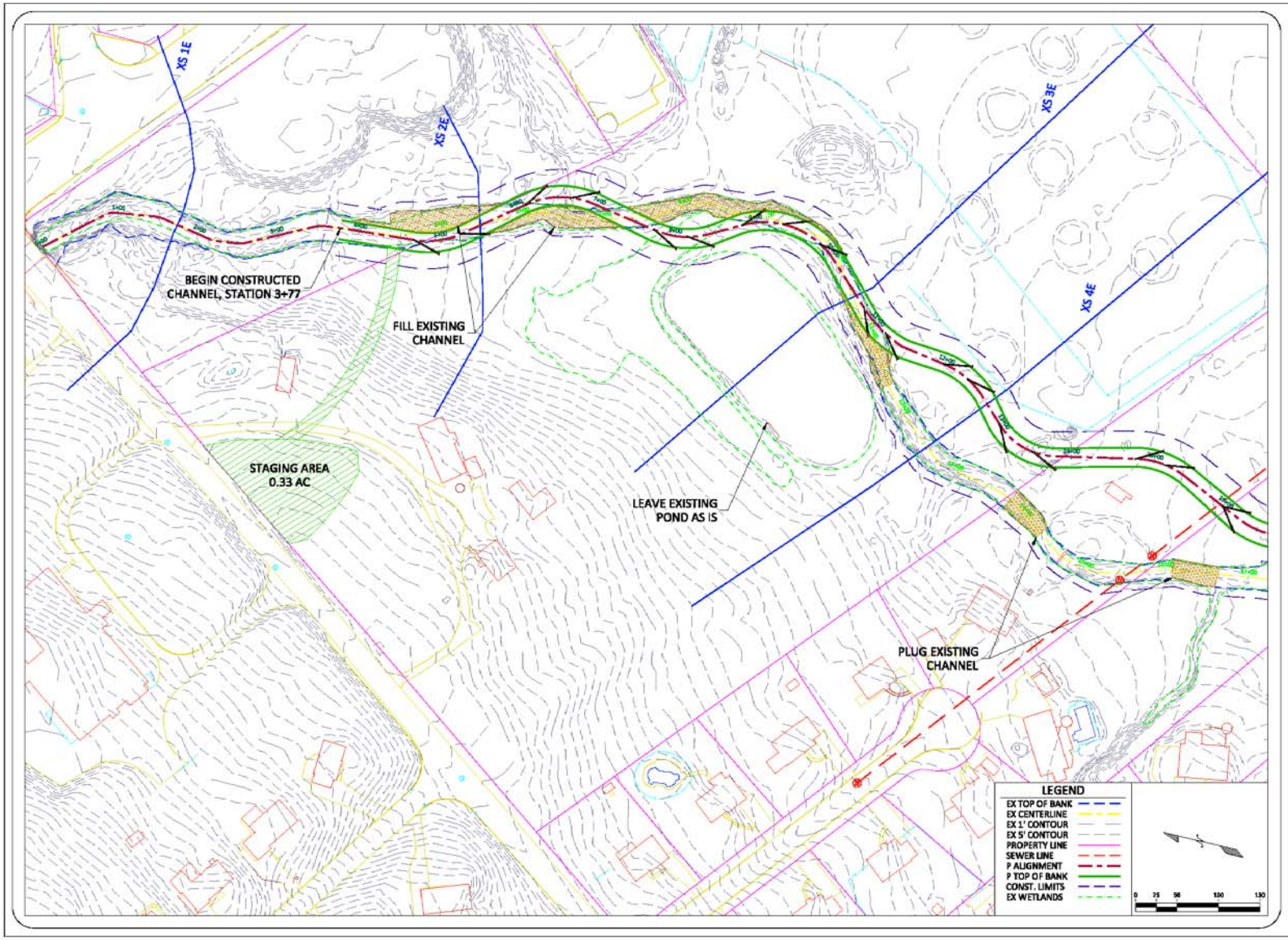
Southampton Creek Ecosystem Restoration Project
Environmental Assessment
Appendices

Appendix A

Proposed Project Alignments

Alignment A



NO.	NOTES:	DRN	CHK	DATE
1	PRELIMINARY PLAN SHEETS	JCB	TPB	12/23/09
2	REVISION 1	JCB	TPB	02/15/10
3	30% DESIGN	JCB	TPB	04/01/10

University of New Hampshire

US Army Corps of Engineers
Philadelphia District

U.S. FISH & WILDLIFE SERVICE, U.S. ARMY CORPS OF ENGINEERS

PROPOSED PLAN VIEW
STATION 00+00 - 16+50

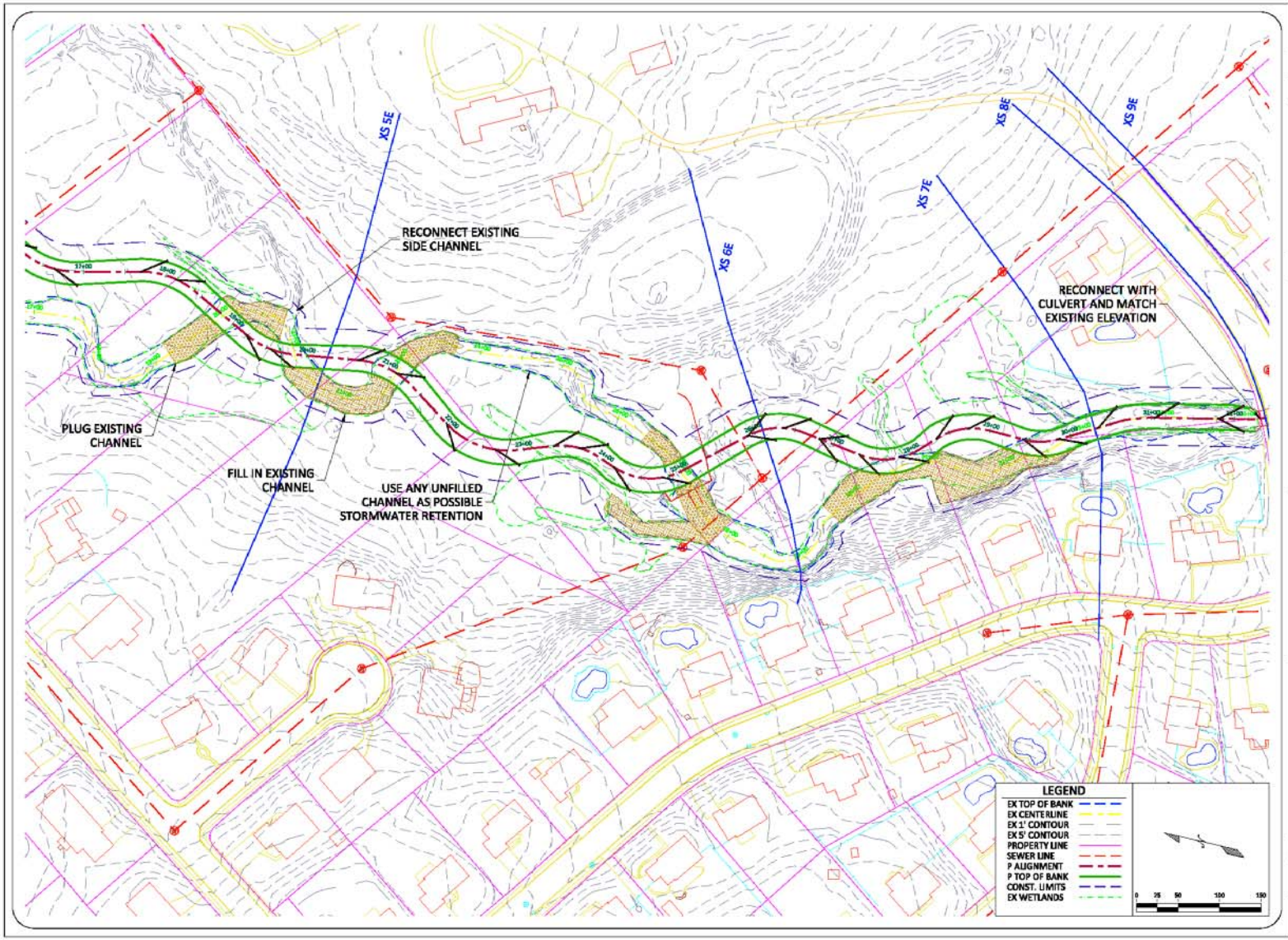
SOUTHAMPTON CREEK ECOSYSTEM RESTORATION

UPPER SOUTHAMPTON TOWNSHIP
BUCKS COUNTY, PA

DATE 04/01/2010

FILENAME SHC_PROPOSED.DWG

SHEET NO. 01 OF 04



NO.	NOTES:	DRN	CHK	DATE
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2	REVISION 1	JCB	TPB	02/15/10
3	30% DESIGN	JCB	TPB	04/01/10

