



PITT-08-19-007
August 2, 2019
Project Number 212IC-BF-00387

Via E-mail and overnight Fed Ex

Mr. John Hohenstein
Pennsylvania Department of Environmental Protection
Waterways and Wetlands Program
Southeast Regional Office
2 East Main Street
Norristown, Pennsylvania 19401

Re: Sunoco Pipeline LP – Pennsylvania Pipeline Project (Mariner East II)
Chapter 102 Permit No. ESG0100015001 – Major Modification
Revised Modification Request-Installation Method Change at PA Turnpike/280 HDD
Upper Uwchlan Township, Chester County, PA

Dear Mr. Hohenstein:

On behalf of Sunoco Pipeline LP (SPLP), please accept the enclosed revised drawings and information related to the Chapter 102 major modification. The original modification request for a change in the route and installation method for the 16 and 20 inch diameter pipelines from a Horizontal Directional Drill (HDD) to open trench installation was submitted to the Pennsylvania Department of Environmental Protection (PADEP) on April 30, 2019. The enclosed materials have been revised to include the crossing of a palustrine emergent fringe wetland (Q76) associated with the previously reported/identified Stream S-Q83 (Unnamed tributary to Marsh Creek) and updates to the Pennsylvania Natural Diversity Inventory (PNDI) process. The proposed limit-of-disturbance has not been modified and the area of wetland disturbance is approximately 0.09 acre.

In accordance with the Chapter 102 major permit amendment requirements, the following updated information is provided for your information/review and incorporation with previously submitted attachments:

- 3 – Erosion and Sediment Control Plan (updated sheets)
- 6 – PNDI Update (recent PFBC response included)
- 10 – Aquatic Resource Report (new material included)

Enclosed are two (2) hard copies of the modification request to facilitate your review. Please note that the Chester County Conservation District and U.S. Army Corps of Engineers-Philadelphia District will also be provided a copy of this request and attachments.

SPLP appreciates your timely review of this modification request. 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,

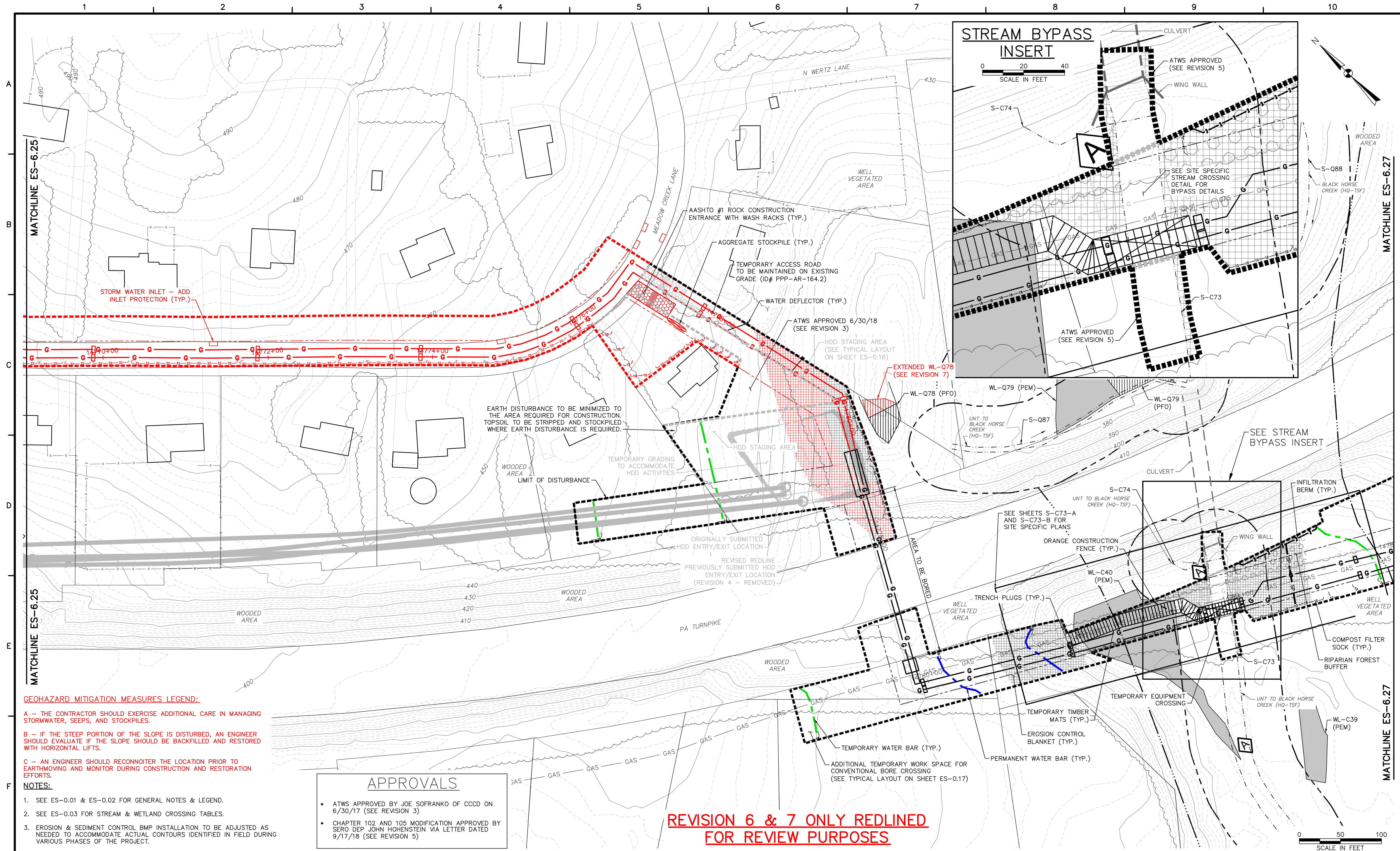
A handwritten signature in black ink, appearing to read 'Robert F. Simcik'.

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

RFS/clm

Enclosures: 1 original, 1 copy

cc: File 212IC-PB-00387
C. Smith, PADEP Southeast Region
J. Sofranko, Chester County Conservation District
D. Caplan, U.S. Army Corps of Engineers, Philadelphia District
M. Gordon, Sunoco Pipeline LP
C. Embry, Sunoco Pipeline LP
M. Styles, Sunoco Pipeline LP
L. Gremminger, Energy Transfer
B. Schaeffer, Tetra Tech



GEOHAZARD MITIGATION MEASURES LEGEND:

A - THE CONTRACTOR SHOULD EXERCISE ADDITIONAL CARE IN MANAGING STORMWATER, SEEPS, AND STOCKPILES.

B - IF THE STEEP PORTION OF THE SLOPE IS DISTURBED, AN ENGINEER SHOULD EVALUATE IF THE SLOPE SHOULD BE BACKFILLED AND RESTORED WITH HORIZONTAL LIFTS.

