



PITT-05-20-026

May 19, 2020

Ms. Dana Drake, P.E.
Environmental Program Manager
Pennsylvania Department of Environmental Protection
Waterways and Wetlands Program
Southwest Regional Office
400 Waterfront Drive
Pittsburgh, Pennsylvania 15222

**Re: DEP FILE E11-352-A1
Technical Deficiency Response
Pennsylvania Pipeline Project – Mariner East 2
Goldfinch Lane HDD and Reroute Major Amendment
Application No E11-352-A1
APS No. ID No. 876467
Jackson Township, Cambria County, PA**

Dear Ms. Drake:

On behalf of Sunoco Pipeline LP (SPLP), Tetra Tech, Inc. provides the following responses to the Pennsylvania Department of Environmental Protection (Department) Technical Deficiency letter dated May 5, 2020, regarding the above-referenced Chapter 105 Major Amendment. The supporting attachments represent additional information to be added to the original modification request. For ease of your review, each Department comment is set forth verbatim below, followed by a narrative response with supporting attachments where necessary.

Comments and Responses to May 5, 2020 Technical Deficiency Letter as provided in Attachment D:

ENVIRONMENTAL COMMENTS/RESPONSES:

1. §105.13(e)(1)(viii), §105.16(a) and §105.18a(b)(3): An Aquatic Resource Table that lists the impacts along the current route of the section of pipeline that is to be re-routed, and provide a cumulative total for all types of aquatic resources to be impacted. (Former TDL item 2.b)

Status: Per Table 1, the total permanent wetland impact along the original route is 0.121 acre; however, your response to Item 3, includes another table that indicates that the permanent wetland impacts along the original route, using an open cut installation method would be 1.312 acres Please explain the differences between these tables.

Response: Table 1 provided in April 2, 2020 response to Former TDL Item 2.b reports the permanent impact to wetlands of 0.121 acre if the 16" pipeline were installed along the original route alignment via the originally-permitted Horizontal Directional Drill (HDD), whereas the table provided in response to Former TDL Item 3 reports the permanent impact to wetlands of 1.312 acres if the 16" pipeline were installed along the original route alignment via open cut installation.

2. §105.13(e)(1)(viii), §105.16(a) and §105.18a(b)(3): Related to the preceding item, your Alternatives Analysis indicates that the approximately 1-mile pipeline reroute of this section of pipeline is being proposed to avoid extensive, permanent, conversion impacts to a PFO wetland area. To facilitate the Department's review of your alternative's analysis, quantify and describe the impact to the PFO wetland area that will be avoided by this proposed reroute. In addition, compare this impact, which you are proposing to avoid, to the new/additional impacts to aquatic resources that are anticipated within the proposed reroute. (Former TDL item 3)

Status: Please explain why permanent and temporary impacts to PFO wetlands are reported in tables 1 & 2 to be 0.032 acre, along the 16 HDD Route, while your response to this item reports impacts to PFO wetlands to be 0.57 acre. Please explain the differences between these reported values. In addition, provide a map that shows the location and boundaries of the PFO wetland that you are proposing to avoid, in relation to the 16 HDD Route and the 16 Inch Reroute.

Response: Tables 1, 2, and 3 provided in the April 2, 2020 response to Former TDL Item 2 compare the aquatic resource impacts for the original route alignment using the originally-permitted HDD construction method (referenced as "16 HDD Route") and for the proposed reroute using the open cut construction method (referenced as "16 Inch Reroute"). These tables also provide a breakdown of individual and total impacts by aquatic resource type and category, and whether the impacts are permanent or temporary as defined by the Pennsylvania Department of Environmental Protection (PADEP) in the *Chapter 105 Fee(s) Calculation Worksheet* (form 3150-PM-BWEW0553, revision 7/2016).

The April 2, 2020 response to the former TDL Item 3 was designed to compare two open cut construction method alternatives for the installation the 16" pipeline one for the original route (the route alignment consistent with the originally-permitted HDD) and one for the proposed reroute. In this comparison discussed in the narrative response to Former TDL Item 3, SPLP details that the proposed 16" reroute "avoid[s] extensive, permanent, conversion impacts to a PFO wetland area", reducing permanent impacts from 0.57 acre in the originally permitted corridor to 0 acres in the proposed 16" reroute corridor. Specifically, the proposed 16" reroute avoids impact to PFO wetland N20.

Attachment E of the April 2, 2020 response to the previous TDL letter shows the PFO component wetland N20 on Sheet 21 of 104, along with the proposed 16" reroute corridor just to the south on Sheet 104 of 104. Additionally, the photo location mapset provided in Attachment A of the SPLP's April 4, 2019 response to the Department's March 13, 2019 Chapter 105 Incompleteness Review depicts wetland N20 with the proposed 16" reroute on Sheet 5 of 6.

3. §105.13(e)(1)(viii) and §105.13(e)(1)(x): Because of the differences in the values that are noted in the preceding comments, provide an accurate comparison between the wetland and stream impacts that are associated with the original route (16 HDD Route) versus the proposed reroute (16 Inch Reroute). (New item)

Response: Table 1 below provides a comparison of the impacts to aquatic resources for the installation of the 16" pipeline for the originally-permitted route using the HDD construction method (16 HDD Route) and for the proposed reroute using the open cut construction method (16 Inch Reroute).

Table 1. Comparison of the Total (Temporary/Permanent) Impacts to Aquatic Resources: 16" HDD Route and 16" Reroute Pipeline Corridors

Route	Wetlands (acre)			Ponds	Stream (square feet)			PADEP Resources (acre)	
	PEM	PSS	PFO	PuB	Per	Int	Eph	Ch. 105 Floodway	Ch. 106 Floodplain
16 HDD Route	0.086	0.020	0.032	-	75	82	-	0.294	0.365
16 Inch Reroute	0.333	0.451	-	0.008	3,706	862	-	1.586	0.241

4. §105.13(e)(1)(viii) and §105.18a(b)(3): Evaluate the feasibility of the following adjustments to the proposed reroute, to potentially avoid or minimize impacts to wetlands:

Could proposed open cuts through Wetland W1r, at three (3) locations, be avoided or minimized by moving the pipeline some tens of feet to the southwest? (Former TDL item #9.a)

Status: Your response indicates that any further adjustment of the ROW to the south would affect another new parcel. Please further evaluate this alternative, including whether this new parcel could reasonably be obtained, utilized, expanded or managed, to potentially avoid or minimize impacts to Wetland W1r.

Response: In response to the Department's Technical Deficiency letter dated March 2, 2020, SPLP provided a more detailed Alternatives Analysis (Attachment A to the submittal to the Department on April 2, 2020). Within that Alternatives Analysis, SPLP presented as part of the Goldfinch HDD reroute, that SPLP conducted an integrated and detailed evaluation of potential alternative reroutes or trenchless construction methods using the Integrated Project Team and Management of Change (MOC) Process presented in the original project-wide Alternatives Analysis. As part of this evaluation process, SPLP considered opportunities to change the permitted route to avoid and minimize potential environmental impacts, while simultaneously considering potential construction and operational constraints presented by adjacent landowners, existing land uses, infrastructure obstacles, and other factors affecting use of existing technology, cost, and logistics.

Specifically, SPLP performed desktop and onsite assessments of the Goldfinch HDD reroute "evaluation area", which included, but was not limited to, the area bounded by the permitted right-of-way (to the north), currently proposed reroute (to the south), and the end points where the currently proposed reroute departs from the permitted right-of-way (to the west and east). This evaluation area encompassed the proposed reroute segment in the vicinity of Wetland W1r. Based on the assessment, SPLP identified and evaluated the following site-specific routing opportunities and constraints within the subject evaluation area (including consideration of open cut and non-HDD trenchless construction methods):

- The presence of numerous stream channels generally north-south oriented, including a number of meandering and braided stream systems covering a greater areal extent and exhibiting a more complex orientation toward the northern portion of the subject evaluation area;
- The presence of numerous wetland areas and complexes associated with and/or adjacent to the above-noted stream channels, particularly toward the northern portion of the subject evaluation area;
- The presence of a greater areal extent of PFO wetlands, particularly toward the northern portion of the subject evaluation area, including along and adjacent to the permitted right-of-way;
- The presence of a pond and adjacent forested buffer area toward the eastern end of the subject evaluation area;
- The presence of a large and generally unfragmented (with the exception of residential development) forested area encompassing the majority of the eastern half of the subject evaluation area;

- The presence of a few, sporadic, non-forested (scrub-shrub and open or agricultural) lands toward the southern portion of the evaluation area;
- The presence of numerous residences and associated infrastructure (i.e., outbuildings, roads, driveways, and potential associated aboveground and buried utilities or septic systems) and adjacent forested buffer area, particularly toward the northern portion of the subject evaluation area;
- The presence of newly affected landowners and associated landowner concerns related to establishment of a new permanent right-of-way easement; and
- Existing configuration of existing parcel/property boundary lines.

Based on the assessment of the above-described opportunities and constraints, SPLP selected the shortest practicable route, taking into consideration cost, existing technology, and logistics, that results in the least impact to environmental and human environment resources, including:

- Crosses stream channels perpendicularly and at optimal locations (based on channel width, adjacent topography, resource areal extent and complexity, etc.) to avoid complex meandering/braided stream channels and adjacent wetland complexes located toward the northern portion of the subject evaluation area;
- Avoids impacts to PFO wetlands located toward the northern portion of the subject evaluation area;
- Avoids the pond and adjacent forested buffer area located toward the eastern end of the subject evaluation area;
- Minimizes impacts to, and fragmentation of, the large and generally unfragmented (with the exception of residential areas) forested area encompassing the majority of the eastern half of the subject evaluation area to the extent practicable by:
 - routing the pipeline along the southern and eastern edges of this forested area, and parallel and adjacent to existing property boundary lines;
 - crossing the contiguous portion of this forested area at its narrowest portion (for the shortest length), with open lands proximate to the west and east; and
 - incorporating crossings a few, sporadic, non-forested (scrub-shrub and open or agricultural) lands located along the southern portion of the evaluation area;
- Avoids residences and associated infrastructure (i.e., outbuildings, roads, driveways, and potential associated aboveground and buried utilities or septic systems) and adjacent forested buffer area located toward the northern portion of the subject evaluation area;
- Minimizes easement fragmentation of affected parcels, to the extent practicable by routing parallel and adjacent to (co-located with) existing property boundary lines; and
- Considers and accommodates newly and potentially affected landowner preferences and concerns related to routing and establishment of a permanent right-of-way easement, to the extent practicable.

In SPLP's more detailed Alternatives Analysis in Attachment A to the submittal to the Department on April 2, 2020, SPLP further evaluated several **micro-siting adjustments to the proposed reroute** to potentially further avoid or minimize impacts to wetlands, including Wetland W1r. SPLP applied the following general objectives to the selection of the proposed reroute, to the extent practicable:

- Shortest length of route alignment;
- Straight-line route alignment of the pipeline centerline and permanent right-of-way easements between points of inflection;
- Minimize the number of newly affected parcels and landowners;
- Parallel and adjacent to existing property boundary lines (and avoid easement fragmentation of affected parcels and landowners);
- Accommodation of new landowner preferences and concerns related to routing and establishment of a permanent right-of-way easement;
- Least impact to environmental resources, including wetlands and waterbodies; and
- Least impact to human environment resources.