University of New Hampshire

US Army Corps of Engineers
Philadelphia District

U.S. FISH & WILDLIFE SERVICE, U.S. ARMY CORPS OF ENGINEERS

PROPOSED PLAN VIEW
STATION 16+50 - 32+50

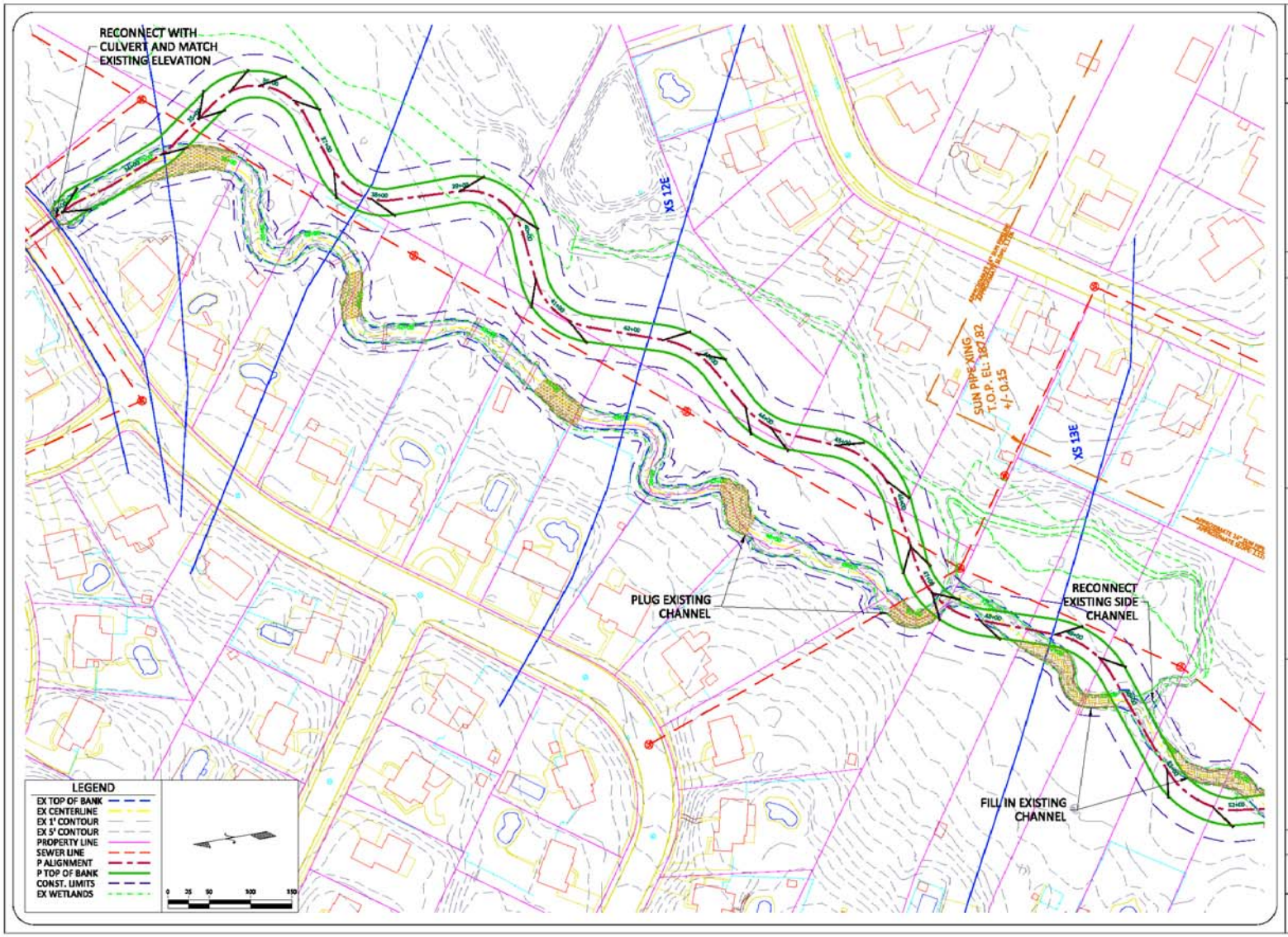
SOUTHAMPTON CREEK ECOSYSTEM RESTORATION

UPPER SOUTHAMPTON TOWNSHIP
BUCKS COUNTY, PA

DATE
04/01/2010

FILENAME
SHC_PROPOSED.DWG

SHEET NO.
02 OF 04



NO.	NOTES:	DRN	CHK	DATE
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2	REVISION 1	JCB	TPB	02/15/10
3	30% DESIGN	JCB	TPB	04/01/10

University of New Hampshire

US Army Corps of Engineers, Philadelphia District

U.S. FISH & WILDLIFE SERVICE, U.S. ARMY CORPS OF ENGINEERS

PROPOSED PLAN VIEW STATION 32+50 - 52+00

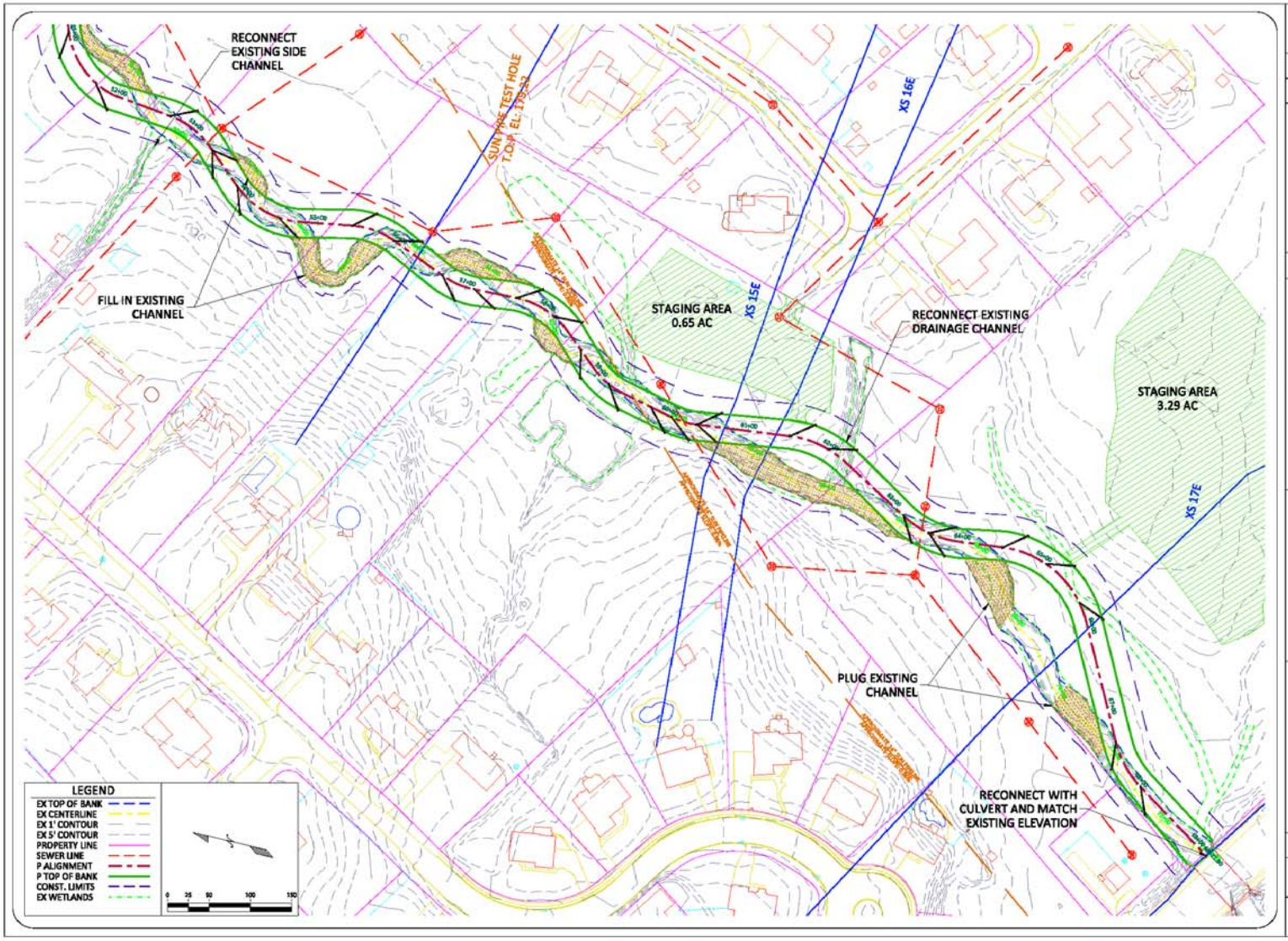
SOUTHAMPTON CREEK ECOSYSTEM RESTORATION

UPPER SOUTHAMPTON TOWNSHIP BUCKS COUNTY, PA

DATE 04/01/2010

FILENAME SHC_PROPOSED.DWG

SHEET NO. 03 OF 04



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2	REVISION 1	JCB	TPB	02/15/10
3	30% DESIGN	JCB	TPB	04/01/10

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U.S. FISH & WILDLIFE SERVICE, U.S. ARMY CORPS OF ENGINEERS

PROPOSED PLAN VIEW STATION 52+00 - 69+22

SOUTHAMPTON CREEK ECOSYSTEM RESTORATION

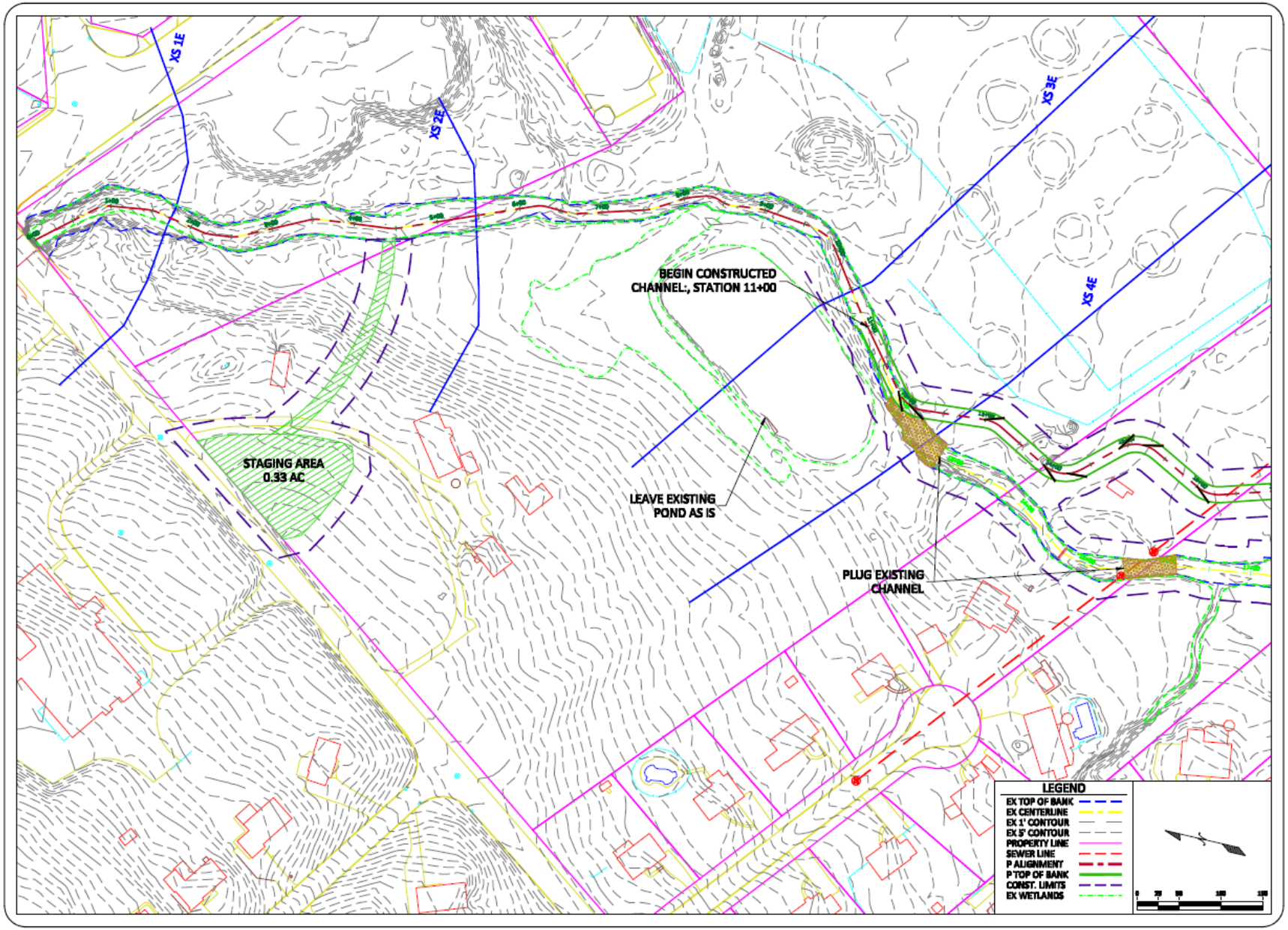
UPPER SOUTHAMPTON TOWNSHIP BUCKS COUNTY, PA