C - AN ENGINEER SHOULD RECONNOITER THE LOCATION PRIOR TO EARTHMOVING AND MONITOR DURING CONSTRUCTION AND RESTORATION EFFORTS.

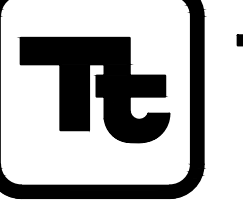
NOTES:

- SEE ES-0.01 & ES-0.02 FOR GENERAL NOTES & LEGEND.
- SEE ES-0.03 FOR STREAM & WETLAND CROSSING TABLES.
- EROSION & SEDIMENT CONTROL BMP INSTALLATION TO BE ADJUSTED AS NEEDED TO ACCOMMODATE ACTUAL CONTOURS IDENTIFIED IN FIELD DURING VARIOUS PHASES OF THE PROJECT.

APPROVALS

- ATWS APPROVED BY JOE SOFRANKO OF CCCD ON 6/30/17 (SEE REVISION 3)
- CHAPTER 102 AND 105 MODIFICATION APPROVED BY SERO DEP JOHN HOHENSTEIN VIA LETTER DATED 9/17/18 (SEE REVISION 5)

REVISION 6 & 7 ONLY REDLINED FOR REVIEW PURPOSES

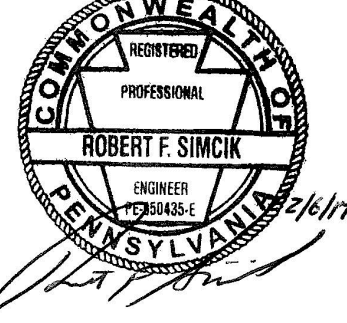


TETRA TECH

www.tetrattech.com

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	6/28/17	ATWS ADDED
4	RS	6/26/18	HDD MODIFICATION
5	RS	7/26/18	ATWS MODIFICATION AND STREAM BYPASS INSERT
6	RS	3/12/19	16" AND 20" RE-ROUTE
7	RS	7/30/19	EXTENDED WETLAND WL-Q78



SUNOCO PIPELINE LP
SINKING SPRING, PENNSYLVANIA

PENNSYLVANIA PIPELINE PROJECT
CONSTRUCTION SPREAD 6

1-20" & 1-16" WELDED STEEL NATURAL GAS PIPELINES

CHESTER COUNTY CONSERVATION DISTRICT
EROSION & SEDIMENT CONTROL &
SITE RESTORATION PLAN

SHEET 26 OF 74

DATE:	2/6/17
PROJECT NO.:	112C05958
DESIGNED BY:	JB
DRAWN BY:	BH
CHECKED BY:	RS
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ES-6.26	
SHEET 6.26 OF 99	



Pennsylvania Fish & Boat Commission

Division of Environmental Services

Natural Gas Section
595 E Rolling Ridge Dr.
Bellefonte, PA 16823

July 30, 2019

IN REPLY REFER TO

SIR# 50864

Tetra Tech
Pat Green
301 Ellicott Street
Buffalo, New York 14203

**RE: Species Impact Review (SIR) – Rare, Candidate, Threatened and Endangered Species
PNDI Search No. 677023_1
S3-0280 Meadow Creek Road
CHESTER County: Upper Uwchlan Township**

Dear Pat Green:

This responds to your updated Pennsylvania Natural Diversity Inventory (PNDI) submission regarding the SPLP Pennsylvania Pipeline Project. Previous correspondence from this office, dated March 26, 2019, requested a habitat assessment to investigate potential impacts to the Eastern Redbelly Turtle (*Pseudemys rubriventris*).

According to the report prepared by Qualified Surveyor Bryon DuBois, the habitats on site do not appear to contain suitable habitat to support the life history requirements of redbelly turtles, though the possibility of a transient use exists. I concur with the results of the evaluation; therefore, I do not foresee the proposed project resulting in adverse impacts to the Eastern Redbelly Turtle. Additionally, the proposed measure of installing an exclusion barrier (super-silt fence) at the edge of the workspace, in between the referenced pond, should be implemented to avoid turtles from entering the work area.

This response represents the most up-to-date summary of the PNDI data and our files and is valid for two (2) years from the date of this letter. An absence of recorded species information does not necessarily imply species absence. Our data files and the PNDI system are continuously being updated with species occurrence information. Should project plans change or additional information on listed or proposed species become available, this determination may be reconsidered, and consultation shall be re-initiated.

Our Mission:

www.fish.state.pa.us

To protect, conserve and enhance the Commonwealth's aquatic resources and provide fishing and boating opportunities.

If you have any questions regarding this review, please contact Greg Lech at 610-847-8772 and refer to the SIR # 50864. Thank you for your cooperation and attention to this important matter of species conservation and habitat protection.

Sincerely,

A handwritten signature in black ink, appearing to read 'Greg Lech', written in a cursive style.

Greg Lech
Natural Gas Section

GPL/dn

Aquatic Resources Report
0280 Reroute
Chester County, Pennsylvania

August 2019

Prepared for:

Sunoco Pipeline, L.P.
535 Fritztown Road
Sinking Spring, PA 19608

Prepared by:

Tetra Tech, Inc.
301 Ellicott Street
Buffalo, NY 14203
(716) 849-9419
Fax (716) 849-9420

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Attachment A – Figures
Attachment B – Wetland Photographic Log
Attachment C – Wetland Data Forms

**Aquatic Resources Report
0280 Reroute
Chester County, Pennsylvania**

1.0 Introduction

Tetra Tech, Inc. (Tetra Tech) was contracted by Sunoco Pipeline L.P. to perform a wetland assessment of an approximately 8-acre area surrounding a section of Right-of Way (ROW) located between Greenridge Road and Styer Road in Upper Uwchlan Township, Chester County, Pennsylvania.

The purpose of this investigation was to determine the presence and extent of resources within the survey area that meet the criteria for federal wetlands designation according to the United States Army Corps of Engineers (USACE) guidelines and are potentially jurisdictional and regulated under Section 404 of the Clean Water Act (CWA). Background review information such as U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) mapped soils and presence of U.S. Fish and Wildlife Service National Wetlands Inventory (USFWS NWI) features are summarized within Survey Methods below.

The following report summarizes the characteristics of delineated resources and report attachments include: Attachment A – Figures, Attachment B – Wetland Photographic Log, and Attachment C – Wetland Data Forms.