The following analysis elaborates on SPLP's Alternatives Analysis in Attachment A to the submittal to the Department on April 2, 2020, specifically regarding Wetland W1r. The proposed reroute segment in the vicinity of Wetland W1r meets the above-identified general selection objectives, as follows:

- The proposed reroute segment represents the shortest length of route alignment as it:
 - is a straight-line alignment that avoids use of multiple, short, “zig-zag” alignments to avoid individual crossings of obstacles and resources; and
 - avoids a much longer potential reroute alignment further to the south that would be necessary to completely avoid encroachment on existing buildings, a pond, a residence, and associated infrastructure on the land parcel immediately adjacent to the south of Wetland W1r.
- The proposed reroute segment is a straight-line route alignment of the pipeline centerline and permanent right-of-way easements between points of inflection;
- The proposed reroute segment minimizes the number of new individual parcels of land and landowners, being located on a single new parcel affecting a single new landowner;
- The proposed reroute segment is located parallel and adjacent to (abuts) the north side of an existing property boundary line, and thus avoids unnecessary easement fragmentation of additional parcels and landowners to the south;
- The proposed reroute segment avoids unnecessary establishment of a 75-foot-wide construction right-of-way, including a new 50-foot-wide permanent right-of-way encumbrance and associated permanent operations and maintenance activities, on a new parcel and affected landowner. This avoids encroachment on (including potential relocation and/or demolition of) three existing outbuildings (located approximately 49, 120, and 150 feet south of the subject property line), encroachment on a private pond (located approximately 200 feet south of the subject property line), encroachment on an existing private residence (located approximately 230 feet south of the subject property line), encroachment on potential associated infrastructure (e.g., private water well, septic system, buried utilities, access ways), and impacts associated with permanent operations and maintenance activities on existing private agricultural and residential land uses. The northernmost outbuilding (located approximately 49 feet south of the subject property line) is currently used as a horse barn, by other animals, and for hay storage, and the adjacent pasture is fenced to prevent animals from crossing the subject property line; thus the proposed reroute segment avoids potential physical disruption to the horse barn, fence line, and pasture use by the horses and other animals during construction, operations, and maintenance activities. In addition, the proposed reroute segment avoids a spring located parallel to the property line before leading to the barn;
- The proposed reroute segment crosses undeveloped land and avoids the private land use and infrastructure encroachment and encumbrance impacts noted above, and therefore results in the least impact to human environment resources; and
- By abutting the north side of the subject property line, the proposed reroute segment avoids impacts to waterbodies (none) and minimizes impacts to Wetland W1r by crossing at three (3) individual wetland segments instead of a single, contiguous, approximately 600-foot-long crossing further to the north. The resulting open cut construction method impacts to Wetland W1r are minor (a small combined [permanent and temporary impact] areal extent of 0.265-acre on a non-exceptional value, palustrine emergent wetland) and temporary (restoration to pre-construction conditions, and no permanent conversion of palustrine forested wetland cover type). Therefore, the proposed reroute segment results in the least impact to environmental resources, including wetlands and waterbodies, to the extent practicable along the proposed reroute alignment.

In addition, acquisition and establishment of temporary and permanent right-of-way easements that would be required on an additional new land parcel and landowner to the south of Wetland W1r may not reasonably be obtained or utilized, and therefore may not be practicable, for several reasons, including but not necessarily limited to:

- As noted above, temporary and permanent encroachment on private agricultural and residential land use and infrastructure, including potential relocation and/or demolition of existing outbuildings;

- Associated permanent right-of-way operations and maintenance activities encroachment on existing agricultural and residential land uses; and
- As noted above, a potentially much longer reroute alignment may be required further to the south to completely avoid encroachment on existing buildings, a pond, a residence, and associated infrastructure on the land parcel immediately adjacent to the south of Wetland W1r.

Furthermore, as noted in the original project-wide Alternatives Analysis, on a site-specific basis, and on a cumulative basis across the entire Project, increasing the length and changing the location of the pipeline to further avoid or minimize minor and temporary impacts on individual wetlands via realignment results in (among other impacts):

- A cumulative increased amount (acreage) of new, permanent land disturbance and encumbrance on existing private residential development, private land uses, and affected private landowners;
- A cumulative permanent reduction in availability of land for future development (or in this case, future uses compatible with existing agricultural and residential land uses); and
- Suboptimal pipeline construction, suboptimal pipeline operation, and increased pipeline construction and operation costs (additional detail presented in the original project-wide Alternatives Analysis incorporated herein by reference).

As a result of this micro-routing assessment, the currently proposed reroute segment in the vicinity of Wetland W1r (and use of the open cut construction method) is technically feasible and has the least impact on environmental and human environmental resources along the subject alignment, taking into consideration existing technology and logistics. Therefore, SPLP selected the currently proposed reroute segment in the vicinity of Wetland W1r as part of the preferred route alignment. SPLP does not propose any changes in the currently proposed reroute (permanent right-of-way, construction workspace) or the pipeline centerline alignment for Wetland W1r.

5. 25 Pa. Code Chapters 93, 95, 102 and 105: Section S3.H Potential Cumulative Impacts, in your Environmental Assessment reports a maximum of approximately 47.9 acres of permanent impacts to wetlands, from the overall/entire Pennsylvania Pipeline Project. The Cumulative Impact Analysis that was included with the Joint Permit Application that was submitted for Permit No. E11-352, reported a cumulative wetland impact of 30.561 acres (see Table 22, page 71. The current application for the proposed Goldfinch re-route is reporting 0.77 acre of additional, permanent wetland impacts. Please check these numbers and discuss the increase in acreage of permanent wetland impacts for the Overall Pennsylvania Pipeline Project. (Former TDL item # 12)

Status: As previously requested, please explain the reason for the increase, from the previously reported cumulative wetland impact of 30.561 acres, to the currently reported value of 47.9 acres, since the additional permanent wetland impacts from the proposed reroute is reported to be 0.77 acres.

Response: Table 22 (page 71) of the original Chapter 105 Joint Permit Application shows that the estimated permanent wetland impacts (not cumulative) for the overall/entire Pennsylvania Pipeline Project was estimated to be 30.561 acres. The temporary wetland impacts (not cumulative) for the overall/entire Pennsylvania Pipeline Project was estimated to be 6.147 acres. Therefore, the total estimated permanent and temporary wetland impacts from the overall Pennsylvania Pipeline Project (per the original permit application) was estimated to be 36.7 acres.

Section S3.H Potential Cumulative Impacts in the Environmental Assessment explains that “a Cumulative Impact Analysis (CIA) was prepared for the overall Project and submitted as part of the PPP Chapter 105 Joint Permit Application (E11-352) in Appendix 11, Enclosure E (Part 6). The CIA addresses the cumulative impacts for the entire Project and other potential or existing SPLP projects, and other oil and gas projects within the Cumulative Impact Assessment Area (CIAA) of the Project.” In addition, the section states that “When the impacts to the wetlands from the proposed Goldfinch Lane/William Penn Avenue reroute are added to the wetland impacts from all other projects in the CIAA, a maximum of approximately of 47.9 acres of wetlands would

be disturbed.” The “increase” PADEP is requesting clarification about is related to the approximately 10.4 acres of wetland impacts from other potential or existing SPLP projects, and other oil and gas projects identified within the CIAA as part of the PPP’s original Chapter 105 Joint Permit Application.

When total permanent and temporary wetland impacts from the overall/entire Pennsylvania Pipeline Project (36.7 acres) are added to the wetland impacts of other potential past, present or future projects that affect wetlands within the project area (10.4 acres), the cumulative wetland impacts is estimated to be 47.1 acres (refer to Table 5-1 in the PPP CIA, dated December 2016). Therefore, the new revised total cumulative wetland impacts for the overall Pennsylvania Pipeline Project and other potential existing or related projects (combined 47.1 acres), plus the proposed Goldfinch Reroute modification (0.77 acre) is estimated to be 47.9 acres.

6. 25 Pa. Code Chapters 93, 95, 102 and 105: Related to the preceding item, Section S3.H Potential Cumulative Impacts, in your Environmental Assessment reports approximately 65,575 linear feet of cumulative waterbody disturbance. The Cumulative Impact Analysis that was included with the Joint Permit Application that was submitted for Permit No. E11-352, reported a total, permanent impact of 12.031 acres to streams, rather than in linear feet (see Table 19, page 56). Accordingly, please check these numbers, and discuss any changes in permanent impacts to watercourses (in linear feet and acres), from the Overall Pennsylvania Pipeline Project. (Former TDL item # 13)

Status: Your response indicates that the reported, total, potential, cumulative, permanent stream impacts of 65,575 linear feet (LF) includes impacts from the overall Pennsylvania Pipeline Project (PPP); as well as, other non-PPP project impacts. Accordingly, the Department understands this value to represent not only total stream impact from PPP, but also includes the total stream impact from other past, present or future projects that affected streams within the project area. Please confirm that the Department’s understanding of the value that you are reporting is correct. In addition, please confirm/clarify that potential, cumulative, permanent, stream impacts from the overall Pennsylvania Pipeline Project will be 53,814 LF [53, 131 LF (previously reported as 12.031 acres) + 683 LF (from the proposed Goldfinch modification)].

Response: Yes, the Department’s understanding of the of the value is correct: the potential, cumulative, permanent, stream impacts from the overall Pennsylvania Pipeline Project will be 53,814 LF with the proposed Goldfinch Reroute impacts added.

ENGINEERING COMMENTS/RESPONSES

- 1 . §105.13(a): Please provide the Joint Permit Application Forms and include an original signature for the applicant. These forms are not provided within the package submission. In addition, Attachment I’s Joint Application Form Landowner List is not seen. Please provide.

Status: Please revise Section E (Compliance Review) of the submitted Joint Application Forms to list any current violations. Please provide delegation of authority for Nicholas Bryan to sign for the applicant (Sunoco Pipeline, LP).

Response: SPLP has no current violations and therefore Section E has been completed correctly. Delegation of authority for Nicholas Bryan is provided as Attachment A to this technical deficiency response.

- 2 . §105.13(e)(1)(x): Please describe how the pipeline will be installed beneath Hinckston Run as it is reported to be roughly 30-feet wide. A pump-around will not work in this location due to the size of the watercourse. Additionally, please ensure all watercourse and wetland crossings for this amendment are located on the resource crossing table on Sheet ES-0.02 as they are not seen.
Status: The design has been revised to use a flume pipe bypass. Please provide the hydraulic information for the flume pipe size that will convey the normal flow of the stream

Ms. Dana Drake
Pennsylvania Department of Transportation
May 19, 2020

with a detail for spacing if multiple flume pipes will be implemented. (The current detail shows the pipe against each other with inadequate spacing per the E&S Manual.) Ensure this revision has been included within the ESCGP-3 updated E&S plan sheets.

Response: Attachment B of this Technical Deficiency response provides the calculation worksheet for Hinckston Run for the sizing of the flume pipes and associated hydraulic information. Additional field survey information identified that Hinckston Run has a bottom width of 20 feet, top width of 26 feet, and a normal water depth of 1.4 feet at the crossing location. As shown in the evaluation, four 36-inch flume pipes will pass the flow without overtopping. In addition, E&S Plan Set sheets ES-0.12 and ES-0.18 have been revised to provide the spacing information associated with the pipes and include a note to identify Hinckston Run (SC-S4R) bypass will require four 36-inch flume pipes. These plans are provided in Attachment C.

- 3 §105.13(g): As revisions have been made to the E&S Plans as part of the ESCGP-3 review, including geohazard mitigation measures, please provide a revised E&S Plan Set in whole for the Joint Permit Application.

Status: The provided drawings and revisions will need to be cross-checked with the ESCGP-3 E&S Plan Set. The ESCGP-3 permit application will need updated E&S sheets and narrative sheets, if applicable, to be consistent with the revisions made in this application.

Response: E&S Plan Set sheets ES-0.12 and ES-0.18 have been revised to address Comment #2 and provided in Attachment C. As previously requested, the entire E&S Plan Set is being provided to replace the previously submitted version in the PADEP and CCD application packages.

Three (3) copies of the responses and revision are being provided as requested. Should you have questions regarding this correspondence, please do not hesitate to contact me at 412-921-8163 or via e-mail at Robert.Simcik@tetrattech.com.

Sincerely,



Robert Simcik, P.E.
Project Manager,
Tetra Tech, Inc.