DATE 04/01/2010

FILENAME SHC_PROPOSED.DWG

SHEET NO. 04 OF 04

Alignment B



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4	30% DESIGN V2	JCB	TPB	05/12/10

University of New Hampshire

US Army Corps of Engineers
Philadelphia District

U.S. FISH & WILDLIFE SERVICE, U.S. ARMY CORPS OF ENGINEERS

PROPOSED PLAN VIEW STATION 00+00 - 16+50

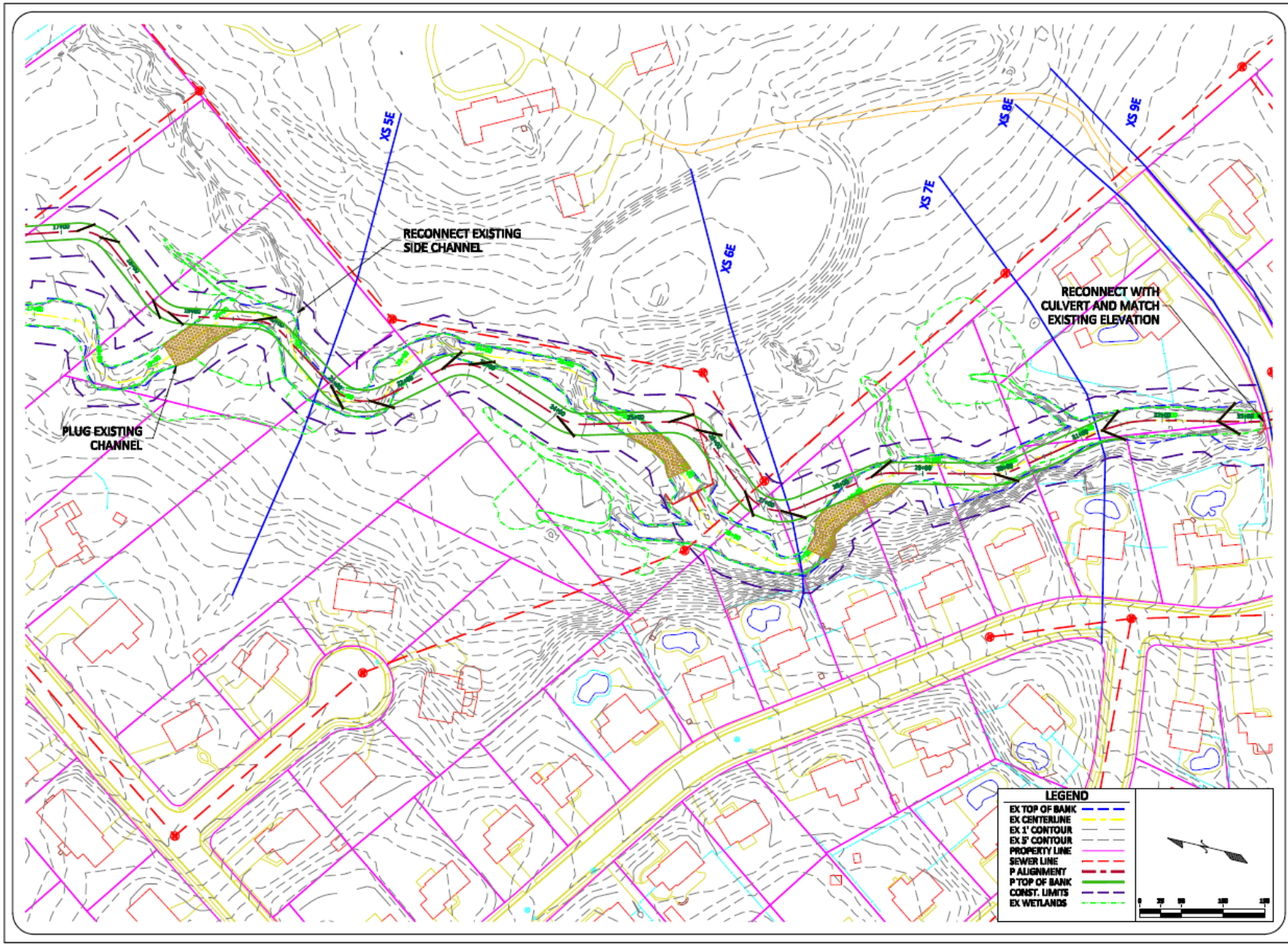
SOUTHAMPTON CREEK ECOSYSTEM RESTORATION

UPPER SOUTHAMPTON TOWNSHIP BUCKS COUNTY, PA

DATE 05/12/2010

FILENAME SHC_PROPOSED.DWG

SHEET NO. 06 OF 09



NO.	NOTES:	DRN	CHK	DATE
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2	REVISION 1	JCB	TPB	02/15/10
3	30% DESIGN	JCB	TPB	04/01/10
4	30% DESIGN v2	JCB	TPB	05/12/10

University of New Hampshire

US Army Corps of Engineers
Philadelphia District

U.S. FISH & WILDLIFE SERVICE, U.S. ARMY CORPS OF ENGINEERS

PROPOSED PLAN VIEW STATION 16+50 - 33+50

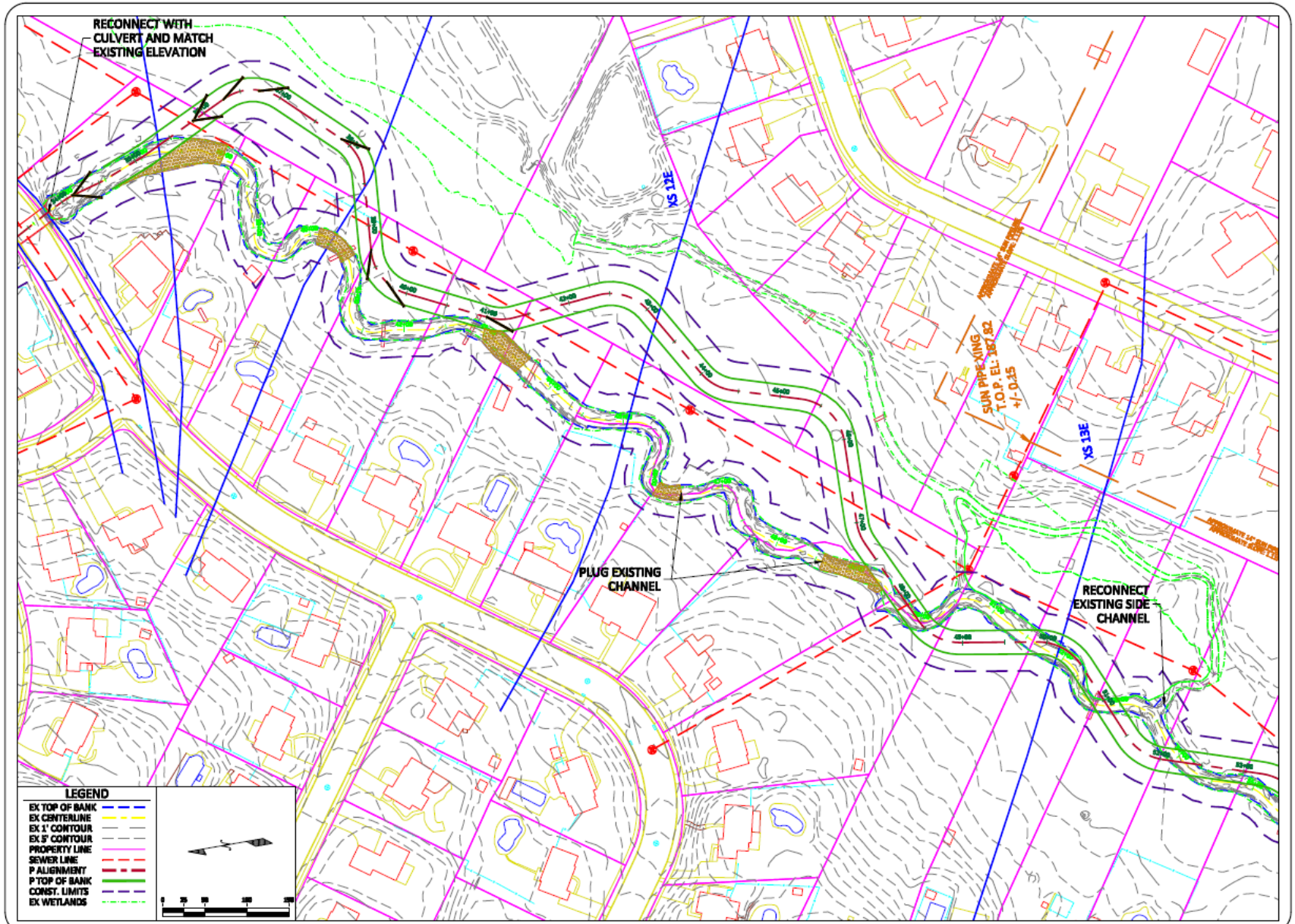
SOUTHAMPTON CREEK ECOSYSTEM RESTORATION

UPPER SOUTHAMPTON TOWNSHIP BUCKS COUNTY, PA

DATE 05/12/2010

FILENAME SHC_PROPOSED.DWG

SHEET NO. 07 OF 09



NO.	NOTES:	DRN	CHK	DATE
1	PRELIMINARY PLAN SHEETS	JCB	TPB	12/23/09
2	REVISION 1	JCB	TPB	02/15/10
3	30% DESIGN	JCB	TPB	04/01/10
4	30% DESIGN v2	JCB	TPB	05/12/10

