershed/water quality values, and availability of contiguous forest habitat for interior wildlife species and migratory birds protected pursuant to the Migratory Bird Treaty Act.  The Trenching-Alternative routes (routing pipeline to the north or south) may potentially further avoid or minimize surface impacts to Stream S124. However, the route deviations extend partially beyond the survey corridor, site-specific wetland and waterbody delineation data are not available along the entire width of these routes. Based on aerial photograph and publicly-available database review, as well as resource continuation lines noted during the in-field delineation, it appears route deviations may potentially, but are not confirmed to, further avoid or minimize the areal extent of surface disturbance to Stream S124. Furthermore, Trenching-Alternative routes to the north or south of the Trenching-Proposed route deviate from and are not co-located with the existing utility corridor (SPLP 12-inch Pipeline), and thus are not in compliance with state and federal co-location guidance.

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							<p>These routes result in new “greenfield” routing alignments, and in turn result in new and permanent impacts on previously undisturbed land, land use encumbrance, and site-specific and contribution to Project-wide cumulative impacts on land and environmental resources. These routes would also increase the amount of new and permanent forested land fragmentation, including impairment of forested ecosystem functions and values, watershed/water quality values, and availability of contiguous forest habitat for interior wildlife species and migratory birds protected pursuant to the Migratory Bird Treaty Act. Because the Trenching-Alternative routes would likely not minimize impacts on Stream S124 and would result in new, permanent, site-specific and contribute to significant Project-wide cumulative impacts on land, environmental, and forested resources, these routes were not selected as the proposed route.</p> <p>The Trenching-Proposed route is co-located with an existing utility corridor (SPLP 12-inch Pipeline) in accordance with state and federal co-location guidance. This routing avoids and minimizes new and permanent impacts on previously undisturbed land, land use encumbrance, and site-specific and contribution to Project-wide cumulative impacts on land and environmental resources, and thus was selected as the proposed route. With implementation of the Project-proposed Impact Avoidance, Minimization, and Mitigation Procedures (see Attachment 11: Enclosure E, Part 4), the remaining, unavoidable impacts to waterbodies are minor and temporary (see Attachment 11: Enclosure D and Enclosure E, Part 2).</p>
<b>Lebanon</b>							
SA-022	40.265394, -76.54336	Lebanon		S-A5a, S-A5	Trenching	<p>It appears that impacts to wetlands A3, A4, and A6, and streams S-A5, S-A5a, and S-A6 could be avoided and minimized by re-locating the alignment to the North and only cross streams S-A5 and S-A6 and in a more perpendicular manner. Revise the application accordingly to avoid and minimize impacts, or provide a detailed analysis of alternative routes, designs and methods to avoid and minimize these impacts which documents and provides evidence that other routes and designs would not further avoid or minimize impacts. [25 Pa. Code §§105.13(e)(1)(viii), 105.14(b)(7), 105.18a]</p>	<p>LE114.i</p> <p>A Trenchless Construction Feasibility Assessment (Appendix B) was conducted to evaluate the viability of alternative methods, specifically HDD and CAB, to avoid and minimize impacts on Streams S-A5 and S-A5a (unnamed tributaries to Buckholder Run), classified as non-HQ/EV, in this SA crossing, and to avoid impacts on “Other” wetlands (A3, A4, and A6). This assessment determined that, based on current technology, use of HDD and CAB construction methods through this SA is not technically feasible and thus is not practicable, and therefore was not selected as the proposed construction method.</p> <p>The Trenching-Alternative route (routing pipeline to the north) may potentially further avoid or minimize surface impacts to Streams S-A5 and S-A5a, and “Other” wetlands (A3, A4, and A6). However, as this route deviation extends partially beyond the survey corridor, site-specific wetland and waterbody delineation data are not available along the full width of this route. Based on aerial photograph and publicly-available database review, it appears this route deviation may potentially, but is not confirmed to, further avoid or minimize the areal extent of streams or wetlands crossed. Furthermore, the alternative route deviates from the existing utility corridor (SPLP 8-inch Pipeline), and thus is not in compliance with state and federal co-location guidance. By definition, this route results in a new “greenfield” routing alignment, and in turn new and permanent impacts on previously undisturbed land, land use encumbrance, and site-specific and contribution to Project-wide cumulative impacts on land and environmental resources. Additionally, this routing increases the amount of new and permanent forested land fragmentation, including impairment of forested ecosystem functions and values, watershed/water quality values, and availability of contiguous forest habitat for interior wildlife species and migratory birds protected pursuant to the Migratory Bird Treaty Act.</p> <p>As detailed in Section 5.0, with the use of current technology the Trenching-Alternative route on a site-specific and cumulative basis jeopardizes Project practicability with regard to logistics, including but not necessarily limited to suboptimal pipeline construction safety, access, efficiency, timing, and</p>

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								<p>duration; and suboptimal pipeline operation process, safety, access, efficiency, and duration; as well as increased construction cost, and increased pipeline operation cost for the life of the pipeline.</p> <p>The Trenching-Alternative route may potentially further avoid or minimize the areal extent of minor and temporary impacts on wetland (and waterbody) resources associated with the Trenching-Proposed route. However, for the above reasons, the Trenching-Alternative route (or any route that further deviates from the Trenching-Proposed route to achieve a dry or drier alignment) would result in new, permanent, site-specific impacts and contribute to significant Project-wide cumulative impacts on land, environmental and forested resources; as well as result in site-specific and cumulatively contribute to Project-wide suboptimal pipeline construction and operation and increased cost; and thus was not selected as the proposed route.</p> <p>On a local scale of analysis, the Trenching-Proposed route results in shorter “greenfield” pipeline which minimizes the length of forested vegetation clearing. Compared to the Trenching-Alternative route, this routing avoids and minimizes new and permanent impacts on previously undisturbed land, land use encumbrance, and site-specific and contribution to Project-wide cumulative impacts on forested land and environmental resources, and thus was selected as the proposed route. Furthermore, the Trenching-Proposed route and associated workspace reductions were designed to avoid and minimize the areal extent of impacts on waterbody resources to the maximum extent practicable along the subject route alignment. The ROW was narrowed to 50-feet to avoid and minimize impacts to Streams S-A5 and S-A5a, and “Other” wetlands (A3, A4, and A6) to the maximum extent practicable. With implementation of the Project-proposed Impact Avoidance, Minimization, and Mitigation Procedures (see Attachment 11: Enclosure E, Part 4), the remaining, unavoidable impacts these wetlands and waterbodies are minor and temporary (see Attachment 11: Enclosure D and Enclosure E, Part 2).</p>
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