RS/clm

Enclosures: Attachments

cc: File 212IC-BF-00037
B. Blosoky, Cambria County Conservation District
J. Pitts, U.S. Army Corps of Engineers, Pittsburgh District
N. Bryan, Energy Transfer
M. Styles, Energy Transfer
C. Embry, Energy Transfer
B. Schaeffer, Tetra Tech

Attachment A



March 26, 2020

Pennsylvania Department of Environmental Protection

Re: Energy Transfer LP (d/b/a Sunoco Pipeline LP, Sunoco Partners Marketing and Terminals LP, ETC Northeast Pipeline LLC, ETC Northeast Field Services LLC, Regency Marcellus Gas Gathering LLC, Regency NEPA Gas Gathering LLC, ET Rover Pipeline LLC, Rover Pipeline LLC)

Dear Sir or Madam,

I, Joseph Perez, am the Responsible Official for Energy Transfer, LP and its subsidiaries (“the Company”), Sunoco Pipeline LP, Sunoco Partners Marketing and Terminals LP, ETC Northeast Pipeline LLC, ETC Northeast Field Services LLC, Regency Marcellus Gas Gathering LLC and Regency NEPA Gas Gathering LLC, ET Rover Pipeline LLC, and Rover Pipeline LLC and hereby duly authorize Nicholas J. Bryan, Sr. Director – E&C Environmental, to represent the Company in its environmental permitting and compliance related reporting and filings.

This includes but is not limited to earth disturbance, water encroachment, stormwater management, NPDES, water quality, waste and air permit application submittals as well as any reports, acknowledgements, certificates, agreements and submission of reports or responses as required by State and/or Federal regulations.

Sincerely,

A handwritten signature in blue ink, appearing to read "Joseph Perez", written over a horizontal line.

Joseph Perez
Senior Vice President
Engineering & Construction – Project Services

Attachment B

STANDARD DESIGN CALCULATION WORKSHEET

TETRA TECH	CALCULATION WORKSHEET	PAGE 1 OF 1
Client: Sunoco Pipeline LP		Project Number: 112C05958
Subject: SC-S4R Temporary Stream Crossing Calculations		
By: AL	Checked By: JP	Approved By: RS
		Date: 5/07/2020

The purpose of this calculation package is to determine the size and number of culverts to safely allow passage of the flow of Stream SC-S4R, Hinckston Run during the pipeline construction activities.

Based on field observation and surveyed measurement, the stream was determined to have, at the utility crossing, a bottom width of 20', a top width of 26', and a normal depth of 1.4'.

Per Design Criteria #5 of the "Temporary Stream and Wetland Crossings" section of the Pennsylvania Department of Environmental Protection's Erosion and Sediment Pollution Control Program Manual, dated March 2012, the temporary stream crossing should be sized to handle flow under normal flow conditions, and a common rule of thumb is to use pipes with a diameter approximately twice the normal flow depth of the stream.

With this in mind, 36" pipes (slightly more than twice the normal depth) were chosen as the culvert size needed, and this assumed culvert size was checked to ensure capacity. Based on the bottom channel depth of 20' and the required minimum spacing dictated by Table 3.5 of the Pennsylvania Department of Environmental Protection's Erosion and Sediment Pollution Control Program Manual, dated March 2012, it was determined that 4 culverts could be placed across the stream channel, while maintaining appropriate spacing of at least 18" between culverts. Potentially placing 5 culverts was examined, however, it was determined that to place 5 culverts, excavation of the channel banks would be required. 4 culverts are being proposed, as the channel integrity is maintained while adequately passing the flow.

The existing channel dimensions and water elevations were inputted into Bentley's FlowMaster in order to determine the stream flow, Q, in cubic feet per second at the crossing location. That calculation has been attached and determined the flow to be 186.1 cubic feet per second (CFS). Additionally, a USGS StreamStats report was ran at this location, which determined the bankfull flow at the location to be 189 CFS, which would be anticipated to be greater than the normal flow. 189 CFS was used for design purposes in order to be conservative.

The FHWA's HY-8 program was used to calculate the flow through the culverts at this location, based on the geometry of the channel and the dimensions of the proposed culvert. HY-8 confirmed that the assumption of four 36" culverts would adequately pass the flow without overtopping.

Attachments:

- Bentley FlowMaster's Flow Determination**
- USGS's StreamStats Report**
- FHWA HY-8 Report**

SC-S4R

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Roughness Coefficient	0.040
Channel Slope	0.019
Normal Depth	16.8
Left Side Slope	2.000
Right Side Slope	2.000
Bottom Width	20.00

Results	
Discharge	186.16
Flow Area	31.9
Wetted Perimeter	26.3
Hydraulic Radius	14.6
Top Width	25.60
Critical Depth	15.9
Critical Slope	0.023
Velocity	5.83
Velocity Head	0.53
Specific Energy	1.93
Froude Number	0.921
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0
Length	0.0
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0
Profile Description	N/A
Profile Headloss	0.00
Downstream Velocity	Infinity
Upstream Velocity	Infinity
Normal Depth	16.8
Critical Depth	15.9
Channel Slope	0.019
Critical Slope	0.023

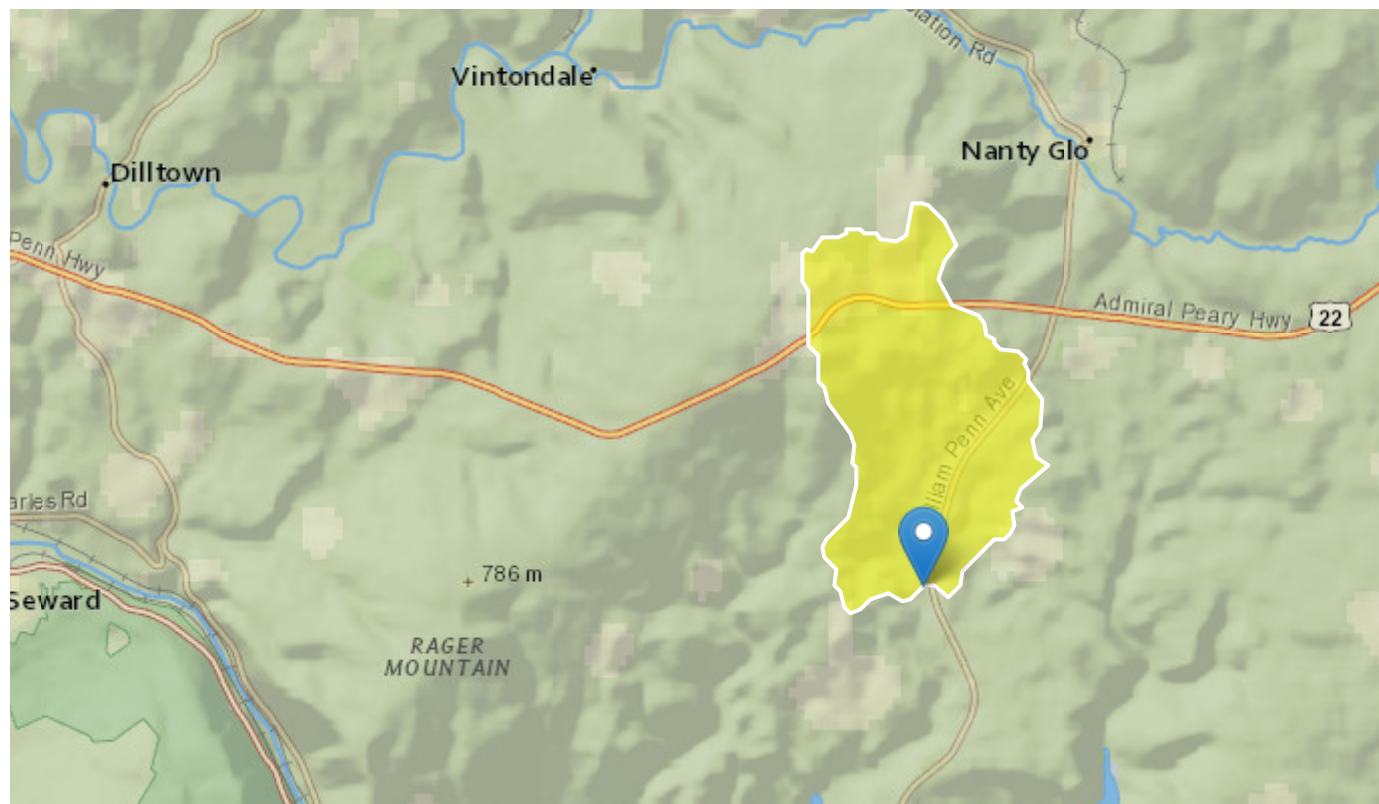
StreamStats Report

Region ID: PA

Workspace ID: PA20200326200630828000

Clicked Point (Latitude, Longitude): 40.41382, -78.86231

Time: 2020-03-26 16:06:50 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	5.09	square miles
ELEV	Mean Basin Elevation	1958.8	feet
PRECIP	Mean Annual Precipitation	49	inches
FOREST	Percentage of area covered by forest	81	percent
URBAN	Percentage of basin with urban development	3	percent
CARBON	Percentage of area of carbonate rock	0	percent

Low-Flow Statistics Parameters^[Low Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	5.09	square miles	2.33	1720
ELEV	Mean Basin Elevation	1958.8	feet	898	2700
PRECIP	Mean Annual Precipitation	49	inches	38.7	47.9

Low-Flow Statistics Disclaimers^[Low Flow Region 3]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Low-Flow Statistics Flow Report^[Low Flow Region 3]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.855	ft ³ /s
30 Day 2 Year Low Flow	1.26	ft ³ /s
7 Day 10 Year Low Flow	0.441	ft ³ /s
30 Day 10 Year Low Flow	0.578	ft ³ /s
90 Day 10 Year Low Flow	0.827	ft ³ /s

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (<http://pubs.usgs.gov/sir/2006/5130/>)

Annual Flow Statistics Parameters^[Statewide Mean and Base Flow]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	5.09	square miles	2.26	1720
ELEV	Mean Basin Elevation	1958.8	feet	130	2700
PRECIP	Mean Annual Precipitation	49	inches	33.1	50.4
FOREST	Percent Forest	81	percent	5.1	100
URBAN	Percent Urban	3	percent	0	89
CARBON	Percent Carbonate	0	percent	0	99

Annual Flow Statistics Flow Report^[Statewide Mean and Base Flow]

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	SEp
Mean Annual Flow	11.1	ft ³ /s	12	12
Harmonic Mean Streamflow	3.01	ft ³ /s	38	38

Annual Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (<http://pubs.usgs.gov/sir/2006/5130/>)

Base Flow Statistics Parameters^[Statewide Mean and Base Flow]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	5.09	square miles	2.26	1720
PRECIP	Mean Annual Precipitation	49	inches	33.1	50.4
CARBON	Percent Carbonate	0	percent	0	99
FOREST	Percent Forest	81	percent	5.1	100
URBAN	Percent Urban	3	percent	0	89

Base Flow Statistics Flow Report^[Statewide Mean and Base Flow]

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	SEp
Base Flow 10 Year Recurrence Interval	4.66	ft ³ /s	21	21
Base Flow 25 Year Recurrence Interval	4.2	ft ³ /s	21	21
Base Flow 50 Year Recurrence Interval	3.94	ft ³ /s	23	23

Base Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (<http://pubs.usgs.gov/sir/2006/5130/>)

Peak-Flow Statistics Parameters^[Peak Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	5.09	square miles	0.92	1720

Peak-Flow Statistics Flow Report^[Peak Flow Region 4]

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	SEp	Equiv. Yrs.
2 Year Peak Flood	263	ft ³ /s	28	28	4
5 Year Peak Flood	464	ft ³ /s	26	26	7
10 Year Peak Flood	634	ft ³ /s	28	28	10
50 Year Peak Flood	1110	ft ³ /s	33	33	13
100 Year Peak Flood	1360	ft ³ /s	38	38	13
500 Year Peak Flood	2070	ft ³ /s	49	49	12