University of New Hampshire

US Army Corps of Engineers
Philadelphia District

U.S. FISH & WILDLIFE SERVICE, U.S. ARMY CORPS OF ENGINEERS

PROPOSED PLAN VIEW STATION 33+50 - 53+00

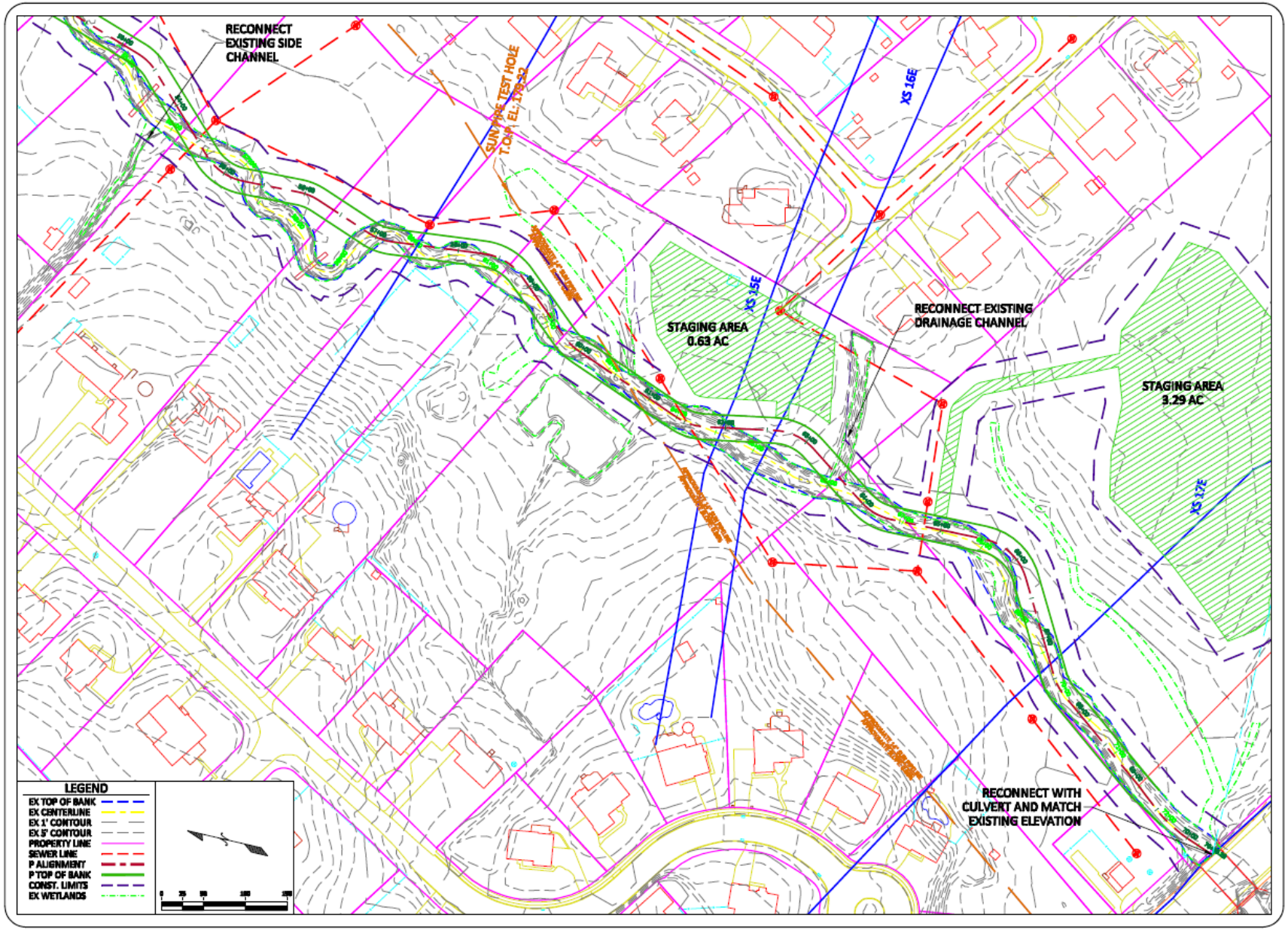
SOUTHAMPTON CREEK ECOSYSTEM RESTORATION

UPPER SOUTHAMPTON TOWNSHIP BUCKS COUNTY, PA

DATE 05/12/2010

FILENAME SHC_PROPOSED.DWG

SHEET NO. 08 OF 09



NO.	NOTES:	DRN	CHK	DATE
1	PRELIMINARY PLAN SHEETS	JCB	TPB	12/23/09
2	REVISION 1	JCB	TPB	02/15/10
3	30% DESIGN	JCB	TPB	04/01/10
4	30% DESIGN v2	JCB	TPB	05/12/10

University of New Hampshire

US Army Corps of Engineers
Philadelphia District

U.S. FISH & WILDLIFE SERVICE, U.S. ARMY CORPS OF ENGINEERS

PROPOSED PLAN VIEW STATION 53+00 - 70+36

SOUTHAMPTON CREEK ECOSYSTEM RESTORATION

UPPER SOUTHAMPTON TOWNSHIP BUCKS COUNTY, PA

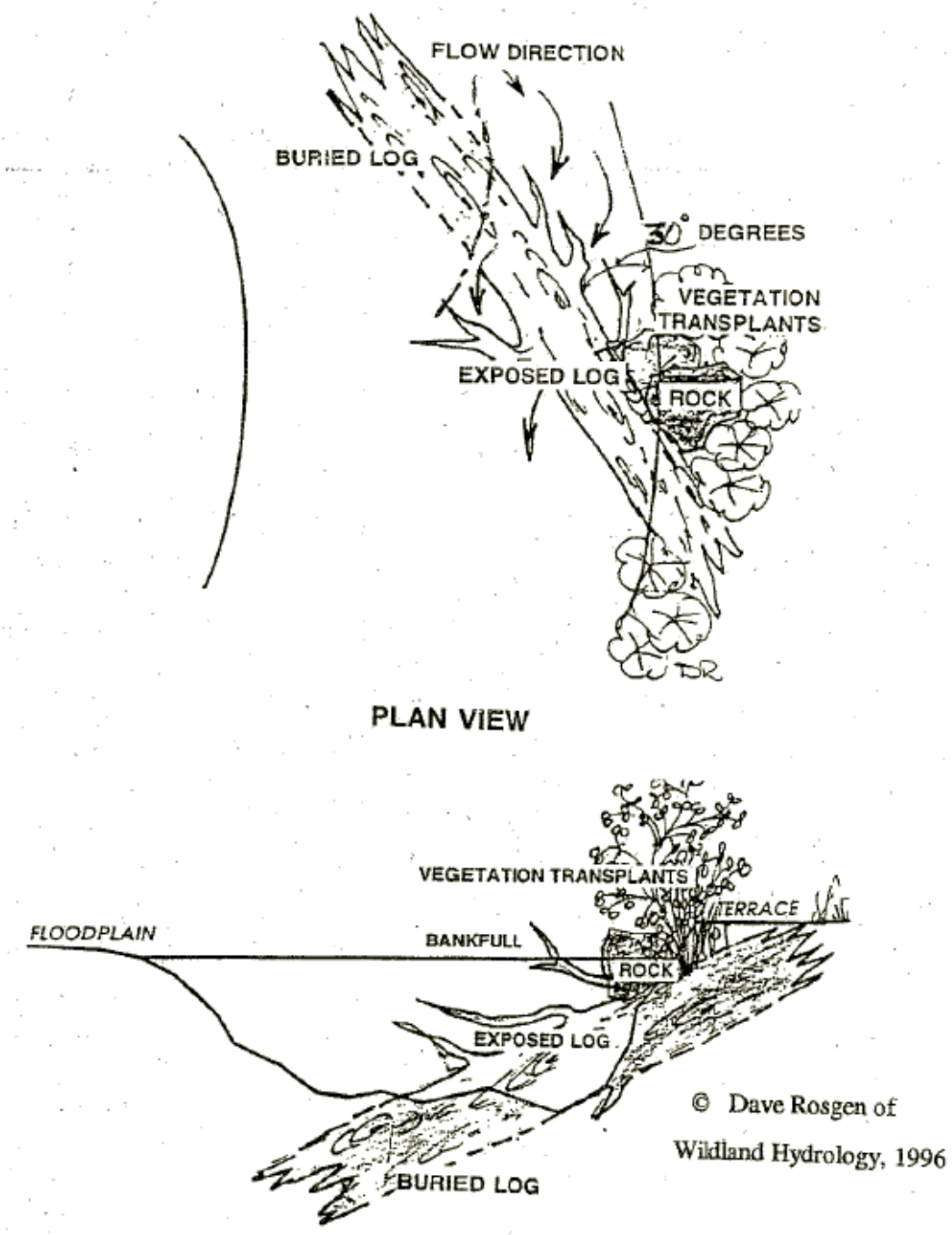
DATE 05/12/2010

FILENAME SRC_PROPOSED.DWG

SHEET NO. 09 OF 09

Appendix B

Proposed Design Features


FLOW DIRECTION
BURIED LOG
30° DEGREES
VEGETATION TRANSPLANTS
EXPOSED LOG
ROCK
PLAN VIEW
VEGETATION TRANSPLANTS
TERRACE
FLOODPLAIN
BANKFULL
ROCK
EXPOSED LOG
BURIED LOG
© Dave Rosgen of
Wildland Hydrology, 1996