2.0 Survey Methods

2.1 Background Research

Prior to conducting fieldwork, Tetra Tech reviewed existing information for the survey area, including:

- United States Geological Survey (USGS) 7.5-minute series topographic quadrangle maps for the survey areas (Downingtown, PA 2001).
- Soil survey maps, descriptions, and lists, to determine presence and extent of hydric and upland soils (USDA NRCS 2007), Web Soil Survey database for Chester County, PA.
- NWI geospatial data available from the USFWS for the survey area (USFWS, Wetlands Mapper, data downloaded January 2019); and,
- Aerial photographs to identify drainage and other hydrologic features (Environmental Sciences Research Institute, Inc. [ESRI] online mapping services, available at: services.arcgisonline.com/arcgis/service).

2.2 On-Site Delineation

Wetland Q76 was extended by Tetra Tech based on a site visit conducted in January 2019 (Tetra Tech 2019). Following review of the report summarizing that effort, the US Army Corps of Engineers (USACE) requested an additional site visit in July 2019 to evaluate the potential for further expanded wetland area north of the delineated wetland. Specifically, USACE noted the potential of additional palustrine emergent (PEM) and possible palustrine scrub-shrub (PSS) areas adjacent to stream S-Q83 and requested the collection of soils data in that area.

Following the review of background information, two wetland scientists and a technician performed a field survey on July 27, 2019. The surveys consisted of walk-through inspection of the survey area to identify topographic, drainage, and vegetation features that would indicate the potential for a wetland determination. Potential wetlands were further evaluated by collecting soil, vegetation, and hydrology data at upland and

wetland sample locations at suspected wetland boundaries. Sample plot data were recorded on Eastern Mountains and Piedmont Region Wetland Determination Data Forms provided within the regional supplement.

The survey area was evaluated for the presence and extent of wetlands using the routine, Level-2 determination method described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0)* (USACE 2012). Wetlands identified and delineated were subsequently classified in accordance with the Classification of Wetlands and Deepwater Habitats of the United States (Cowardin *et al.* 1979). Classifications were restricted to palustrine emergent (PEM), palustrine scrub-shrub (PSS), and palustrine forested (PFO). Wetland boundaries were also flagged and marked in the field and each wetland area was photographed.

Each wetland and waterbody was further evaluated to characterize the hydrological connection to adjacent upland, wetland, and waterbody regions occurring in proximity to the survey area investigated. Specific methods for characterizing and evaluating the soils, vegetation, and hydrologic indicators are described below.

Vegetation: Dominant plant species in each major vegetation stratum (tree, sapling/shrub, herbaceous, and woody vine) were identified within 30-foot radius sample plots. The wetland indicator status of each species was assigned according to the *Eastern Mountains and Piedmont Regional Wetland Plant List* (Lichvar *et al.* 2016). Hydrophytic vegetation was determined to be present where more than 50 percent of the dominant species from all vegetation strata were classified as facultative (FAC), facultative wetland (FACW), or obligate wetland species (OBL). Other tests used to evaluate the dominance of hydrophytic species included the Dominance Test and the Prevalence Index (USACE 2012).

Soils: A soil auger was used at each sample plot to extract a core sample to a depth where either hydric indicators were observed, approximately 20 inches, or until rocky substrate resulted in auger refusal. The soils were characterized by determining the color and texture of each soil horizon. Soil matrix and mottle colors were identified using Munsell Soil Color Charts (Munsell Color 2012). Soils were considered hydric if they exhibited one (1) or more of the following indicators, including, but not limited to: histosols, histic epipedons, black histic, hydrogen sulfide, stratified layers, 2 cm muck, depletion below dark surface, thick dark surface, sandy mucky mineral, sandy gleyed matrix, sandy redox, stripped matrix, dark surface, polyvalue below surface, thin dark surface, loamy gleyed matrix, depleted matrix, redox dark surface, depleted dark surface, redox depressions, iron-manganese masses, umbric surface, Piedmont floodplain soils, and red parent material. These indicators support a hydric soil determination, although secondary or additional indicators may also be present.

Hydrology: Each sample plot was examined for evidence of wetland hydrology. Indicators of wetland hydrology include: surface water, high water table, saturations, water marks, sediment deposits, drift deposits, algal mat or crust, iron deposits, visible inundation on arials, water stained leaves, aquatic fauna, true aquatic plants, hydrogen sulfide odor, oxidized rhizospheres on living roots, presence of reduced iron, recent iron reduction in tilled soils, or a thin muck surface. Presence of standing water or depth to soil saturation was recorded at each sampling location.

2.3 Waterbody Identification

Prior to field surveys, known waterbodies in the survey area were identified on USGS topographic quadrangle maps. During the field investigation, a qualified biologist examined the entire field survey area for mapped and unmapped waterbodies. Waterbodies identified included perennial, intermittent, and ephemeral streams and ponds. Data recorded included stream name, associated wetlands, flow regime (perennial, intermittent, or ephemeral), direction of flow, water width, bank-to-bank width, bank height and slope, water depth, bottom and bank substrates, observed water quality, channel meander, and adjacent vegetation type. In addition, indicators of aquatic habitat, wildlife use, and soil erosion potential were recorded.

2.4 GPS Mapping

Wetland and waterbody boundaries/alignments were flagged at regular intervals to accurately represent the boundary between the aquatic resource and the adjacent upland. Flag points were then land surveyed using a Trimble, Inc. (Sunnyvale, CA) Geo XH Global Positioning System (GPS). Each point used an identification code and was numbered consecutively to facilitate the desktop mapping process. Flag points were differentially corrected in accordance with Trimble, Inc. sub-meter accuracy standards. All data was recorded in the WGS 84 coordinate zone and then projected into NAD 83 State Plane Pennsylvania South using ArcGIS 10.2.

Attribute data for all flag points was recorded, including the following information:

- Unique number or name;
- NAD 1983 coordinates;
- Date;
- Time;
- Number of positions recorded;
- Max value position dilution of precision (PDOP); and,
- Horizontal accuracy (in meters)

GPS data were differentially corrected using Pathfinder Office 5.60 software (Trimble Inc., Sunnyvale, CA) and commercial base station control points. Corrected flag points were then imported into ArcView 10.2 (ESRI; Redlands, CA) Geographic Information System (GIS) mapping software where points were connected in consecutive order and according to surveyor notes. Wetland boundaries were left “open” when the wetland extended beyond the survey boundaries and were “closed” when contained entirely within the survey boundaries. Stream alignments were connected in a similar manner and designated as “line” data. A geo-referenced wetland delineation boundary suitable for overlay onto themed base layers was created using ArcView 10.2 GIS software. The same GIS software was also used as an analytical tool, providing acreages of the delineated wetlands and coordinate location of the centroids of the polygons.

3.0 Survey Results

3.1 Background Data Review

General Area Description

Land use within the survey boundary is rural and consists of residential lawn, mowed field, scrub-shrub, woodlots, and several sparsely-concentrated residential homes. Land use in the general vicinity of the survey area is the same. Attachment A, Figure 1 provides an aerial basemap of the survey area.