Peak-Flow Statistics Citations

Roland, M.A., and Stuckey, M.H., 2008, Regression equations for estimating flood flows at selected recurrence intervals for ungaged streams in Pennsylvania: U.S. Geological Survey Scientific Investigations Report 2008-5102, 57p. (<http://pubs.usgs.gov/sir/2008/5102/>)

Bankfull Statistics Parameters^[Statewide Bankfull Noncarbonate 2018 5066]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	5.09	square miles	2.62	207
CARBON	Percent Carbonate	0	percent		

Bankfull Statistics Flow Report^[Statewide Bankfull Noncarbonate 2018 5066]

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE
Bankfull Area	45	ft ²	64
Bankfull Streamflow	189	ft ³ /s	74
Bankfull Width	30.2	ft	59

Statistic	Value	Unit	SE
Bankfull Depth	1.53	ft	56

Bankfull Statistics Citations

Clune, J.W., Chaplin, J.J., and White, K.E., 2018, Comparison of regression relations of bankfull discharge and channel geometry for the glaciated and nonglaciated settings of Pennsylvania and southern New York: U.S. Geological Survey Scientific Investigations Report 2018–5066, 20 p. (<https://doi.org/10.3133/sir20185066>)

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Application Version: 4.3.11

HY-8 Culvert Analysis Report

Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 189 cfs

Design Flow: 189 cfs

Maximum Flow: 189 cfs

Table 1 - Summary of Culvert Flows at Crossing: SC-S4R

Headwater Elevation (ft)	Total Discharge (cfs)	Culverts 1-4 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
1637.48	189.00	189.00	0.00	1
1637.48	189.00	189.00	0.00	1
1637.48	189.00	189.00	0.00	1
1637.48	189.00	189.00	0.00	1
1637.48	189.00	189.00	0.00	1
1637.48	189.00	189.00	0.00	1
1637.48	189.00	189.00	0.00	1
1637.48	189.00	189.00	0.00	1
1637.48	189.00	189.00	0.00	1
1637.48	189.00	189.00	0.00	1
1637.48	189.00	189.00	0.00	1
1637.48	189.00	189.00	0.00	1
1637.50	190.03	190.03	0.00	Overtopping

Rating Curve Plot for Crossing: SC-S4R

Total Rating Curve
Crossing: SC-S4R

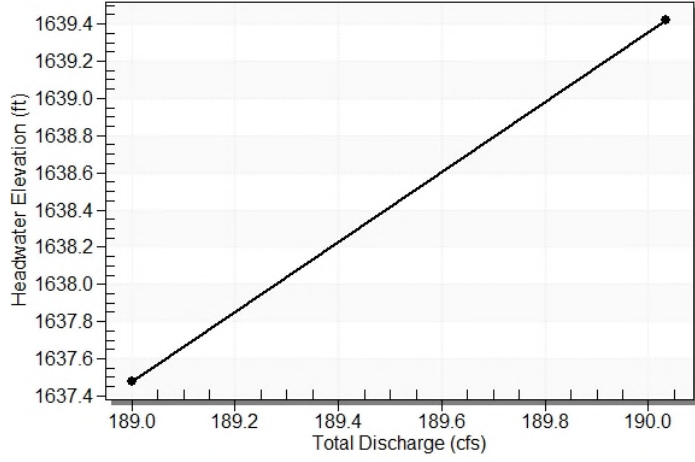


Table 2 - Culvert Summary Table: Culverts 1-4

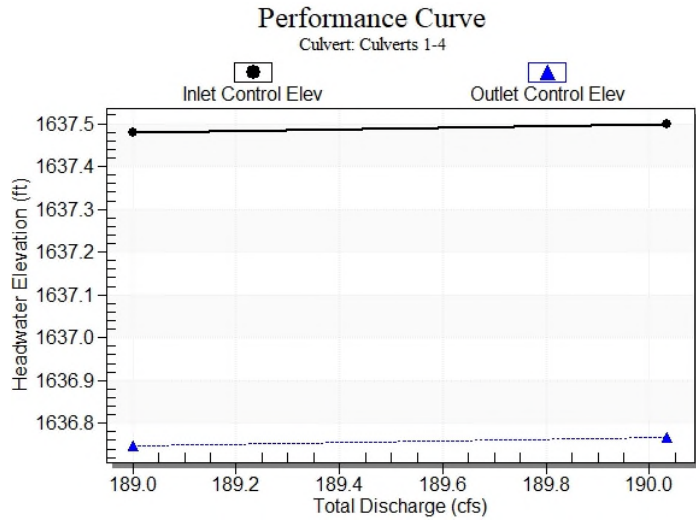
Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
189.00	189.00	1637.48	3.780	3.047	5-S2n	1.721	2.236	1.916	1.400	9.620	0.000
189.00	189.00	1637.48	3.780	3.047	5-S2n	1.721	2.236	1.916	1.400	9.620	0.000
189.00	189.00	1637.48	3.780	3.047	5-S2n	1.721	2.236	1.916	1.400	9.620	0.000
189.00	189.00	1637.48	3.780	3.047	5-S2n	1.721	2.236	1.916	1.400	9.620	0.000
189.00	189.00	1637.48	3.780	3.047	5-S2n	1.721	2.236	1.916	1.400	9.620	0.000
189.00	189.00	1637.48	3.780	3.047	5-S2n	1.721	2.236	1.916	1.400	9.620	0.000
189.00	189.00	1637.48	3.780	3.047	5-S2n	1.721	2.236	1.916	1.400	9.620	0.000
189.00	189.00	1637.48	3.780	3.047	5-S2n	1.721	2.236	1.916	1.400	9.620	0.000
189.00	189.00	1637.48	3.780	3.047	5-S2n	1.721	2.236	1.916	1.400	9.620	0.000
189.00	189.00	1637.48	3.780	3.047	5-S2n	1.721	2.236	1.916	1.400	9.620	0.000
189.00	189.00	1637.48	3.780	3.047	5-S2n	1.721	2.236	1.916	1.400	9.620	0.000
189.00	189.00	1637.48	3.780	3.047	5-S2n	1.721	2.236	1.916	1.400	9.620	0.000
189.00	189.00	1637.48	3.780	3.047	5-S2n	1.721	2.236	1.916	1.400	9.620	0.000
189.00	189.00	1637.48	3.780	3.047	5-S2n	1.721	2.236	1.916	1.400	9.620	0.000

Straight Culvert

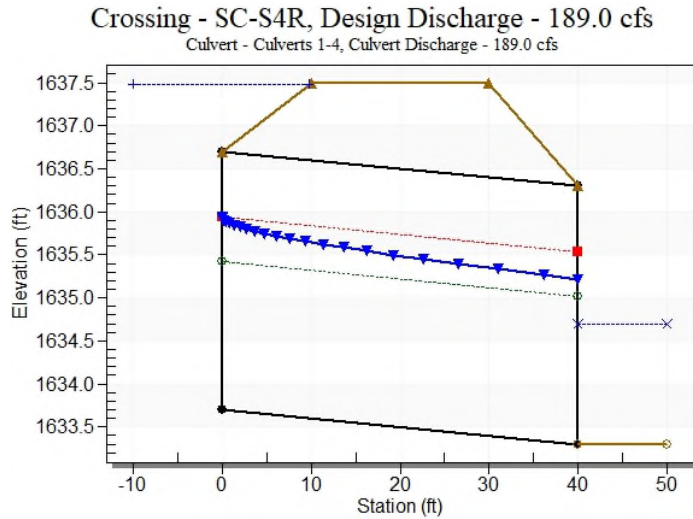
Inlet Elevation (invert): 1633.70 ft, Outlet Elevation (invert): 1633.30 ft

Culvert Length: 40.00 ft, Culvert Slope: 0.0100

Culvert Performance Curve Plot: Culverts 1-4



Water Surface Profile Plot for Culvert: Culverts 1-4



Site Data - Culverts 1-4

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 1633.70 ft

Outlet Station: 40.00 ft

Outlet Elevation: 1633.30 ft

Number of Barrels: 4

Culvert Data Summary - Culverts 1-4

Barrel Shape: Circular

Barrel Diameter: 3.00 ft

Barrel Material: Smooth HDPE

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Square Edge with Headwall

Inlet Depression: None

Table 3 - Downstream Channel Rating Curve (Crossing: SC-S4R)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)
189.00	1634.70	1.40
189.00	1634.70	1.40
189.00	1634.70	1.40
189.00	1634.70	1.40
189.00	1634.70	1.40
189.00	1634.70	1.40
189.00	1634.70	1.40
189.00	1634.70	1.40
189.00	1634.70	1.40
189.00	1634.70	1.40
189.00	1634.70	1.40
189.00	1634.70	1.40
189.00	1634.70	1.40
189.00	1634.70	1.40
189.00	1634.70	1.40