Log Vane

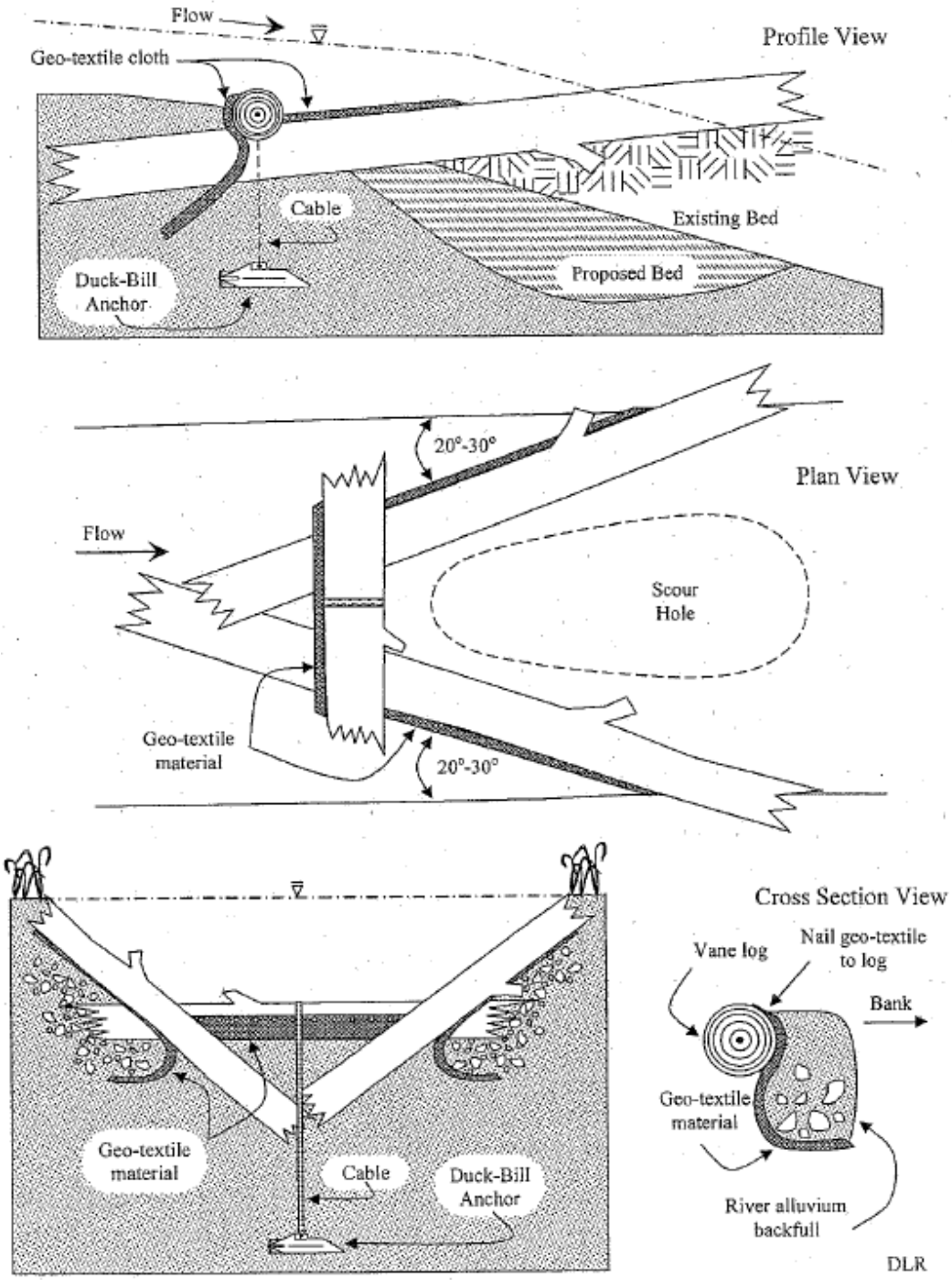
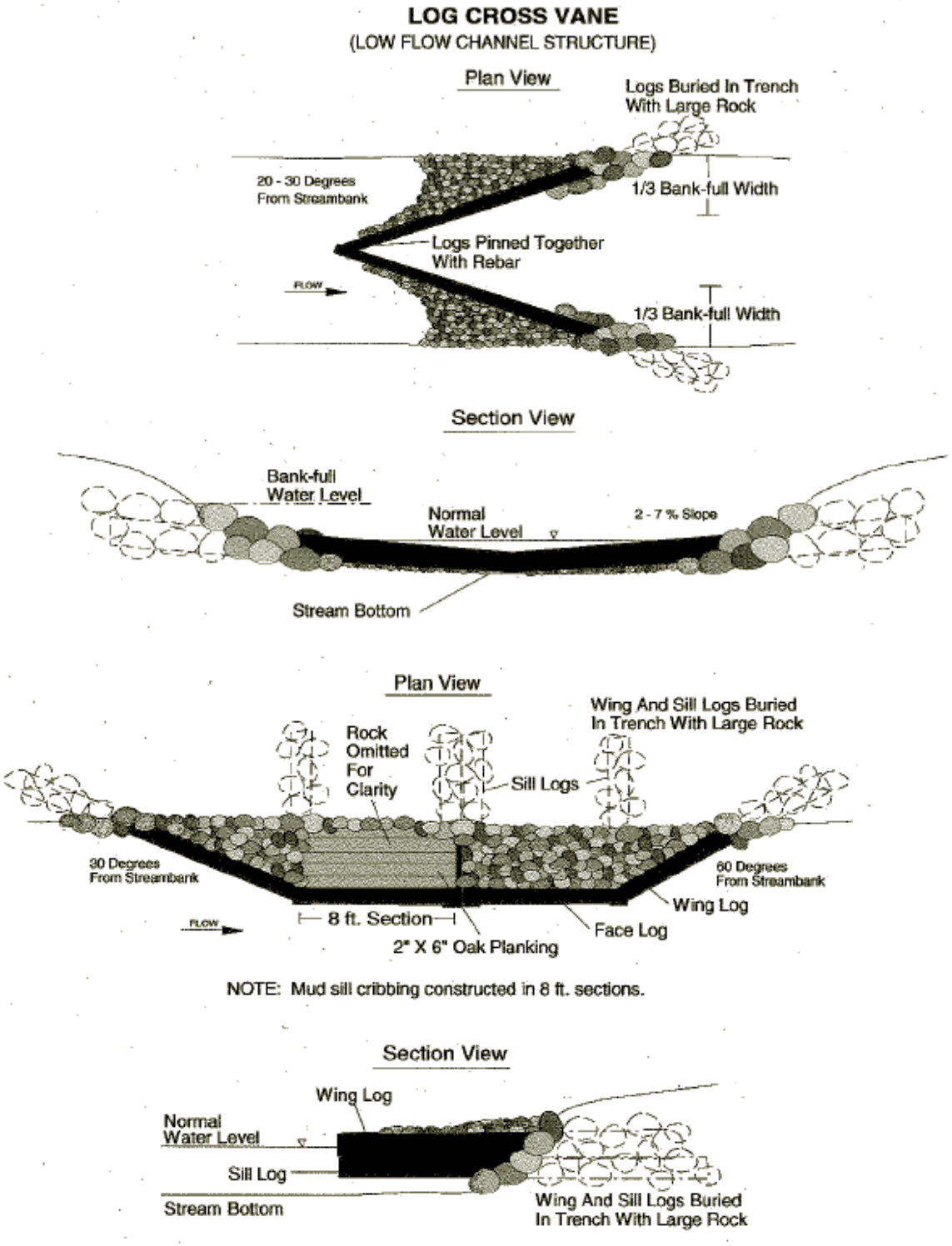
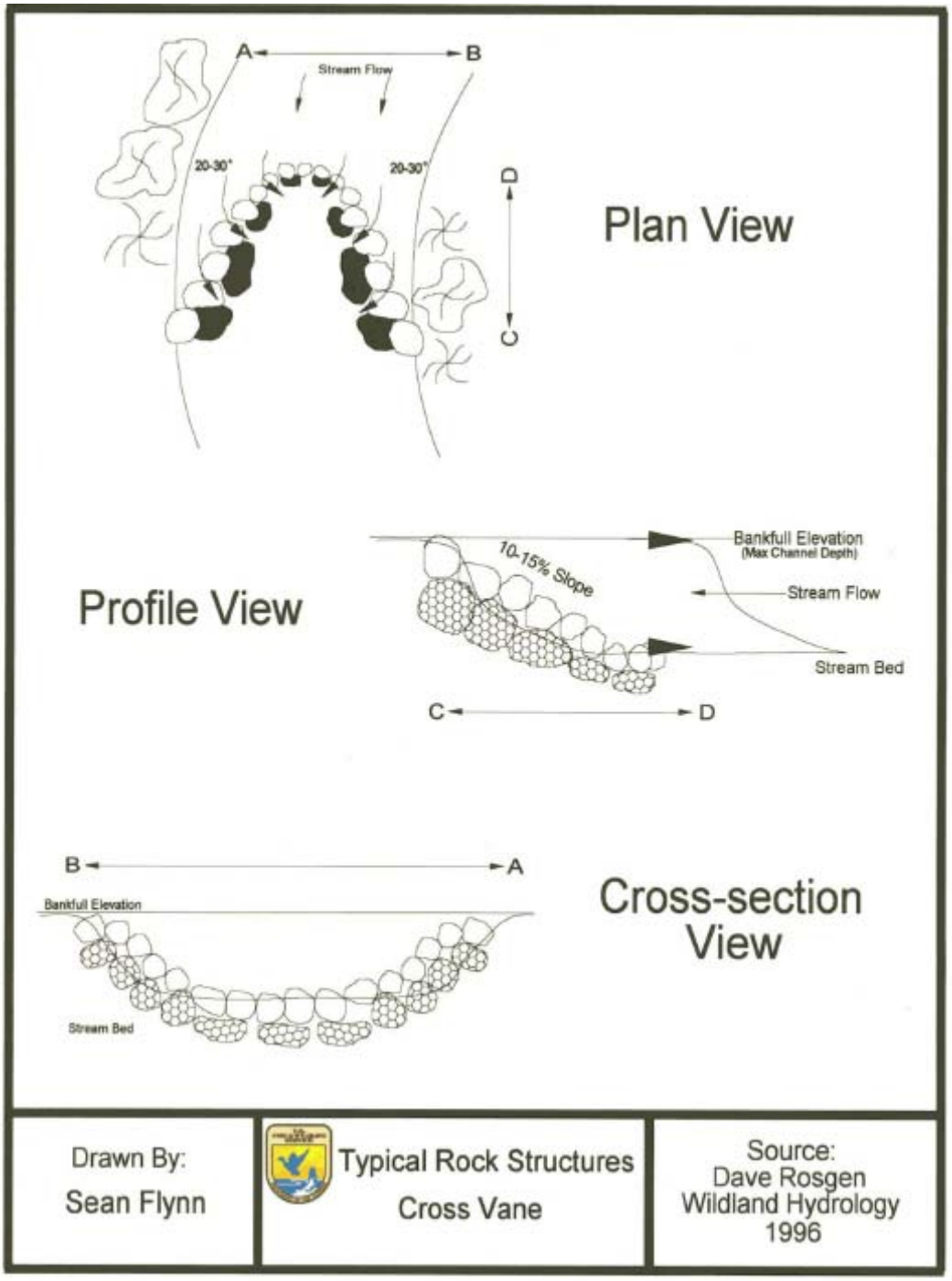