Soils

A review of published and publicly available soils data for the survey area indicates that five (5) soils series are mapped within the survey boundary (Attachment A, Figure 1). Mapped soil series are summarized in Table 1 below.

Table 1. Mapped Soil Types on 0280 Reroute

Soil Symbol	Soil Name and Brief Description ¹	Hydric Soil Classification
GdB	Gladstone gravelly loam, 3 to 8 percent slopes	Not Hydric
GeD	Gladstone-Parker gravelly loams, 15 to 25 percent slopes	Not Hydric
GfD	Gladstone gravelly loam, 8 to 25 percent slopes, very boulder	Partially
Ha	Hatboro silt loam	Hydric
UuD	Urban land-Udorthents, schist and gneiss complex, 8 to 25 percent slopes	Partially

¹USDA, NRCS, Soil Series Descriptions for Chester County, PA, 2017.

Mapped Wetlands

One (1) USFWS mapped NWI feature was identified in the survey area. The NWI feature is classified as a temporary flooded, broad-leaved deciduous palustrine forested system (USFWS code PFO1A).

Mapped Waterbodies

No waterbodies were identified on the USGS topographic maps.

3.2 Delineated Aquatic Resources

One (1) existing wetland was extended through the expanded survey area. No new streams or ponds were identified during the field survey.

Wetlands

No new wetlands were identified within the survey corridor during survey efforts. One wetland, Q76, was extended from its modified (January 2019) delineation limits. The extension of wetland Q76 is a palustrine emergent wetland located in a narrow floodplain adjacent to stream S-Q83. The shrub area observed by USACE near wetland extension is located entirely in upland habitat. Though some hydrophytic vegetation was present in the understory vegetation, presence was observed to be below the thresholds required to meet USACE parameters for the hydric vegetation criteria of wetland delineation. Additionally, the shrub species themselves were not classified as hydrophytic. Hydrology indicators were identified inconsistently throughout the reevaluation areas, and where identified, the signature was generally weak. Specifically, some oxidized rhizospheres were identified in low concentrations. Soil cores were largely uniform in color and texture, lacking distinctive wetland characteristics such as redox concentrations or depletions noted in the delineated extension of wetland Q76.

4.0 Summary

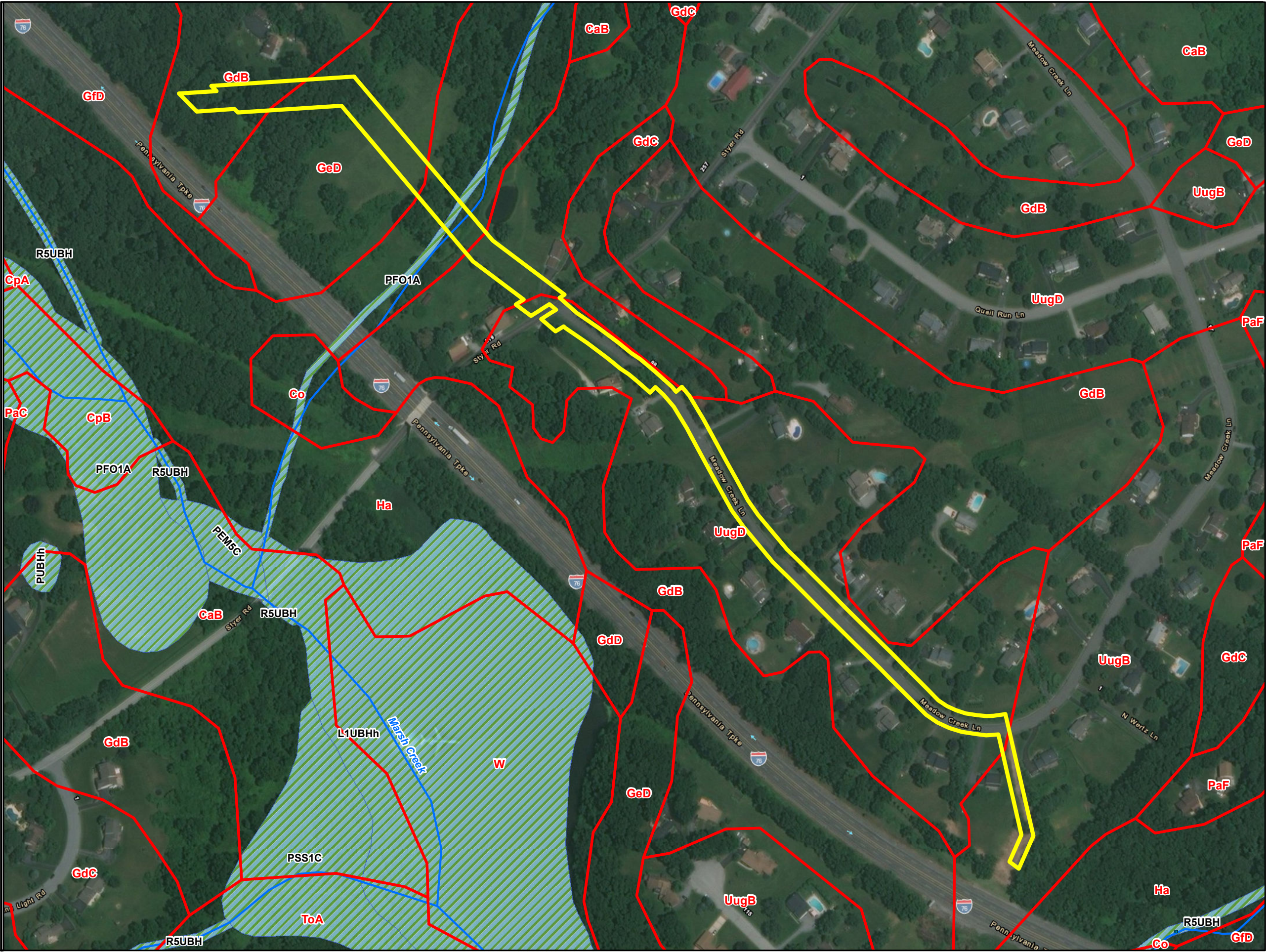
Tetra Tech completed an aquatic resource survey on an approximately 8-acre area surrounding a section of Right-of Way (ROW) located between Greenridge Road and Styer Road in Upper Uwchlan Township, Chester County, Pennsylvania. Tetra Tech expanded the boundary of one (1) existing resource that meets USACE criteria for wetland delineation. Attachment A provides figures regarding the site location and geometry and alignments of the delineated features. Attachment B provides a photographic log for each of the new resources delineated within the survey area, and Attachment C provides data forms for each of the features.