Tailwater Channel Data - SC-S4R

Tailwater Channel Option: Enter Constant Tailwater Elevation

Constant Tailwater Elevation: 1634.70 ft

Roadway Data for Crossing: SC-S4R

Roadway Profile Shape: Constant Roadway Elevation

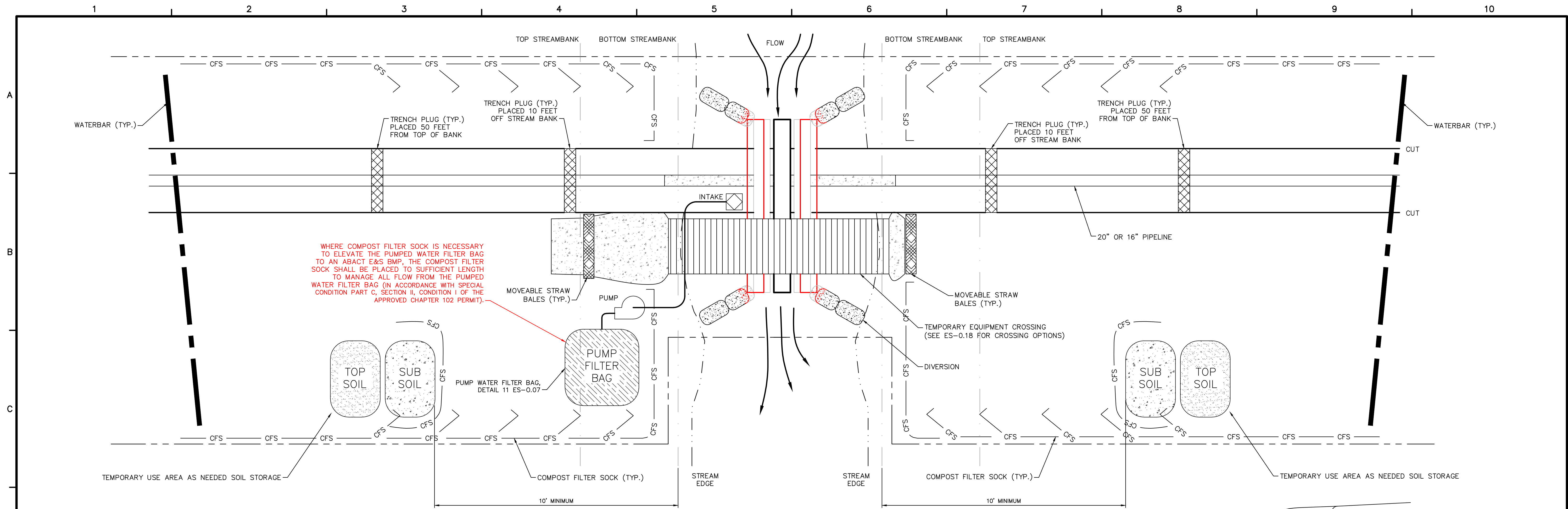
Crest Length: 26.00 ft

Crest Elevation: 1637.50 ft

Roadway Surface: Paved

Roadway Top Width: 20.00 ft

Attachment C



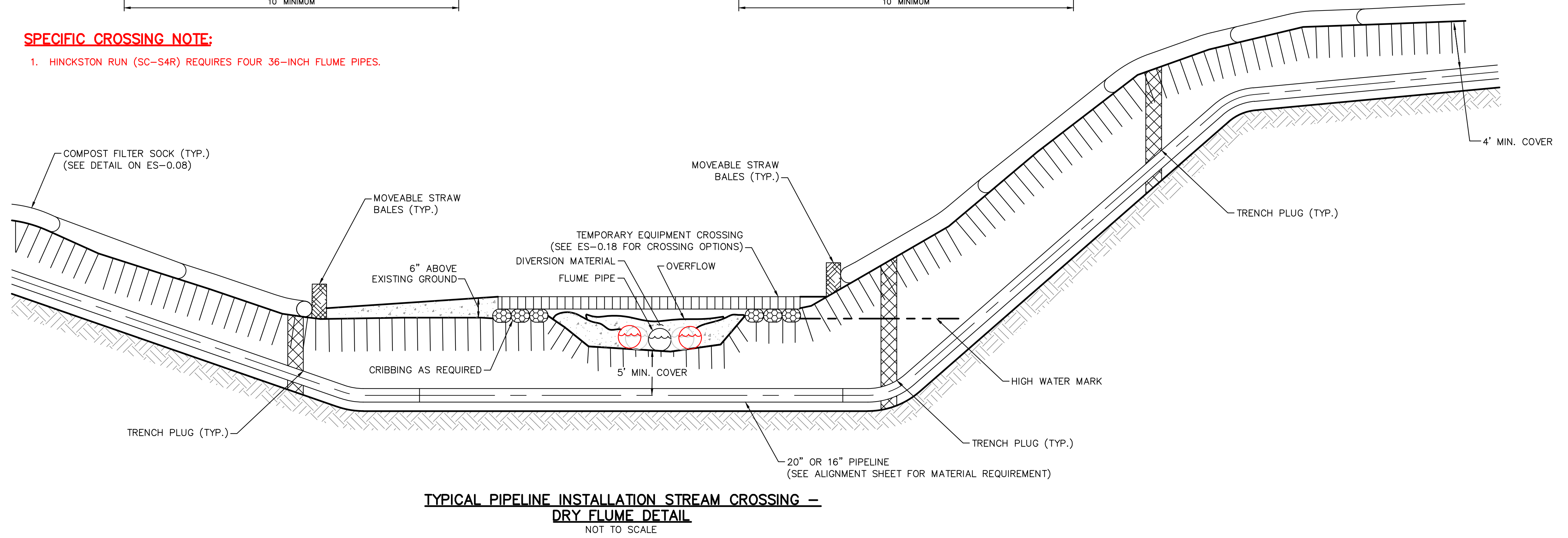
WHERE COMPOST FILTER SOCK IS NECESSARY TO ELEVATE THE PUMPED WATER FILTER BAG TO AN ABACT E&S BMP, THE COMPOST FILTER SOCK SHALL BE PLACED TO SUFFICIENT LENGTH TO MANAGE ALL FLOW FROM THE PUMPED WATER FILTER BAG (IN ACCORDANCE WITH SPECIAL CONDITION PART C, SECTION II, CONDITION I OF THE APPROVED CHAPTER 102 PERMIT).

NOTES:

- SEE PLAN SHEETS FOR FLOODWAY AND FLOODPLAIN LOCATIONS AND FOR REFERENCE TO SITE-SPECIFIC STREAM CORRING DRAWINGS.
- THE FLUME SHOULD BE OF SUFFICIENT SIZE TO CONVEY NORMAL STREAM FLOW OVER THE OPEN TRENCH (MINIMUM SIZE OF 12 INCHES);
- FLUME PIPE MUST BE ONE CONTINUOUS PIPE LONG ENOUGH TO ACCOUNT FOR THE POSSIBILITY OF THE TRENCH WIDENING UNEXPECTEDLY DURING THE EXCAVATION (DUE TO SLOUGHING);
- FLUME SHALL BE INSTALLED PRIOR TO TRENCH EXCAVATION AT THAT LOCATION; AND,
- AN EFFECTIVE SEAL MUST BE CREATED AROUND THE FLUME(S). ONCE IN PLACE, THE FLUMES ARE NOT REMOVED UNTIL THE PIPELINE HAS BEEN INSTALLED AND THE STREAMBED AND BANKS HAVE BEEN RESTORED.
- WATERBARS ARE TO BE PLACED 50 FEET FROM TOP OF BANK EXCEPT AS NOTED ON SITE SPECIFIC PLAN DRAWINGS.
- MARK THE TOP OF STREAMBANK WITH HIGH VISIBLE FLAGGING AND POST RESOURCE AND NO REFUELING SIGNS WITHIN 100 FEET OF TOP OF STREAMBANK;
- HAZARDOUS OR POLLUTANT MATERIAL STORAGE AREAS SHALL BE LOCATED AT LEAST 100 FEET BACK FROM TOP OF STREAMBANK;
- GRUBBING SHALL NOT TAKE PLACE WITHIN 50 FEET OF TOP OF BANK PRIOR TO STREAM INSTALLATION WITH THE EXCEPTION OF THE TRAVEL LANE UNTIL ALL MATERIALS REQUIRED TO COMPLETE CROSSING ARE ON SITE AND PIPE IS READY FOR INSTALLATION;
- CONSTRUCT DAMS WITH SAND BAGS, JERSEY BARRIERS OR SIMILAR MATERIAL WITH AN IMPERVIOUS LINER EXTENDED TO THE STREAM BOTTOM AND SECURED WITH SANDBAGS (SEE ES-0.08) MAINTAINING AMBIENT DOWNSTREAM FLOW RATES;
- NATURAL STREAM BED MATERIAL TO BE STRIPPED AND SEGREGATED FROM SUBSURFACE MATERIAL FOR FINAL STREAMBED RESTORATION. EXCAVATION PORTION OF NATIVE STREAM BEDS COMPRISED OF ROCK, COBBLE, OR GRAVEL ARE TO BE STRIPPED AND SEGREGATED AND USED DURING STREAM RESTORATION.
- REMOVE ALL CONSTRUCTION MATERIAL AND STRUCTURES FROM THE WATERBODY AFTER CONSTRUCTION;
- RESTORE STREAM CHANNELS AND BOTTOMS TO THEIR PRECONSTRUCTION CONTOURS OR BETTER, AND STABILIZING THE STREAM CHANNEL PRIOR TO REESTABLISHING FLOW.
- ALL EXCESS EXCAVATED MATERIAL SHALL BE REMOVED FROM THE STREAM FLOODWAY PRIOR TO PERMANENTLY STABILIZING STREAM BANKS; AND,
- ALL DISTURBED AREAS WITHIN 50 FEET OF TOP OF BANK AND 100 FEET IN SPECIAL PROTECTION WATERSHEDS SHOULD BE BLANKETED OR MATTED WITHIN 24 HOURS OF INITIAL DISTURBANCE FOR MINOR STREAMS OR 48 HOURS OF INITIAL DISTURBANCE FOR MAJOR STREAMS UNLESS OTHERWISE AUTHORIZED. APPROPRIATE STREAM BANK PROTECTION SHALL BE PROVIDED WITHIN THE CHANNEL.
- KEEP LIME AND FERTILIZERS OUT OF STREAM.
- TEMPORARY CROSSINGS WILL STAY IN PLACE FOR NO GREATER THAN ONE YEAR.

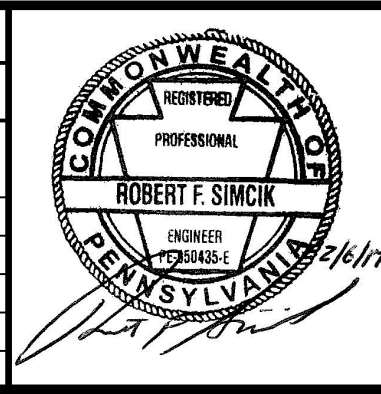
SPECIFIC CROSSING NOTE:

- HINCKSTON RUN (SC-S4R) REQUIRES FOUR 36-INCH FLUME PIPES.



TYPICAL PIPELINE INSTALLATION STREAM CROSSING – DRY FLUME DETAIL
NOT TO SCALE

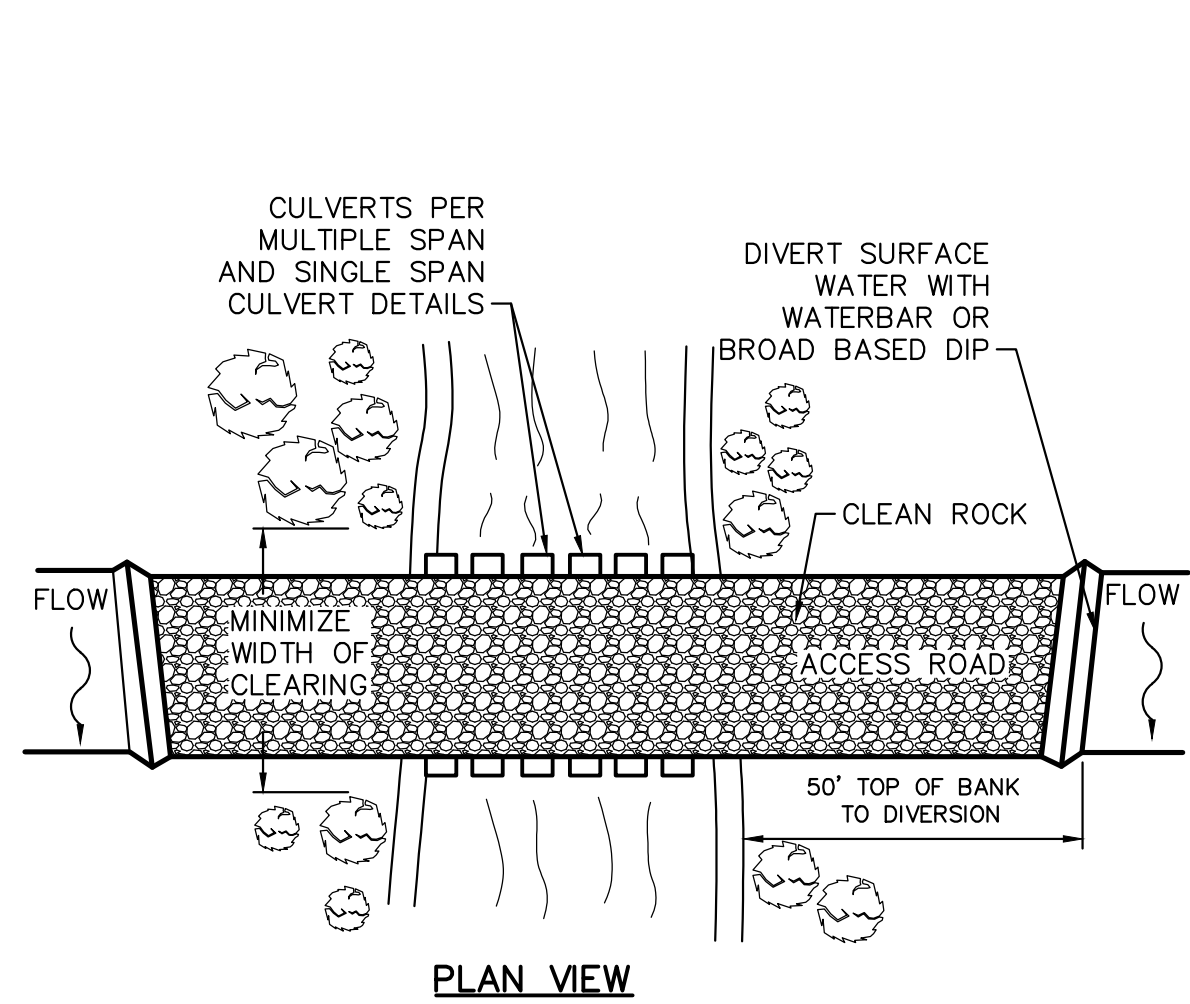
NO.		BY	DATE	REVISIONS	REMARKS
1	RS	3/28/17		INCORPORATED THE SPECIAL CONDITIONS SET FORTH IN DEP'S CHAPTER 102 AND CHAPTER 105 PERMITS	
2	RS	5/25/17		DRAWINGS PROVIDED TO FIELD	
3	RS	5/6/20		REVISED FLUME SPACING	