Figure 11. Cross-Vane using logs and a duck-bill anchor

Log Cross-Vane


LOG CROSS VANE
(LOW FLOW CHANNEL STRUCTURE)
Plan View
Logs Buried In Trench
With Large Rock
20 - 30 Degrees
From Streambank
1/3 Bank-full Width
Logs Pinned Together
With Rebar
FLOW
1/3 Bank-full Width
Section View
Bank-full
Water Level
Normal
Water Level
2 - 7 % Slope
Stream Bottom
Plan View
Wing And Sill Logs Buried
In Trench With Large Rock
Rock
Omitted
For
Clarity
Sill Logs
30 Degrees
From Streambank
60 Degrees
From Streambank
Wing Log
FLOW
8 ft. Section
Face Log
2" X 6" Oak Planking
NOTE: Mud sill cribbing constructed in 8 ft. sections.
Section View
Wing Log
Normal
Water Level
Sill Log
Stream Bottom
Wing And Sill Logs Buried
In Trench With Large Rock

Mud Sill


A
B
Stream Flow
20-30°
20-30°
D
C
Plan View
Profile View
10-15% Slope
Bankfull Elevation
(Max Channel Depth)
Stream Flow
Stream Bed
C
D
B
A
Bankfull Elevation
Stream Bed
Cross-section View
Drawn By:
Sean Flynn
Typical Rock Structures
Cross Vane
Source:
Dave Rosgen
Wildland Hydrology
1996

Rock Vane

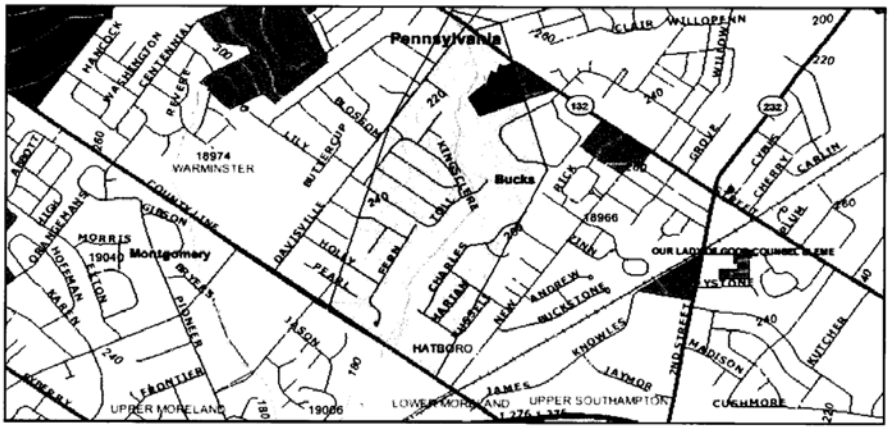
Appendix C

Relevant Project Correspondence

PNDI Project Environmental Review Receipt Project Search ID: 20091113217531

1. PROJECT INFORMATION

Project Name: **Southampton Creek Stream Restoration Project**
Date of review: **11/13/2009 9:19:05 AM**
Project Category: **Habitat Conservation and Restoration,In-stream habitat restoration (habitat improvement structures)**
Project Area: **324.2** acres
County: **Bucks,Montgomery** Township/Municipality: **Upper Southampton,Warminster,Upper Moreland**
Quadrangle Name: **HATBORO**
ZIP Code: **18966,18974**



2. SEARCH RESULTS

Agency	Results	Response
PA Game Commission	No Known Impact	No Further Review Required
PA Department of Conservation and Natural Resources	**Conservation Measure**	**No Further Review Required, See Agency Comments**
PA Fish and Boat Commission	No Known Impact	No Further Review Required
U.S. Fish and Wildlife Service	No Known Impact	No Further Review Required

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate that while threatened and endangered and/or special concern species and resources are in the project vicinity, no adverse impacts are anticipated. Therefore, based on the information you provided, no further coordination is required with the jurisdictional agencies. However, the jurisdictional agency/agencies recommend the project proponent/applicant follow the Conservation Measures indicated in their entirety. If a DEP permit is required for this project, DEP has the discretion to incorporate one or more Conservation Measures into its permit. This response does not reflect potential agency concerns regarding potential impacts to other ecological resources, such as wetlands.

Note that regardless of PNDI search results, projects requiring a Chapter 105 DEP individual permit or GP 5, 6, 7, 8, 9 or 11 in certain counties (Adams, Berks, Bucks, Carbon, Chester, Cumberland, Delaware, Lancaster, Lebanon, Lehigh, Monroe, Montgomery, Northampton, Schuylkill and York) must comply with the bog turtle habitat screening requirements of the PASPGP.

RESPONSE TO QUESTION(S) ASKED

Q1: "Accurately describe what is known about wetland presence in the project area or on the land parcel by selecting ONE of the following. ""Project"" includes all features of the project (including buildings, roads, utility lines, outfall and intake structures, wells, stormwater retention/detention basins, parking lots, driveways, lawns, etc.), as well as all associated impacts (e.g., temporary staging areas, work areas, temporary road crossings, areas subject to grading or clearing, etc.). Include all areas that will be permanently or temporarily affected -- either directly or indirectly -- by any type of disturbance (e.g., land clearing, grading, tree removal, flooding, etc.). Land parcel = the lot(s) on which some type of project(s) or activity(s) are proposed to occur ."
Your answer is: **"5. The specific project area (that is, project layout or "footprint") has not yet been identified, but the land parcel on which the project will occur has been investigated by someone qualified to identify and delineate wetlands, and wetlands were located on the land parcel. "**

3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for one year** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt.

PA Game Commission

RESPONSE: No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Department of Conservation and Natural Resources

DCNR Species:
Scientific Name: Amelanchier canadensis
Common Name: Serviceberry
Current Status: Special Concern Species*
Proposed Status: Endangered

RESPONSE: Conservation Measure: In order to maintain or improve wetland habitat, conserve at least a

300-foot wide upland buffer around each wetland, a 150 foot wide buffer on each side of perennial waterways, as well as a buffer of 50 feet wide on each side of intermittent waterways. When adequately vegetated, these upland buffers will act to filter pollutants (e.g., sediment, fertilizers, pesticides, road salt), and stabilize streambanks (preventing or minimizing erosion). Avoid any construction, earth disturbance, and chemical application (e.g., fertilizer, pesticide) in the wetland and upland buffer. If other activities are being considered (e.g., timber harvesting, agricultural use, land development, streambank stabilization, tree planting, control of exotic plant species), conduct a review under those project categories.

PA Fish and Boat Commission

RESPONSE: No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

U.S. Fish and Wildlife Service

RESPONSE: No impacts to **federally** listed or proposed species are anticipated. Therefore, no further consultation/coordination under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.* is required. Because no take of federally listed species is anticipated, none is authorized. This response does not reflect potential Fish and Wildlife Service concerns under the Fish and Wildlife Coordination Act or other authorities.

* Special Concern Species or Resource - Plant or animal species classified as rare, tentatively undetermined or candidate as well as other taxa of conservation concern, significant natural communities, special concern populations (plants or animals) and unique geologic features.
** Sensitive Species - Species identified by the jurisdictinal agency as collectible, having economic value, or being susceptible to decline as a result of visitation.

4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. For cases where a "Potential Impact" to threatened and endangered species has been identified before the application has been submitted to DEP, the application should not be submitted until the impact has been resolved. For cases where "Potential Impact" to special concern species and resources has been identified before the application has been submitted, the application should be submitted to DEP along with the PNDI receipt, a completed PNDI form and a USGS 7.5 minute quadrangle map with the project boundaries delineated on the map. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. DEP and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at http://www.naturalheritage.state.pa.us.

5. ADDITIONAL INFORMATION

The PNDI environmental review website is a **preliminary** screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

6. AGENCY CONTACT INFORMATION

PA Department of Conservation and Natural Resources
Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552, Harrisburg, PA. 17105-8552
Fax:(717) 772-0271

U.S. Fish and Wildlife Service
Endangered Species Section
315 South Allen Street, Suite 322, State College, PA. 16801-4851
NO Faxes Please.

PA Fish and Boat Commission
Division of Environmental Services
450 Robinson Lane, Bellefonte, PA. 16823-7437
NO Faxes Please

PA Game Commission
Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA. 17110-9797
Fax:(717) 787-6957

7. PROJECT CONTACT INFORMATION

Name:_____
Company/Business Name:_____
Address:_____
City, State, Zip:_____
Phone:(_____)_____Fax:(_____)_____
Email:_____

8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.

_____ _____
applicant/project proponent signature date

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA GAME COMMISSION
2001 ELMERTON AVENUE, HARRISBURG, PA
17110

"TO MANAGE ALL WILD BIRDS, MAMMALS AND THEIR HABITATS FOR CURRENT AND FUTURE GENERATIONS."

PNDI Project Review

September 18, 2009

Mr. Mark Eberle
Department of the Army
Philadelphia District, Corps of Engineers
Wanamaker Building, 100 Penn Square East
Philadelphia, PA 19107-3390

PNDI Project Review
Southampton Creek Stream Restoration
Upper Southampton Township, Bucks County, PA

Dear Mr. Eberle:

Thank you for submitting information about the above referenced project for review. The Pennsylvania Game Commission (PGC) screened this project for potential impacts to species and resources of concern under PGC responsibility, which includes birds and mammals only.