5.0 References





- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. FWS/OBS-79/31, Washington, D.C. 131 pp.
- Environmental Laboratory. 1987. United States Army Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1, U.S. Army Engineers Waterways Experiment Station, Vicksburg, MS. 100 pp.
- Munsell Color. 2009. Munsell Soil Color Chart. MacBeth Division of Kollmorgen Instruments Corporation. Baltimore, MD. 27 pp.
- Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. *The National Wetland Plant List*. 2016 wetland ratings. Phytoneuron 2016-30: 1-17. Published 28 April 2016. ISSN 2153 733X
- Tetra Tech. 2019. Aquatic Resources Report for the 0280 Reroute, Chester County, Pennsylvania. Submitted February 2019.
- United States Army Corps of Engineers. 2012. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont (Version 2.0). Vicksburg, MS. 179 pp.
- United States Department of Agriculture, Natural Resources Conservation Service and University of California Davis. 2011. SoilWeb App. Available at <http://casoilresource.lawr.ucdavis.edu/soilweb-apps/>.
- United States Department of Agriculture, Natural Resources Conservation Service. Web Soil Survey [online]. Accessed January 2019. Available at <https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>.

ATTACHMENT A

FIGURES



Legend

-  Survey Area
-  NHD
-  NWI Wetlands
-  Soils

Location



0 125 250 500

1 inch = 250 feet

Figure 1. NWI Features and Soils on the Sunoco Pennsylvania Pipeline Project, Chester County, PA.
Sheet 1 of 1

Prepared By:



Date:

07/2019

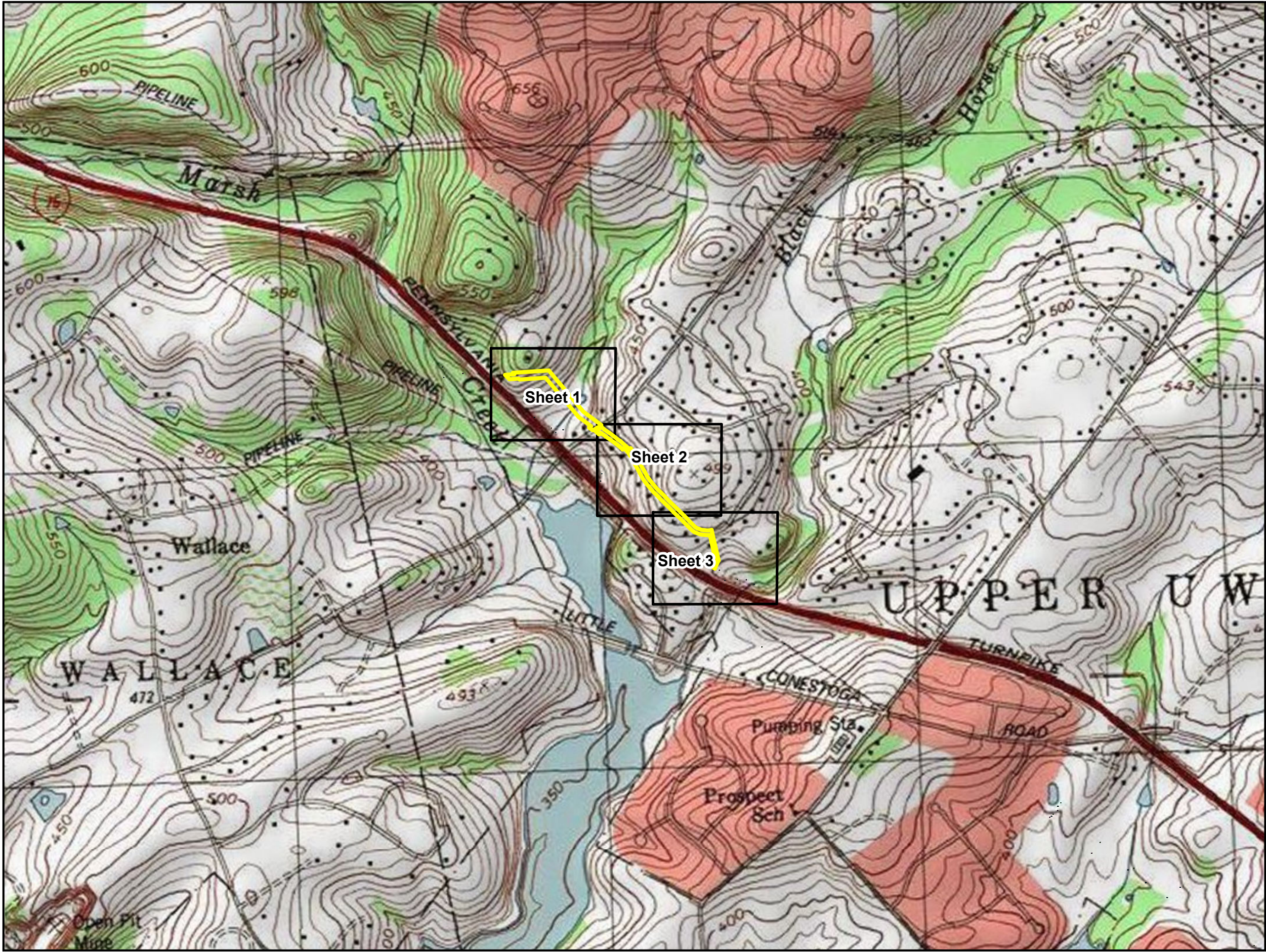
Base Map: ESRI World Imagery 07/03/2017.

Soils USDA 09/18/2018 Chester County,



NWI Wetlands USFWS 09/19/2016

Coordinate System: NAD 83 Stateplane, PA South, Feet

P:\GIS\projects\112\0505958-PP\PP\MXD\Permits\Permits\WDR_FEMA_Map\SS_0280WDR\Figure1.mxd JL