SUNOCO PIPELINE LP
SINKING SPRING, PENNSYLVANIA
**PENNSYLVANIA PIPELINE PROJECT
CONSTRUCTION SPREAD 2**

1-20" & 1-16" PROPOSED WELDED STEEL NATURAL GAS LIQUIDS PIPELINES
CAMBRIA COUNTY CONSERVATION DISTRICT
EROSION & SEDIMENT CONTROL &
SITE RESTORATION PLAN
NOTES & DETAILS

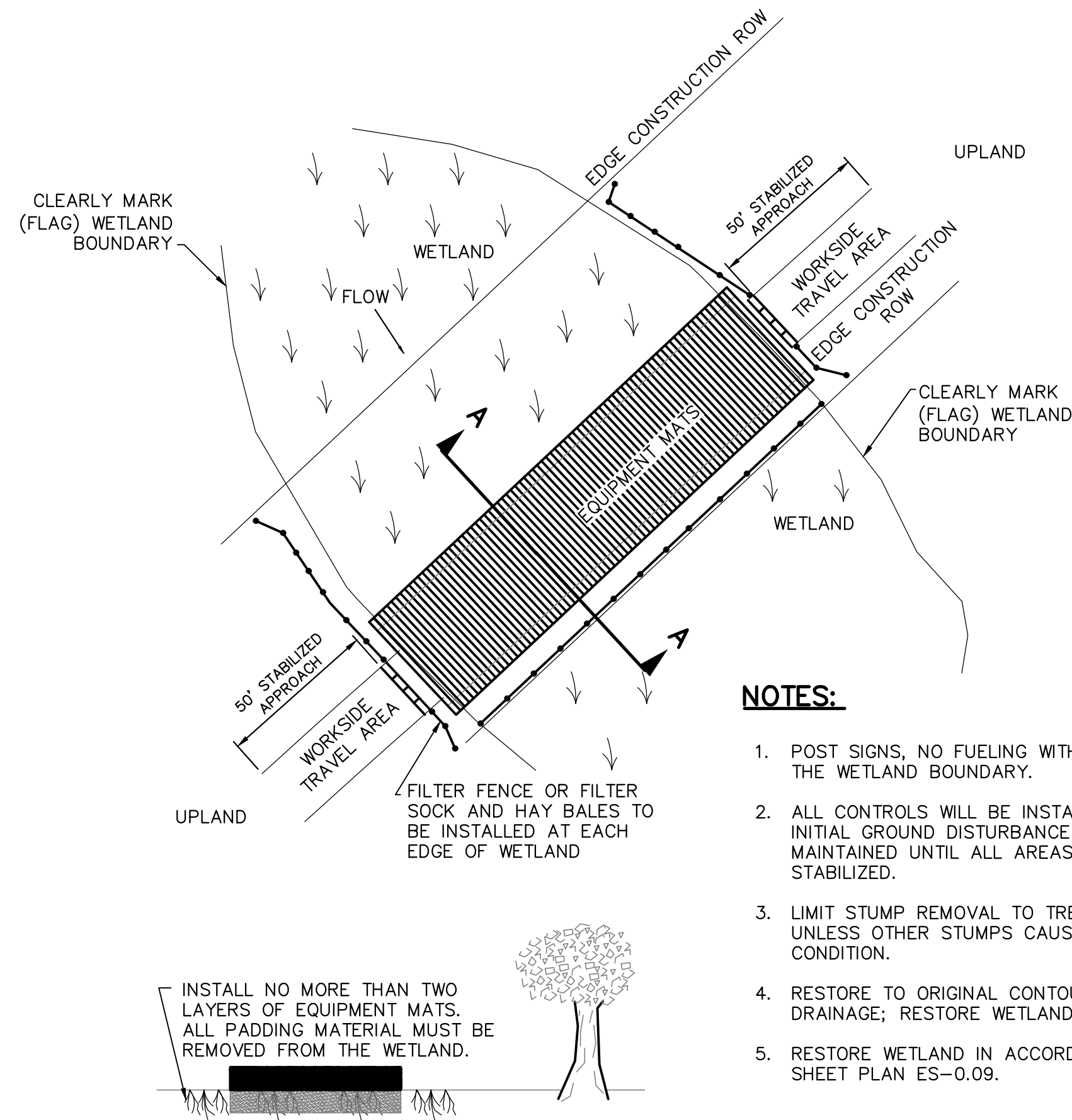
DATE:	2/6/2017
PROJECT NO.:	112C05958
DESIGNED BY:	JB
DRAWN BY:	BH
CHECKED BY:	RS
COPYRIGHT TETRA TECH INC.	
ES-0.12	
SHEET 0.12 OF 102	



NOTES:

1. WATERBARS AND BROAD-BASED DIPS SHALL DISCHARGE TO 18" CFS OR APPROVED SEDIMENT REMOVAL FACILITY.
2. CLEAN ROCK SHALL CONFORM TO CHAPTER 105 PERMITTING REQUIREMENTS.
3. FOLLOW PERMIT CONDITIONS REGARDING REMOVAL OF CROSSING.
4. ALTERNATIVELY, TIMBER MATS MAY BE USED TO FORM THE TRAVEL SURFACE.
5. PROVIDE 50' STABILIZED ACCESS TO CROSSING ON BOTH SIDES OF STREAM CHANNEL (SEE PLAN VIEW). THE STABILIZED APPROACH MAY CONSIST OF GRAVEL (AASHTO #1 OR EQUAL) OR TIMBER MATS.
6. PIPES SHALL EXTEND BEYOND THE TOE OF THE CROSSING SUPPORT.
7. RUNOFF FROM THE ROADWAY SHALL BE DIVERTED OFF THE ROADWAY AND INTO A SEDIMENT REMOVAL BMP BEFORE IT REACHES THE ROCK APPROACH TO THE CROSSING.
8. FOLLOW TROUT STREAM RESTRICTIONS SHOWN ON PLAN SHEETS.

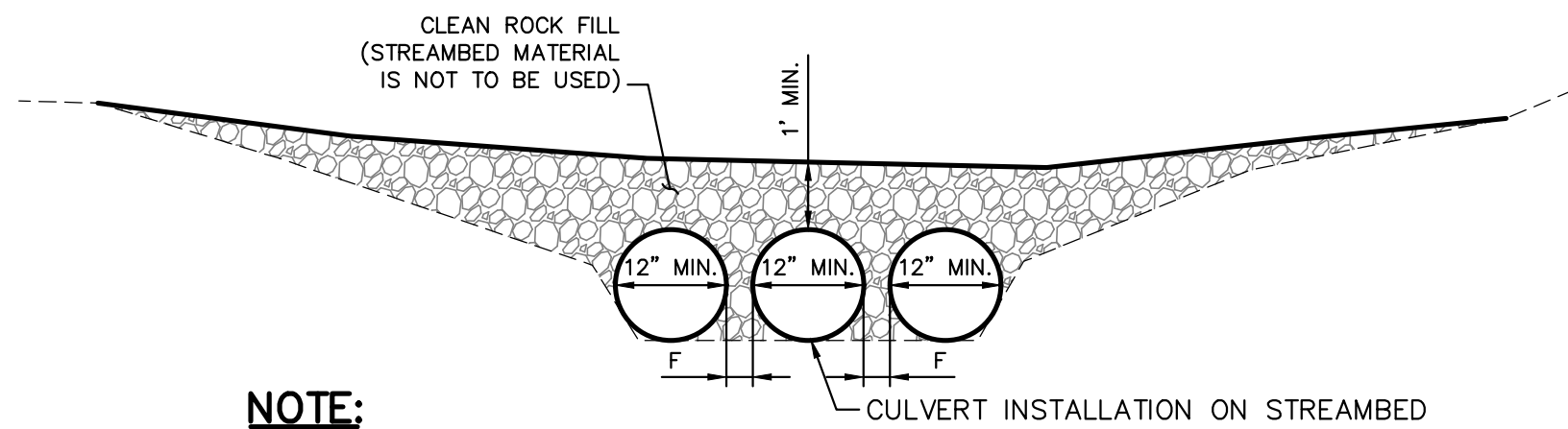
TEMPORARY CULVERT STREAM CROSSING
NOT TO SCALE



NOTES:

1. POST SIGNS, NO FUELING WITHIN 100' OF THE WETLAND BOUNDARY.
2. ALL CONTROLS WILL BE INSTALLED AFTER INITIAL GROUND DISTURBANCE AND MAINTAINED UNTIL ALL AREAS ARE STABILIZED.
3. LIMIT STUMP REMOVAL TO TRENCH LINE, UNLESS OTHER STUMPS CAUSE AN UNSAFE CONDITION.
4. RESTORE TO ORIGINAL CONTOUR AND DRAINAGE; RESTORE WETLAND MATERIAL.
5. RESTORE WETLAND IN ACCORDANCE WITH SHEET PLAN ES-0.09.

TEMPORARY TIMBER MAT WETLAND CROSSING
NOT TO SCALE

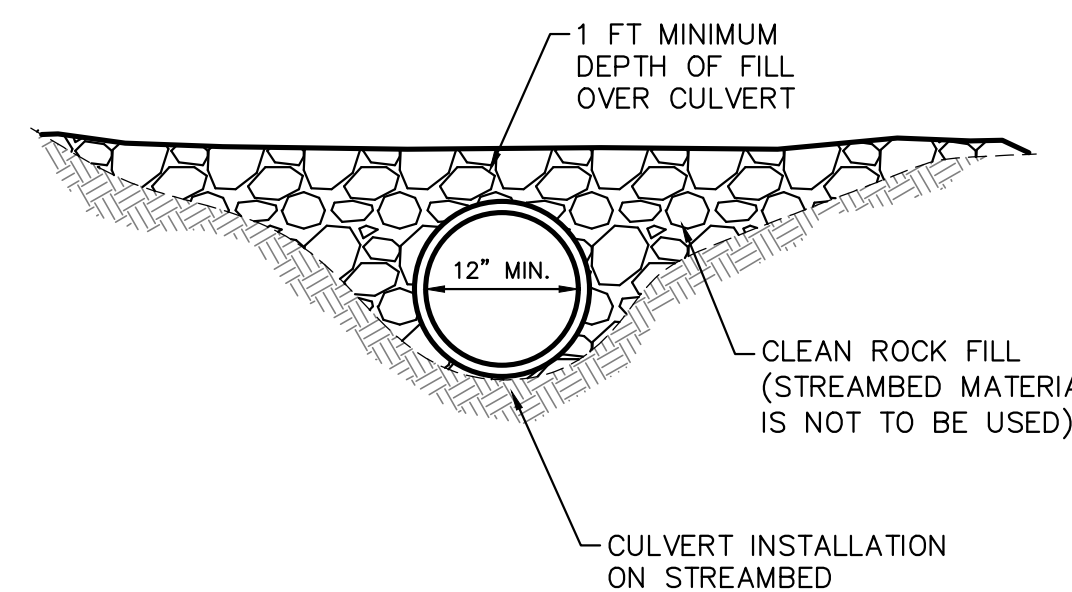


NOTE:

1. MULTIPLE PIPES AND MULTIPLE SPAN BRIDGES AND CULVERTS WHICH MAY TEND TO COLLECT DEBRIS, CONTRIBUTE TO THE FORMATION OF ICE JAMS AND INCREASE HEAD LOSSES SHALL BE AVOIDED TO THE MAXIMUM EXTENT PRACTICABLE. CROSSINGS OF LESS THAN 15 FEET SHALL BE BY ONE SPAN, EXCEPT WHERE CONDITIONS MAKE IT IMPRACTICAL TO AFFECT THE CROSSING WITHOUT MULTIPLE SPANS (SECTION 105.162).
2. REFER TO PADEP E&S MANUAL PAGES 39 AND 40 FOR DETAILS #3-13 (SINGLE SPAN CULVERT) AND #3-14 (MULTIPLE SPAN OUTLET) FOR ADDITIONAL INFORMATION.
3. HINCKSTON RUN (SC-S4R) REQUIRES FOUR 36-INCH FLUME PIPES.