No Impact Anticipated

PNDI records indicate that no known occurrences of species or resources of concern under PGC jurisdiction occur in the vicinity of the project. Therefore, the above-referenced project is not expected to impact any birds or mammals of concern, and no further coordination with the PGC is necessary for this project at this time.

This response represents the most up-to-date summary of the PNDI data files and is valid for one (1) year from the date of this letter. An absence of recorded information does not necessarily imply actual conditions on site. Should project plans change or additional information on listed or proposed species become available, this determination may be reconsidered.

Should the proposed work continue beyond the period covered by this letter, please resubmit the project to this agency as an "Update" (including an updated PNDI receipt, project narrative and accurate map). If the proposed work has not changed and no additional information concerning listed species is found, the project will be cleared for PNDI requirements under this agency for an additional year.

This finding applies to impacts to birds and mammals only. To complete your review of state and federally-listed threatened and endangered species and species of special concern, please be sure that the U.S. Fish and Wildlife Service, the PA Department of Conservation and Natural Resources, and/or the PA Fish and Boat Commission have been contacted regarding this project as directed by the online PNDI ER Tool found at www.naturalheritage.state.pa.us.

Sincerely,

James R. Leigey
Wildlife Impact Review Coordinator
Division of Environmental Planning
And Habitat Protection
Bureau of Wildlife Habitat Management
Phone: 717-787-4250, Extension 3128
Fax: 717-787-6957
E-Mail: jleigey@state.pa.us

A PNHP Partner

Pennsylvania Natural Heritage Program

Attachment

Cc: File

Pennsylvania Fish & Boat Commission

established 1866

Division of Environmental Services
Natural Diversity Section
450 Robinson Lane
Bellefonte, PA 16823-9620
(814) 359-5237 Fax: (814) 359-5175

September 24, 2009

IN REPLY REFER TO
SIR # 32635

MARK EBERLE
DEPARTMENT OF THE ARMY
WANAMAKER BUILDING
100 PENN SQUAGE EAST
PHILADELPHIA, PA 19107-3390

RE: Species Impact Review (SIR) - Rare, Candidate, Threatened and Endangered Species
SOUTHAMPTON CREEK STREAM RESTORATION PROJECT
BUCKS County, Pennsylvania

This responds to your inquiry about a Pennsylvania Natural Diversity Inventory (PNDI) Internet Database search "potential conflict" or a threatened and endangered species impact review. These projects are screened for potential conflicts with rare, candidate, threatened or endangered species under Pennsylvania Fish & Boat Commission jurisdiction (fish, reptiles, amphibians, aquatic invertebrates only) using the Pennsylvania Natural Diversity Inventory (PNDI) database and our own files. These species of special concern are listed under the Endangered Species Act of 1973, the Wild Resource Conservation Act, and the Pennsylvania Fish & Boat Code (Chapter 75), or the Wildlife Code. The absence of recorded information from our files does not necessarily imply actual conditions on site. Future field investigations could alter this determination. The information contained in our files is routinely updated. A Species Impact Review is valid for one year only.

__X__ ***NO ADVERSE IMPACTS EXPECTED FROM THE PROPOSED PROJECT***

__X__ Except for occasional transient species, rare, candidate, threatened or endangered species under our jurisdiction are not known to exist in the vicinity of the project area. Therefore, no biological assessment or further consultation regarding rare species is needed with the Commission. Should project plans change, or if additional information on listed or proposed species becomes available, this determination may be reconsidered.

____ An element occurrence of a rare, candidate, threatened, or endangered species under our jurisdiction is known from the vicinity of the proposed project. However, given the nature of the proposed project, the immediate location, or the current status of the nearby element occurrence(s), no adverse impacts are expected to the species of special concern.

If you have any questions regarding this review, please contact the biologist indicated below:

____	Chris Urban	814-359-5113	__X__	Kathy Gipe	814-359-5186
____	Nevin Welte	814-359-5234	____	Bob Morgan	814-359-5129

Thank you in advance for your cooperation and attention to this important matter of species conservation and habitat protection.

SIGNATURE: Christopher C. Urban DATE: September 24, 2009

Christopher A. Urban
Chief, Natural Diversity Section

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
55 Great Republic Drive
Gloucester, MA 01930-2276

OCT 20 2009

Mark Eberle
Philadelphia District, Corps of Engineers
Wanamaker Building, 100 Penn Square East
Philadelphia, Pennsylvania 19107-3390

Dear Mr. Eberle,

This is in response to your letter dated September 14, 2009 regarding the proposed stream restoration along Southampton Creek in Upper Southampton Township, Pennsylvania. Your letter requests information regarding any species listed as threatened or endangered by NOAA's National Marine Fisheries Service (NMFS).

While several species of listed sea turtles occur seasonally in Delaware waters, including Delaware Bay, and there is a population of endangered shortnose sturgeon (*Acipenser brevirostrum*) in the Delaware River, no listed species are known to occur in Southampton Creek. As such, no further coordination with NMFS Protected Resources Division regarding the proposed project is necessary. Should project plans change or new information become available that changes the basis for this determination, further coordination should be pursued. If you have any questions regarding these comments, please contact Julie Crocker of my staff at (978)282-8480 or by e-mail (Julie.Crocker@Noaa.gov).

NMFS' Habitat Conservation Division is responsible for overseeing programs related to Essential Fish Habitat (EFH) designated under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and other NOAA trust resources. More information on essential fish habitat designations in the Northeastern United States is located on the Habitat Conservation Division web site at http://www.nero.noaa.gov/hcd/webintro.html. If you have not done so already, I recommend that you contact Karen Greene in NMFS' Habitat Conservation Division to determine if coordination regarding EFH or other trust resources is necessary (732)872-3077.

Sincerely,

Mary A. Colligan
Assistant Regional Administrator
for Protected Resources

File Code: Sec 7 No Species Present 2009

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Habitat Conservation Division
James J. Howard Marine
Sciences Laboratory
74 Magruder Road
Highlands, NJ 07732

October 5, 2009

Minas M. Arabatzis, Chief
Planning Branch
U.S. Army Corps of Engineers
Philadelphia District
Wanamaker Building
100 Penn Square East
Philadelphia, PA 19107-3390

ATTN: Mr. Mark Eberle

Dear Mr. Arabatzis:

This responds to your letter dated September 14, 2009 requesting our participation in the scoping process for alternatives for stream restoration along Southampton Creek from the intersection of Davisville Road and Street Road to the bridge on County Line Road in Upper Southampton Township, PA. Southampton Creek does not provide habitat for NOAA trust resources. Due to our limited staff and the lack of resources in the project area, we are unable to participate in the scoping process for this project.

Although NOAA resources do not occur in the project area, we support fully the efforts of the Army Corps and Upper Southampton Township to restore Southampton Creek. Southampton Creek is tributary to Pennypack Creek. Portions of Pennypack Creek provide habitat for a variety of resources under our jurisdiction including American shad (*Alosa sapidissima*), blueback herring (*Alosa aestivalis*), alewife (*Alosa pseudoharengus*), white perch (*Morone americana*), hickory shad (*Alosa mediocris*), gizzard shad (*Dorosoma cepedianum*) and striped bass (*Morone saxatilis*). Any efforts to restore bank stability, improve aquatic habitat and re-establish the sediment transport cycle in Southampton Creek will likely have downstream benefits.

Thank you for the opportunity to participate in the scoping process for this project. If you have any questions, please contact Karen Greene at 732 872-3023.

Sincerely,

Stanley W. Gorski
Field Offices Supervisor

cf: PRD – J. Crocker
RC- B. Bearmore

Appendix D

Wetland Delineation

US Army Corps of Engineers

Southampton Creek Stream Restoration
Southampton, Pennsylvania
Wetland Delineation Report
April 2010

By *Michael H. Hayduk*
Senior Staff Biologist
U.S. Army Corps of Engineers
Philadelphia District
CENAP-OP-R
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1.0 INTRODUCTION

This report is being provided to describe the results of a March 25th & 26th, 2010 wetland delineation conducted along Southampton Creek from Street Road to County Line Road in Southampton Township, Bucks County, Pennsylvania (see Figure 1). The delineation was performed to support a proposed stream restoration project under investigation and design by Planning Division, U.S. Army Corps of Engineers (Corps). The stream restoration project involves channel reconstruction and stabilization as well as riparian buffer improvements.

2.0 METHODOLOGY

Wetlands were delineated utilizing the U.S. Army Corps of Engineers Wetlands Delineation Manual (dated January 1987) Technical Report Y-87-1. For the purpose of delineating aquatic resources associated with this project, a study boundary, approximately 100' wide along each side of the creek, was established from Street Road to County Line Road. The site was then evaluated by technical staff with Corps (Mr. Michael Hayduk and Mr. Todd Schiable) and Pennsylvania Department of Environmental Protection (Mr. Randy Brown) by walking the entire study limit. Various vegetative communities were identified within the study limits. Hydrological conditions were examined and soil samples were taken to determine if wetlands were present. According to the 1987 delineation manual, all three parameters (Hydric Soils, Hydrology and Hydrophytic Vegetation) must be present in order to make a positive finding of wetlands. Soil samples were taken in different representative vegetative communities and recorded on a data sheet. A Munsell Soil Color chart was utilized to determine the soil color.

Other aquatic resources, such as stream, ponds and rivers, were evaluated utilizing regulations contained in 33 CFR 328.3(a). The boundaries of such aquatic features are determined by either the ordinary high water mark, high tide line or mean high water mark.

The wetland boundary was then surveyed located via a differential global positioning system (DGPS). The DGPS equipment used for this task was a survey-grade Trimble Pro X/XR system with a portable differential antenna that collected real-time, differentially-corrected satellite data. According to the manufacturer, the accuracy of horizontal fixes from the unit is plus/minus approximately 20 inches with no data post processing.

All wetland boundary data was downloaded directly into an Arcview GIS system for data manipulation and map plotting. These points were layered onto an aerial photo of the area. Boundaries of the wetland and plant communities were determined by extrapolation between consecutive points from the data taken in the field and using the aerial photo as a reference. Wetland delineation and data point coordinates are included in Appendix A.