Legend

-  Survey Area
-  Sheet Boundary

Project Location

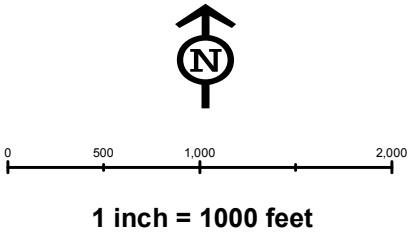
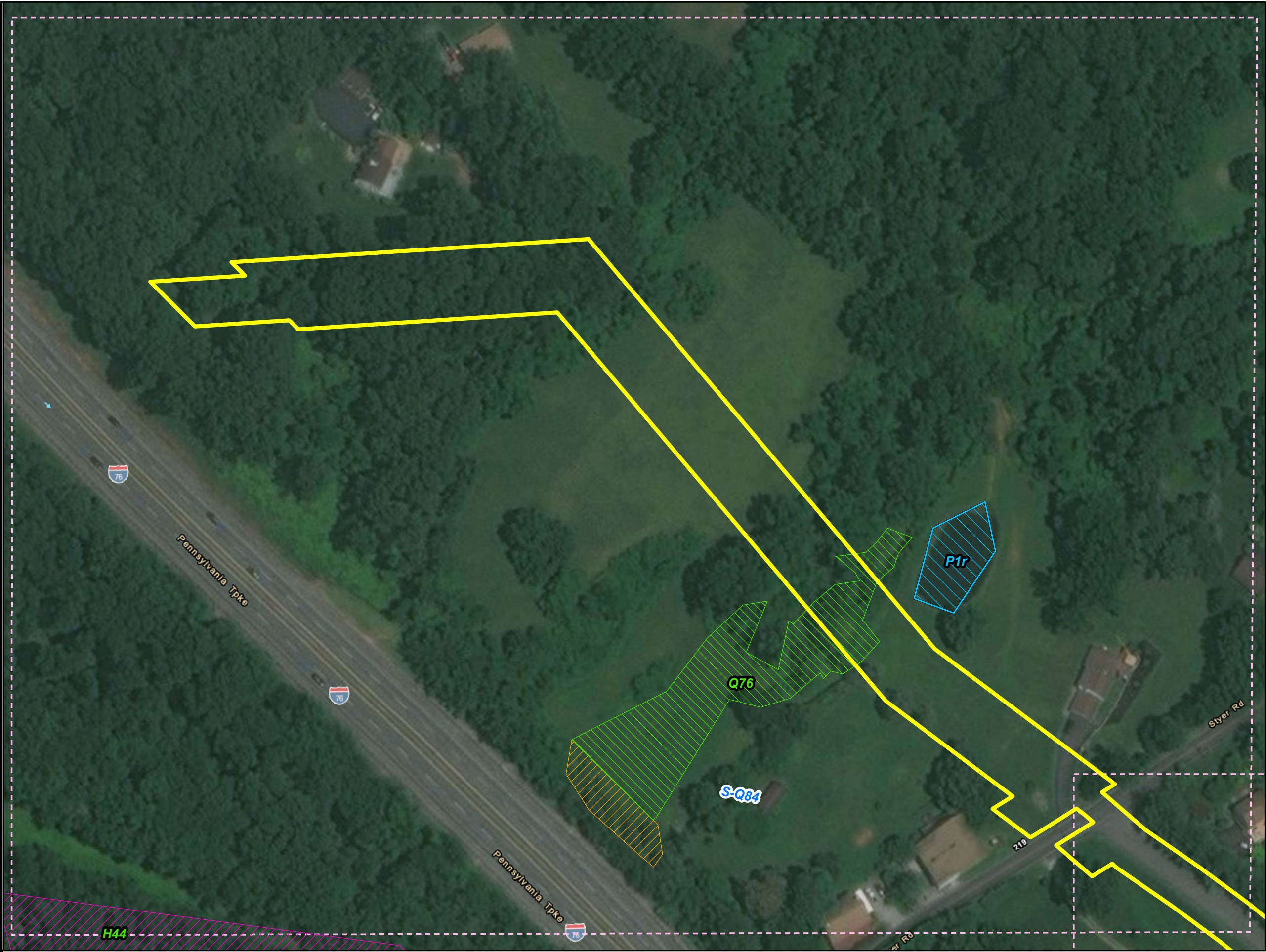


Figure 2. Delineated Aquatic Resources on the Sunoco Pennsylvania Pipeline Project, Chester County, PA. Sheet Key

Prepared By:	Date:
 TETRA TECH	07/2019

Base Map; ESRI US Topo Maps
Coordinate System: NAD 83 Stateplane, PA South, Feet



Legend

- Survey Area
- PEM Wetland
- PFO Wetland
- PSS Wetland
- Pond
- Sheet Boundary

Sheet Identifier

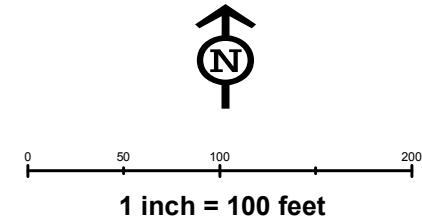
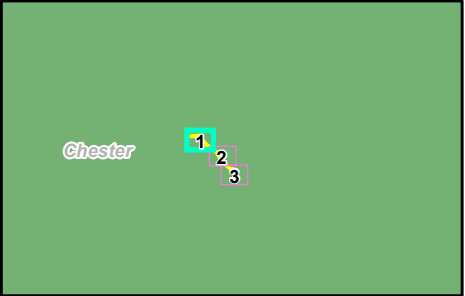
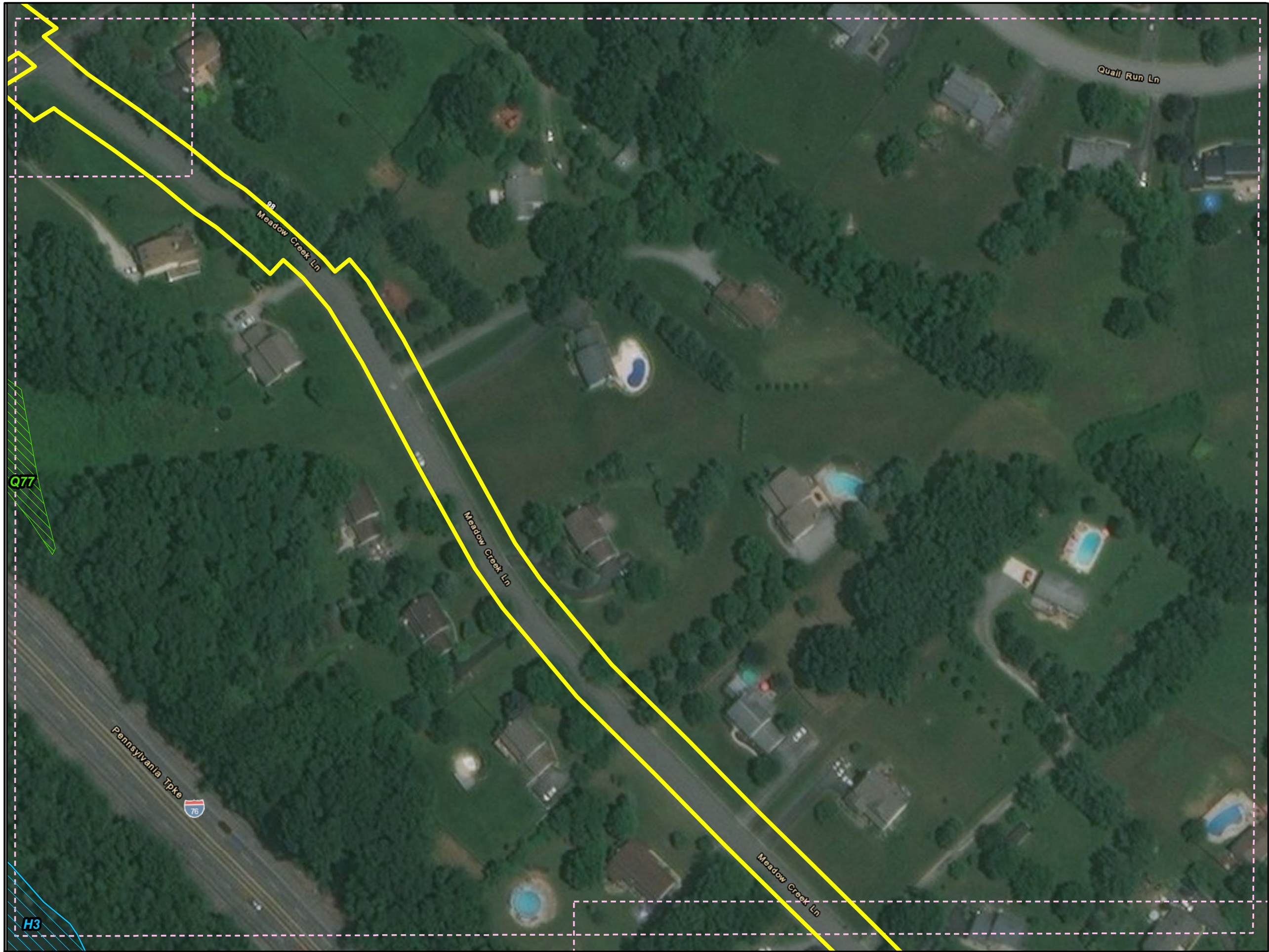