PIPE DIAMETER (D)	MINIMUM DISTANCE (F)
12" TO 24"	12"
24" TO 72"	1/2 DIAMETER (D)
72" TO 120"	36"

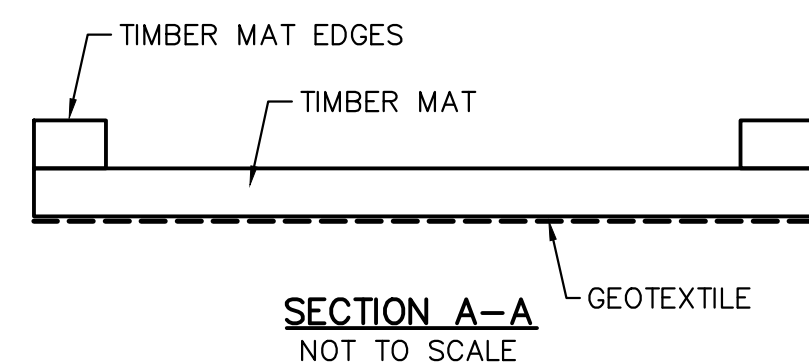
MULTIPLE SPAN CULVERT
NOT TO SCALE



MAINTENANCE OF TEMPORARY EQUIPMENT CROSSING:

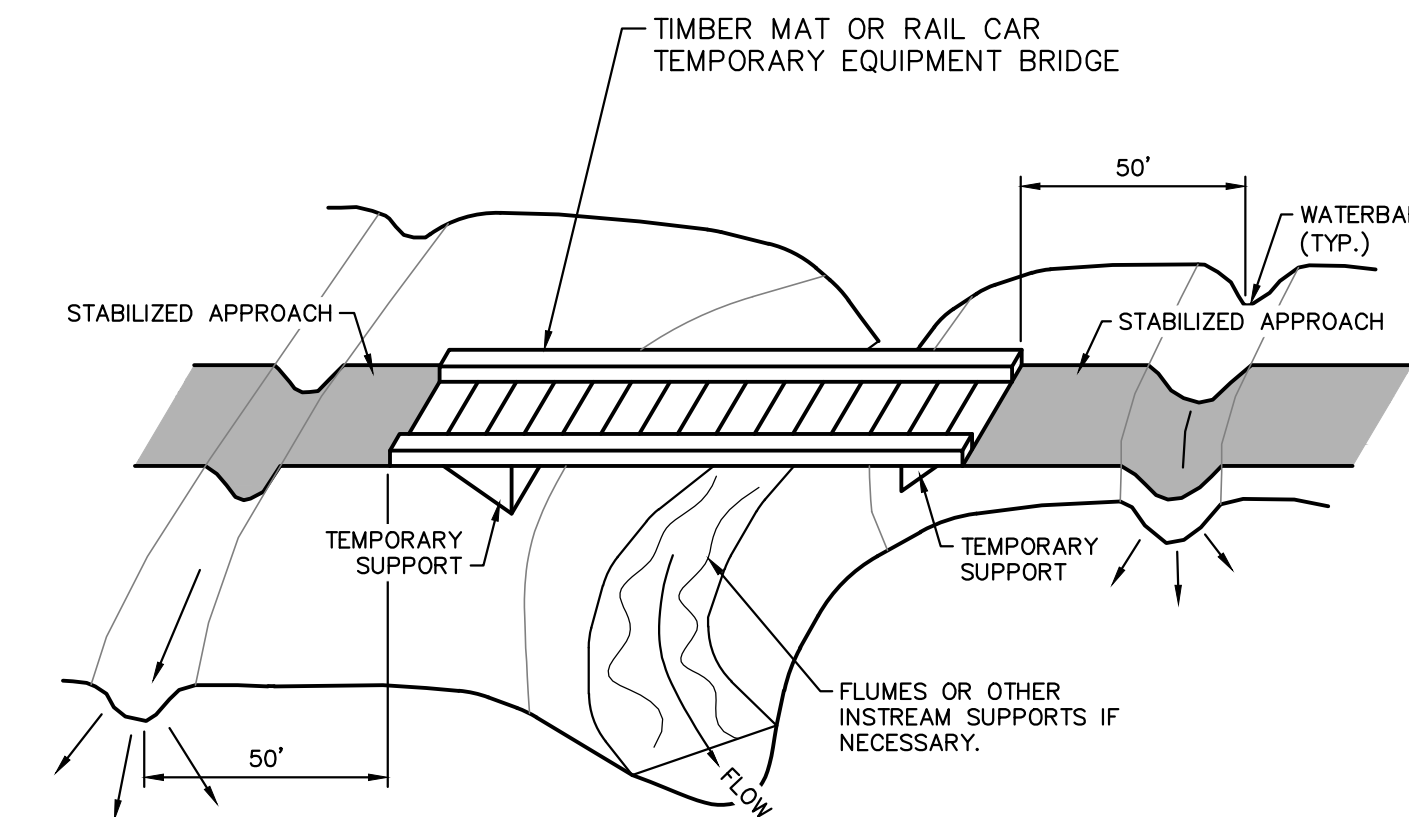
1. TEMPORARY STREAM CROSSING SHALL BE INSPECTED ON A DAILY BASIS.
2. DAMAGED CROSSINGS SHALL BE REPAIRED WITHIN 24 HOURS OF THE INSPECTION AND BEFORE ANY SUBSEQUENT USE.
3. SEDIMENT DEPOSITS ON THE CROSSING OR ITS APPROACHES SHALL BE REMOVED REGULARLY AND PLACED IN SOIL STOCKPILES.
4. FLOW THROUGH SHALL BE INSPECTED DAILY AND IMPEDANCES REMOVED WITHIN 24 HOURS.
5. AS SOON AS TEMPORARY CROSSING IS NO LONGER NEEDED, IT SHALL BE REMOVED. ALL MATERIALS SHALL BE DISPOSED OF PROPERLY AND AREAS STABILIZED. TEMPORARY EQUIPMENT CROSSINGS SHALL BE IN PLACE NO LONGER THAN 1 YEAR.

TEMPORARY EQUIPMENT CROSSING DETAILS
NOT TO SCALE



NOTE:

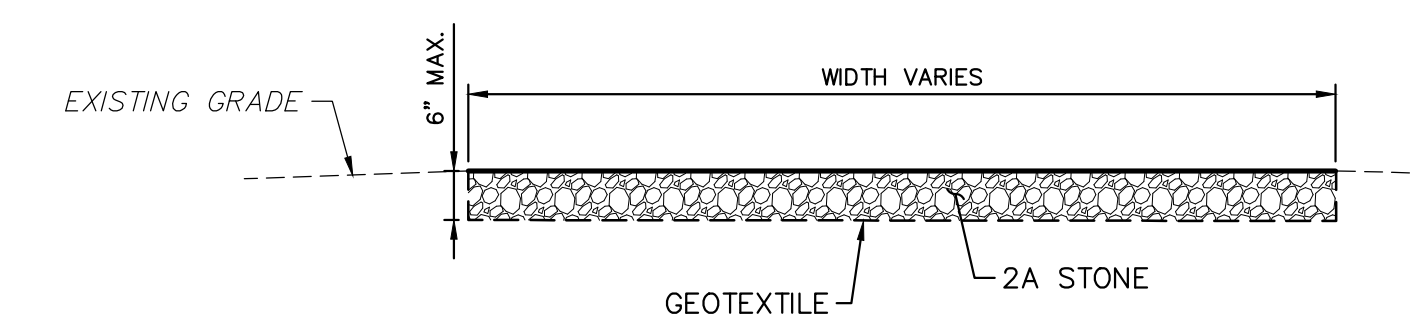
1. IF TIMBER MAT OR EQUIPMENT BRIDGE EDGES ARE NOT PROVIDED ON MAT TO CONTAIN SEDIMENT, INSTALL CFS IN SPECIAL PROTECTION WATERSHEDS OR SILT FENCE IN NON-SPECIAL PROTECTION WATERSHEDS TO PREVENT ANY SEDIMENT FROM THE EQUIPMENT CROSSING FROM ENTERING THE WETLAND.
2. GEOTEXTILE SHALL BE WOVEN WITH A MINIMUM GRAB TENSILE STRENGTH OF 200 POUNDS (MARV). ALTERNATES MUST BE APPROVED BY ENGINEER. WHERE SAFETY IS A CONCERN, GEOTEXTILE MAY BE REMOVED WITH PRIOR APPROVAL OF ENGINEER.
3. COMPOSITE MAT CAN BE SUBSTITUTED FOR TIMBER MATS.
4. ACCUMULATED SEDIMENT ON TIMBER MAT OR EQUIPMENT BRIDGE WILL BE REMOVED BY HAND AND PLACED IN SOIL STOCKPILES.



NOTES:

1. POST SIGNS; NO REFUELING WITHIN 100 FEET OF A STREAM.
2. APPROACHES TO CROSSINGS ARE NOT TO EXCEED 6" ABOVE ORIGINAL GRADE.
3. TIMBER MAT SPANS WITHOUT CENTER SUPPORT ARE LIMITED TO 15 FEET.
4. RAIL CAR SPANS WITHOUT CENTER SUPPORT ARE LIMITED TO 40 FEET.
5. GEOTEXTILE SHALL BE WOVEN WITH A MINIMUM GRAB TENSILE STRENGTH OF 200 POUNDS (MARV). ALTERNATES MUST BE APPROVED BY ENGINEER. WHERE SAFETY IS A CONCERN, GEOTEXTILE MAY BE REMOVED WITH PRIOR APPROVAL OF ENGINEER.
6. COMPOSITE MAT CAN BE SUBSTITUTED FOR TIMBER MATS.
7. CONSTRUCT AND MAINTAIN EQUIPMENT BRIDGES TO ALLOW UNRESTRICTED FLOW AND TO PREVENT SOIL FROM ENTERING THE WATERBODY.
8. WATERBARS AND BROAD-BASED DIPS SHALL DISCHARGE TO 18" CFS OR APPROVED SEDIMENT REMOVAL FACILITY.
9. FOLLOW PERMIT CONDITIONS REGARDING REMOVAL OF CROSSING.
10. PROVIDE 50' STABILIZED ACCESS TO CROSSING ON BOTH SIDES OF STREAM CHANNEL (SEE PLAN VIEW). THE STABILIZED APPROACH MAY CONSIST OF GRAVEL (AASHTO #1 OR EQUAL) OR TIMBER MATS.
11. RUNOFF FROM THE ROADWAY SHALL BE DIVERTED OFF THE ROADWAY AND INTO A SEDIMENT REMOVAL BMP BEFORE IT REACHES THE ROCK APPROACH TO THE CROSSING.
12. FOLLOW TROUT STREAM RESTRICTIONS SHOWN ON PLAN SHEETS.
13. ACCUMULATED SEDIMENT ON TIMBER MAT OR EQUIPMENT BRIDGE WILL BE REMOVED BY HAND AND PLACED IN SOIL STOCKPILES.