Figure 2. Delineated Aquatic Resources on the Sunoco Pennsylvania Pipeline Project, Chester County, PA.
Sheet 1 of 3

Prepared By:	Date:
TETRA TECH	07/2019

Base Map; ESRI World Imagery 07/03/2017
Coordinate System: NAD 83 Stateplane, PA South, Feet



- Legend**
- Survey Area
 - PEM Wetland
 - Pond
 - Sheet Boundary

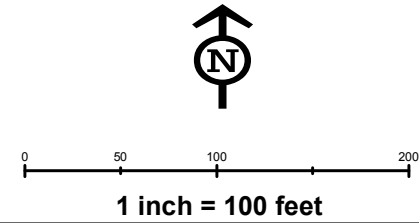
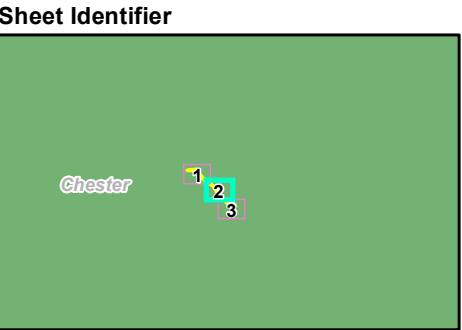
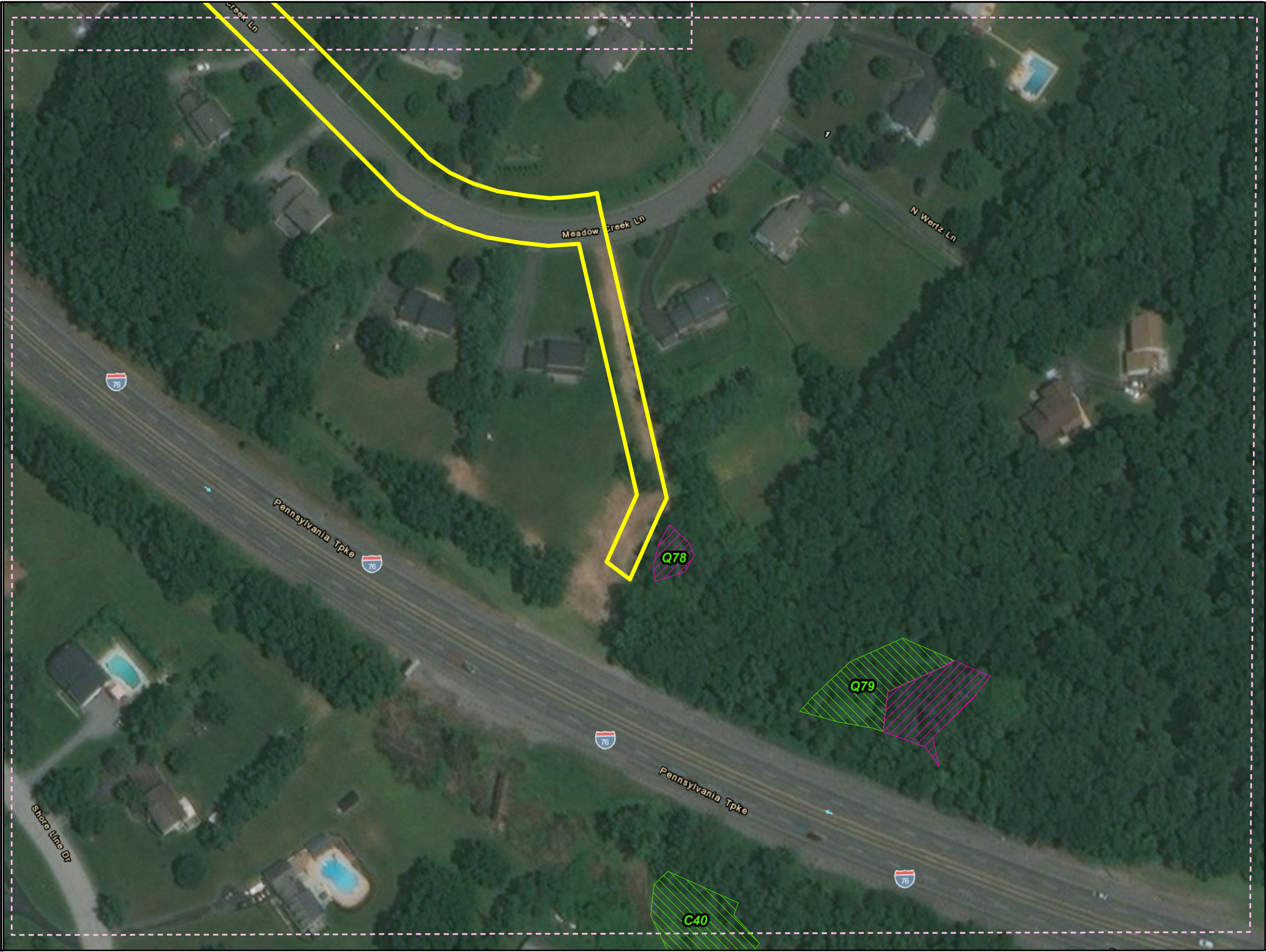