TEMPORARY EQUIPMENT BRIDGE STREAM CROSSING DETAIL
NOT TO SCALE



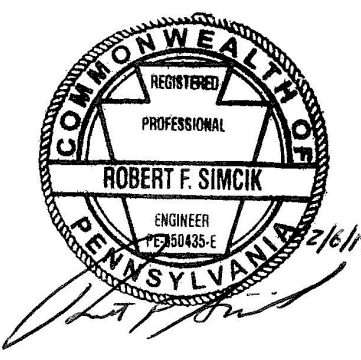
NOTES:

1. ENSURE RUNOFF FROM THE TRAVEL LANE SHALL BE DIVERTED OFF THE TRAVEL LANE INTO A SEDIMENT REMOVAL BMP BEFORE IT REACHES THE STABILIZED APPROACH.
2. GEOTEXTILE SHALL BE WOVEN WITH A MINIMUM GRAB TENSILE STRENGTH OF 200 POUNDS (MARV). ALTERNATES MUST BE APPROVED BY ENGINEER. WHERE SAFETY IS A CONCERN, GEOTEXTILE MAY BE REMOVED WITH PRIOR APPROVAL OF ENGINEER.



661 ANDERSEN DRIVE - FOSTER PLAZA 7
PITTSBURGH, PA 15220
T: (412) 921-7090 | F: (412) 921-4040

REVISIONS			
NO.	BY	DATE	REMARKS
1	RS	3/28/17	INCORPORATED THE SPECIAL CONDITIONS SET FORTH IN DEP'S CHAPTER 102 AND CHAPTER 105 PERMITS
2	RS	5/25/17	DRAWINGS PROVIDED TO FIELD
3	RS	5/7/20	ADDED TABLE TO DETAILS



SUNOCO PIPELINE LP
SINKING SPRING, PENNSYLVANIA
**PENNSYLVANIA PIPELINE PROJECT
CONSTRUCTION SPREAD 2**

1-20" & 1-16" PROPOSED WELDED STEEL NATURAL GAS LIQUIDS PIPELINES
CAMBRIA COUNTY CONSERVATION DISTRICT
EROSION & SEDIMENT CONTROL &
SITE RESTORATION PLAN
NOTES & DETAILS

DATE:	2/6/2017
PROJECT NO.:	112C05958
DESIGNED BY:	JB
DRAWN BY:	BH
CHECKED BY:	RS
COPYRIGHT:	TETRA TECH INC.
ES-0.18	
SHEET 0.18 OF 102	

Attachment D



Southwest Regional Office

May 5, 2020

Matthew Gordon
Sunoco Pipeline, L.P.
525 Fritztown Road
Sinking Spring, PA 19608
Email Address: MLGordon@sunocologistics.com

Re: DEP FILE E11-352-A1
Second Technical Deficiency Letter
Pennsylvania Pipeline Project – Mariner East 2 Goldfinch Lane HDD Reroute
APS ID # 876467
Jackson Township
Cambria County

Dear Matthew Gordon:

The Department of Environmental Protection (DEP) has reviewed the above referenced application package and had identified significant technical deficiencies on **March 2, 2020**. The attached list specifies the deficiency items that still need to be resolved. The deficiencies are based on applicable laws and regulations, and the guidance set forth as DEP's preferred means of satisfying the applicable regulatory requirements.

Pursuant to 25 Pa. Code §105.13a of DEP's Chapter 105 Rules and Regulations you must submit a response fully addressing each of the significant technical deficiencies set forth on the attached list. Please note that this information must be received within Thirty (30) calendar days from the date of this letter or DEP may consider the application to be withdrawn by the applicant.

You may request a time extension, in writing before the due date to respond to deficiencies beyond the thirty (30) calendar days. Requests for time extensions will be reviewed and considered by DEP. You will be notified of the decision in writing to either grant or deny, including a specific due date to respond if the extension is granted. Time extensions shall be in accordance with 25 Pa. Code §105.13a(b).

DEP has developed a standardized review process and processing times for all permits or other authorizations that it issues or grants. Pursuant to its Permit Review Process and Permit Decision Guarantee Policy (021-2100-001), DEP guarantees providing permit decisions within the published time frames, provided applicants submit complete, technically adequate applications that address all applicable regulatory and statutory requirements, in the first submission. Since you did not submit a complete and/or technically adequate application, DEP's Permit Decision Guarantee is no longer applicable to your application.

If you believe that any of the stated deficiencies is not significant, instead of submitting a response to that deficiency, you have the option of asking DEP to make a decision based on the information with regard to the subject matter of that deficiency that you have already made available. If you choose this option with regard to any deficiency, you should explain and justify how your current submission

satisfies that deficiency. Please keep in mind that if you fail to respond, your application may be withdrawn or denied.

Should you have any questions related to the engineering comments, please contact James Sommer at **412.442.4268** or jamsommer@pa.gov. For questions related to the environmental comments, please contact Joseph Snyder at **412.442.4308** or jossnyder@pa.gov. Please refer to Application No. **E11-352-A1** to discuss your concerns or to schedule a meeting. You may also follow your application review process via *eFACTS on the Web* at: <http://www.ahs2.dep.state.pa.us/eFactsWeb/default.aspx>.

Sincerely,

Dana Drake

Dana Drake, P.E.
Environmental Program Manager
Waterways & Wetlands Program

Enclosure(s)

cc: Jackson Township
Cambria County Conservation District – Bobbie Blososky
Brad Schaeffer, Tetra Tech, Inc. (brad.schaeffer@tetratech.com)
U. S. Army Corps of Engineers
PA Fish & Boat Commission
Permitting & Technical Services Section DEP File No. E11-352-A1
Dana Drake, P.E., Program Manager

PLEASE ENCLOSE A COPY OF THIS LETTER WHEN SUBMITTING
THE REQUESTED INFORMATION
ALL REQUESTED INFORMATION BELOW MUST BE SUPPLIED IN TRIPLICATE
Items Needed for TECHNICAL ADEQUACY

Second Technical Deficiency Notice

*For ease of review we have repeated the original comment from the first Technical Deficiency Letter followed by **the information/changes that are still needed (In Bold)**.*

Environmental Comments:

1. §105.13(e)(1)(viii), §105.16(a) and §105.18a(b)(3): An Aquatic Resource Table that lists the impacts along the current route of the section of pipeline that is to be re-routed, and provide a cumulative total for all types of aquatic resources to be impacted. (Former TDL item 2.b)
Status: Per Table 1, the total permanent wetland impact along the original route is 0.121 acre; however, your response to Item 3, includes another table that indicates that the permanent wetland impacts along the original route, using an open cut installation method would be 1.312 acres Please explain the differences between these tables.
2. §105.13(e)(1)(viii), §105.16(a) and §105.18a(b)(3): Related to the preceding item, your Alternatives Analysis indicates that the approximately 1-mile pipeline reroute of this section of pipeline is being proposed to avoid extensive, permanent, conversion impacts to a PFO wetland area. To facilitate the Department's review of your alternatives analysis, quantify and describe the impact to the PFO wetland area that will be avoided by this proposed reroute. In addition, compare this impact, which you are proposing to avoid, to the new/additional impacts to aquatic resources that are anticipated within the proposed reroute. (Former TDL item 3)
Status: Please explain why permanent and temporary impacts to PFO wetlands are reported in tables 1 & 2 to be 0.032 acre, along the 16 HDD Route, while your response to this item reports impacts to PFO wetlands to be 0.57 acre. Please explain the differences between these reported values. In addition, provide a map that shows the location and boundaries of the PFO wetland that you are proposing to avoid, in relation to the 16 HDD Route and the 16 Inch Reroute.
3. §105.13(e)(1)(viii) and §105.13(e)(1)(x): Because of the differences in the values that are noted in the preceding comments, provide an accurate comparison between the wetland and stream impacts that are associated with the original route (16 HDD Route) versus the proposed reroute (16 Inch Reroute). (New item)
4. §105.13(e)(1)(viii) and §105.18a(b)(3): Evaluate the feasibility of the following adjustments to the proposed reroute, to potentially avoid or minimize impacts to wetlands:
 - a. Could proposed open cuts through Wetland W1r, at three (3) locations, be avoided or minimized by moving the pipeline some tens of feet to the southwest? (Former TDL item #9.a)
Status: Your response indicates that any further adjustment of the ROW to the south would affect another new parcel. Please further evaluate this alternative, including whether

this new parcel could reasonably be obtained, utilized, expanded or managed, to potentially avoid or minimize impacts to Wetland W1r.

5. 25 Pa. Code Chapters 93, 95, 102 and 105: Section S3.H Potential Cumulative Impacts, in your Environmental Assessment reports a maximum of approximately 47.9 acres of permanent impacts to wetlands, from the overall/entire Pennsylvania Pipeline Project. The Cumulative Impact Analysis that was included with the Joint Permit Application that was submitted for Permit No. E11-352, reported a cumulative wetland impact of 30.561 acres (see Table 22, page 71. The current application for the proposed Goldfinch re-route is reporting 0.77 acre of additional, permanent wetland impacts. Please check these numbers and discuss the increase in acreage of permanent wetland impacts for the Overall Pennsylvania Pipeline Project. (Former TDL item # 12)

Status: As previously requested, please explain the reason for the increase, from the previously reported cumulative wetland impact of 30.561 acres, to the currently reported value of 47.9 acres, since the additional permanent wetland impacts from the proposed reroute is reported to be 0.77 acres.

6. 25 Pa. Code Chapters 93, 95, 102 and 105: Related to the preceding item, Section S3.H Potential Cumulative Impacts, in your Environmental Assessment reports approximately 65,575 linear feet of cumulative waterbody disturbance. The Cumulative Impact Analysis that was included with the Joint Permit Application that was submitted for Permit No. E11-352, reported a total, permanent impact of 12.031 acres to streams, rather than in linear feet (see Table 19, page 56). Accordingly, please check these numbers, and discuss any changes in permanent impacts to watercourses (in linear feet and acres), from the Overall Pennsylvania Pipeline Project. (Former TDL item # 13)

Status: Your response indicates that the reported, total, potential, cumulative, permanent stream impacts of 65,575 linear feet (LF) includes impacts from the overall Pennsylvania Pipeline Project (PPP); as well as, other non-PPP project impacts. Accordingly, the Department understands this value to represent not only total stream impact from PPP, but also includes the total stream impact from other past, present or future projects that affected streams within the project area. Please confirm that the Department's understanding of the value that you are reporting is correct. In addition, please confirm/clarify that potential, cumulative, permanent, stream impacts from the overall Pennsylvania Pipeline Project will be 53,814 LF [53, 131 LF (previously reported as 12.031 acres) + 683 LF (from the proposed Goldfinch modification)].

Engineering Comments:

1. §105.13(a): Please provide the Joint Permit Application Forms and include an original signature for the applicant. These forms are not provided within the package submission. In addition, Attachment I's Joint Application Form Landowner List is not seen. Please provide.
Status: Please revise Section E (Compliance Review) of the submitted Joint Application Forms to list any current violations. Please provide delegation of authority for Nicholas Bryan to sign for the applicant (Sunoco Pipeline, LP).
2. §105.13(e)(1)(x): Please describe how the pipeline will be installed beneath Hinckston Run as it is reported to be roughly 30-feet wide. A pump-around will not work in this location due to the

size of the watercourse. Additionally, please ensure all watercourse and wetland crossings for this amendment are located on the resource crossing table on Sheet ES-0.02 as they are not seen.

Status: The design has been revised to use a flume pipe bypass. Please provide the hydraulic information for the flume pipe size that will convey the normal flow of the stream with a detail for spacing if multiple flume pipes will be implemented. (The current detail shows the pipe against each other with inadequate spacing per the E&S Manual.) Ensure this revision has been included within the ESCGP-3 updated E&S plan sheets.

3. §105.13(g): As revisions have been made to the E&S Plans as part of the ESCGP-3 review, including geohazard mitigation measures, please provide a revised E&S Plan Set in whole for the Joint Permit Application.

Status: The provided drawings and revisions will need to be cross-checked with the ESCGP-3 E&S Plan Set. The ESCGP-3 permit application will need updated E&S sheets and narrative sheets, if applicable, to be consistent with the revisions made in this application.

Please note that the responses should be in the form of revisions to the original application. Any pages revised should bear the revision date. We need three (3) copies of any responses and revisions. Please do NOT send copies of the entire application; only those pages or drawings that change should be submitted.