Figure 2. Delineated Aquatic Resources on the Sunoco Pennsylvania Pipeline Project, Chester County, PA.
Sheet 2 of 3

Prepared By: TETRA TECH	Date: 07/2019
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Base Map; ESRI World Imagery 07/03/2017
Coordinate System: NAD 83 Stateplane, PA South, Feet



- Legend**
- Survey Area
 - PEM Wetland
 - PFO Wetland
 - Sheet Boundary

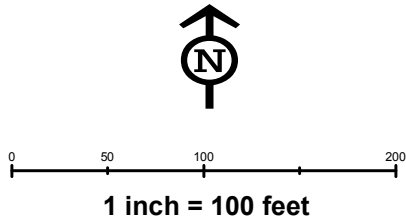
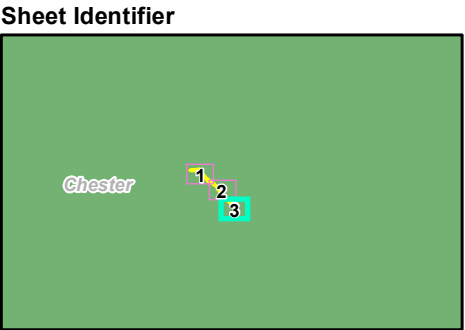


Figure 2. Delineated Aquatic Resources on the Sunoco Pennsylvania Pipeline Project, Chester County, PA.
Sheet 3 of 3

Prepared By:	Date:
	07/2019

Base Map; ESRI World Imagery 07/03/2017
Coordinate System: NAD 83 Stateplane, PA South, Feet

ATTACHMENT B

WATERBODY PHOTOGRAPHIC LOG

WETLAND PHOTOGRAPHIC LOG

Company:
Project:

Sunoco Pipeline, L.P.
Pennsylvania Pipeline Project (PPP) – 0280 Re-route



Photographer: K. Berend

Date: 7/27/2019

Photo No.: 1

Direction: South

Comments: Extension of wetland Q76 (PEM) – wetland sample point



Photographer: G. McBrien

Date: 7/27/2019

Photo No.: 2

Direction: West

Comments: Extension of wetland Q76 – upland sample point

WETLAND PHOTOGRAPHIC LOG

Company:
Project:

Sunoco Pipeline, L.P.
Pennsylvania Pipeline Project (PPP) – 0280 Re-route



Photographer: G. McBrien
Date: 7/27/2019
Photo No.: 3
Direction: n/a

Comments: Soil profile for extension of wetland Q76 (PEM).

ATTACHMENT C

WATERBODY DATA FORMS

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: 0280 Meadow Creek reroute City/County: Upper Vachlan Twp, Chester Co. Sampling Date: 7/27/19
 Applicant/Owner: SPLP State: PA Sampling Point: Q76 ext - wet
 Investigator(s): K. Berend, W. Darling, G. McBrien Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Platflood of creek Local relief (concave, convex, none): none Slope (%): _____
 Subregion (LRR or MLRA): LRR-5, MLRA: 148 Lat: 40.091419° N Long: -75.728214° W Datum: _____
 Soil Map Unit Name: Hatboro silt loam NWI classification: n/a
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No _____		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No _____		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input checked="" type="checkbox"/> Saturation (A3)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Aquatic Fauna (B13)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Water Table Present?	Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>6</u>		
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>3</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

Sampling Point: Q76ext - wet

Eastern Mountains and Piedmont – Version 2.0

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: 0280 Meadow Creek restate City/County: Upper Merion Twp., Chester Co. Sampling Date: 7/27/19
 Applicant/Owner: SPLP State: PA Sampling Point: Q76-up1
 Investigator(s): K. Bernd, W. Darling, G. McBrean Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): fluvial plain of creek Local relief (concave, convex, none): slope to E Slope (%): 15
 Subregion (LRR or MLRA): LRR: S, MLRA: 148 Lat: 40.091660° N Long: -75.728101° W Datum: _____
 Soil Map Unit Name: Hatboro silt loam NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____ No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes _____ No <input checked="" type="checkbox"/>		
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)		Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: Q76 ext-up1

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. <u>Liriodendron tulipifera</u>	<u>40</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)														
2. <u>Juglans nigra</u>	<u>30</u>	<input checked="" type="checkbox"/>	<u>FACW</u>															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
50% of total cover: <u>35</u> <u>70</u> = Total Cover 20% of total cover: <u>14</u>				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>15</u></td> <td>x 2 = <u>30</u></td> </tr> <tr> <td>FAC species <u>35</u></td> <td>x 3 = <u>105</u></td> </tr> <tr> <td>FACU species <u>105</u></td> <td>x 4 = <u>420</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>155</u> (A)</td> <td><u>555</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.58</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>15</u>	x 2 = <u>30</u>	FAC species <u>35</u>	x 3 = <u>105</u>	FACU species <u>105</u>	x 4 = <u>420</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>155</u> (A)	<u>555</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>15</u>	x 2 = <u>30</u>																	
FAC species <u>35</u>	x 3 = <u>105</u>																	
FACU species <u>105</u>	x 4 = <u>420</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>155</u> (A)	<u>555</u> (B)																	
Sapling/Shrub Stratum (Plot size: _____)																		
1. <u>Eleagnus umbellata</u>	<u>5</u>	_____	<u>FACU?</u>															
2. <u>Lonicera spp.</u>	<u>10</u>	_____	_____															
3. <u>Rosa multiflora</u>	<u>20</u>	<input checked="" type="checkbox"/>	<u>FACU</u>															
4. <u>Rubus phoenicolasius</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FACU</u>															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
50% of total cover: <u>22.5</u> <u>45</u> = Total Cover 20% of total cover: <u>9</u>																		
Herb Stratum (Plot size: _____)																		
1. <u>Dicranthelium clandestinum</u>	<u>15</u>	<input checked="" type="checkbox"/>	<u>FACW</u>															
2. <u>Toxodendron radicans</u>	<u>15</u>	<input checked="" type="checkbox"/>	<u>FAC</u>															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
50% of total cover: <u>15</u> <u>30</u> = Total Cover 20% of total cover: <u>6</u>																		
Woody Vine Stratum (Plot size: _____)																		
1. <u>Vitis riparia</u>	<u>20</u>	<input checked="" type="checkbox"/>	<u>FAC</u>															
2. <u>Smilax spp.</u>	<u>10</u>	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
50% of total cover: <u>15</u> <u>30</u> = Total Cover 20% of total cover: <u>6</u>																		
Remarks: (Include photo numbers here or on a separate sheet.) 				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>														

SOIL

Sampling Point: Q76 ext upl

[illegible]