SOUTHAMPTON CREEK PROJECT
SOUTHAMPTON TOWNSHIP, BUCKS COUNTY, PENNSYLVANIA.

AERIAL PHOTOGRAPH

FIGURE 1

3.0 PRELIMINARY INVESTIGATION

A pre-site visit investigation and data collection effort was conducted to determine the potential presence of resources in the study area to include wetlands, soil types, and hydrologic resources.

3.1 National Wetland Inventory

The National Wetlands Inventory (NWI) Maps for the area were reviewed prior to the site investigation. According to the NWI map (Figure 2), several designated wetland types occur within the area of the investigation. The USFWS classification system is based on "Classification of Wetlands and Deep Water Habitats of the United States (Cowardin, 1979)" to designate wetland types on their NWI maps. According to the Cowardin System, the types of wetlands occurring in the study area were as follows:

1) PEM: Palustrine Emergent;

2) PFO1: Palustrine Forested -Seasonally Flooded/Saturated;

3) PUB: Palustrine-Unconsolidated Bottom-Permanent.

3.2 Soil Survey

The Bucks County Soil Survey was reviewed prior to the delineation to determine the approximate locations of hydric soils within the study limits. Soil mapping at this level is a general planning tool and boundaries are not specific enough to determine the location of hydric soils.

According to the Bucks County Soil Survey (Figure 3), hydric soils that may occur in the area include Bowmansville and Chalfont Soil Series. These soils are listed as hydric soils on the National Hydric Soils List or contain components of hydric soils.

CbA - Chalfont silt loam, 0 to 3 percent slopes
Bo - Bowmansville-Knauers silt loams

4.0 SITE VISIT AND DELINEATION

Technical staff from the U.S. Army Corps of Engineers and Pennsylvania Department of Environmental Protection conducted a site and delineation of the project area on March 25th and March 26th, 2010. A team of biologists examined the study limits and identified various vegetative communities. Data was collected within each vegetative community and recorded on data sheets (Appendix A). The data collected dominance of vegetation within each of the five vegetative stratum, evidence of hydrology and soil texture/color.

SOUTHAMPTON CREEK PROJECT
SOUTHAMPTON TOWNSHIP, BUCKS COUNTY, PENNSYLVANIA.

NATIONAL WETLAND INVENTORY

FIGURE 2

SOUTHAMPTON CREEK PROJECT
SOUTHAMPTON TOWNSHIP, BUCKS COUNTY, PENNSYLVANIA.

USDA SOIL SURVEY

FIGURE 3

The other team comprised a biologist and technical staff conducting the GPS survey. This team recorded photographs of the project site (Appendix B), collected data for the wetland assessment and determined the location of the ordinary high water mark of the stream.

4.1 Vegetation

Vegetative communities were identified within the study limits. Community designations were based upon species composition (i.e., vegetative dominance) and ecological characteristics (e.g., floodplain or slope). Dominant vegetative species were determined according to the "50/20 Rule" prescribed in the Corps wetlands delineation manual for each of the four vegetative stratum (herbaceous, tree, sapling/shrub and vine) within each community. Those species were then rated, according to the "National List of Plant Species that Occur in Wetlands" (USFWS, 1988), for their frequency to occur in wetlands. A rating of OBL (obligatory) indicates that a plant has a 99% affinity for growth in wetlands. A rating of FACW (facultative wetland) indicates that a plant has a 99% to 66% affinity for growth in wetlands. A rating of FAC (facultative) indicates that a plant has a 66% to 33% affinity for growth in wetlands. A rating of FACU (facultative upland) indicates that a plant has a 33% to 1% affinity for growth in wetlands. A rating of UPL (upland) indicates that a plant has a less than 1% affinity for growth in wetlands. Plants rated "NL" or "NI" are either not listed or not indicated and are treated as upland species for determining wetland vegetation. A modifier of "+" or "-" indicates a tendency to either wetter (+) or drier (-) side of a rating. For an area to have a positive finding of hydrophytic vegetation (wetland), greater than 50% of all dominants must be FAC or wetter.

The project area was found to have four basic vegetative communities. Those communities are forested uplands, forested wetlands, emergent wetlands, and herbaceous uplands. Within and among those communities, species composition varied but generally adhered to a common ecologic setting and condition.

Herbaceous upland community comprises upland residential lawns, field and upland areas of the utility easements. Dominant vegetation within this community is comprised of Lesser Celendine *(Ranunculus ficaria, NL),* English Plantain *(Plantago lanceloata, NL*), Common Cinquefoil (*Potentilla simplex, NL*), and Kentucky Bluegrass (*Poa pratensis, FACU*). The largest herbaceous upland habitat was found adjacent to the farm house and pond in the northwestern portion of the project limits. Within this area, Little Bluestem Grass (*Andropogon virginicus, FACU*) and Birds-foot Trefoil (*Lotus corniculatus, FACU*) become dominant.

Emergent wetlands were identified adjacent to Southampton Creek and within the floodplain of the creek. The largest emergent wetland was found downstream of Toll Drive and east of Southampton Creek. This emergent community is dominated by Reed Canary Grass (*Phalaris arundinacea*), and Skunk Cabbage (*Symplocarpus foetidus*). The other emergent wetlands were found in a wooded floodplain and are dominated by Skunk Cabbage (*Symplocarpus foetidus*).

Forested uplands were identified within much of the floodplain corridor. Dominant vegetation identified within this community is comprised of Red Maple (Acer rubrum, FAC), White Ash (Fraxinus americana, FACU), Black Cherry (Prunus serotina, FACU), Multiflora Rose (Rosa multiflora, FACU) and Lesser Celendine *(Ranunculus ficaria, NL).* Many other non-dominant species were found within the forested uplands.

Forested wetlands were identified within small portions of the floodplain corridor. Dominant vegetation identified within this community is comprised of Red Maple (*Acer rubrum*, FAC), Green Ash (*Fraxinus pennsylvanica*, FACW), Pin Oak (*Quercus palustris*, FACW), Skunk Cabbage (*Symplocarpus foetidus*) and Spicebush (*Lindera benzoin*, FACW).

4.2 Hydrology

Any indicator of wetland hydrology that was observed during the investigation was noted on the data sheets (Appendix A). Primary wetland hydrology indicators within the area included inundation or saturation in the upper 12 inches of soil. This observation, while a snap shot in time (i.e., two field investigation days), was made within the growing season for this region. Rainfall, in general, has been average or slightly above average. Evidence of soils saturation was noted at the time of soil borings within each vegetative community observed. Southampton Creek and its tributaries are shown on a U.S. Geological Survey Map (Figure 4).

4.3 Soils

Soil data was gathered from the USDA NRCS Soil Survey. The National Hydric Soils List was than referenced to identify the soils that could potentially occur in the area as hydric or non-hydric. During the investigation, the soils within the wetlands appeared to be more similar to the Doylestown Soil Series then Bowmansville. Additionally, while the soil survey shows most of the floodplain as Chalfont, it appears to be more like the Landsdale Loam Soil Series. Hydric soil indicators that were observed within wetland areas included low chroma matrixes with bright concentrations and the presence of muck within the emergent wetlands.

5.0 RESULTS AND DISCUSSION

Those vegetative communities dominated by hydrophytic vegetation that had evidence of hydric soil and wetland hydrology, were mapped as wetlands. No one limiting factor was found within this study area to separate uplands from wetlands but rather varied along the stream corridor. A dramatic shift in all three parameters was observed in much of the project limits. Approximately 2.2 acres of emergent wetlands were identified within the study boundary. Approximately .74 acres of forested wetlands were identified within the study boundary. Figure 5 and 6 show the eleven wetland areas identified within the project limits. A complete listing of acreage for each wetland identified is contained in Appendix C.

Most of the wetlands identified are located within the riparian corridor of Southampton Creek. Being located within the riparian area, all of the wetlands serve important habitat and water quality functions. This is especially true for the largest of the wetland complexes located south (downstream) of Toll Drive. The emergent wetland, having a mucky substrate, can be utilized by amphibians and reptiles for feeding, hibernation, estivation and breeding. The forested wetlands immediately adjacent to the emergent wetlands provides a habitat continuum for many wildlife species such as Wood Duck (observed on March 26, 2010) and other species dependant on forested wetlands. The species composition, limited degree of invasive and non-native vegetation and size of both the forested and emergent wetlands south of Toll Drive makes this area highly valuable and rare in comparison to southern Bucks County.

Due to the proximity to residents, most of the wetland/upland boundary was not flagged. Biologists on the team walked with the GPS technician along the boundary. Individual points or continuous readings were taken and used to establish the wetlands/upland boundary. The boundary was flagged around the pond as sufficient distance exists between residents and the wetlands.

The ordinary high water mark (OHWM) of several waterways was survey located. The boundary is defined in Federal regulations 33 CFR 328.3(a). The OHWM is the line on the shoreline of a stream or other waterbody impressed by the highest annual flow in the absence of storm induced levels. The OHWM is regulatory boundary used for the Clean Water Act and is often used by the PADEP for establishing State jurisdiction.

4.0 REFERENCES

U.S. Army Corps of Engineers, Waterways Experiment Station, Technical Report Y-87-1, January, 1987. Corps of Engineers Wetlands Delineation Manual.

Trimble Navigation Limited, 1998. Trimble Pro X/XR Receiver Manual.

United States Fish and Wildlife Service, 2001. National Wetlands Inventory Maps.

Cowardin, Lewis M., 1979. Classification of Wetlands and Deep Water Habitats of the United States.

United States Department of Agriculture, Soil Conservation Service, 1971, Bucks County Pennsylvania Soil Survey.

National Hydric Soils List, Pennsylvania.

Munsell, 1992. Munsell Color Chart.

Reed, Porter B. Jr., United States Fish and Wildlife Service, National Ecology Research Center, 1988. National List of Plant Species that Occur in Wetlands, Northeast (Region 1).

United State Department of Agriculture, Natural Resource Conservation Service, 2006. Field Indicators of Hydric Soils in the United States.

SOUTHAMPTON CREEK PROJECT
SOUTHAMPTON TOWNSHIP, BUCKS COUNTY, PENNSYLVANIA.

USGS TOPOGRAPHIC MAP

FIGURE 4

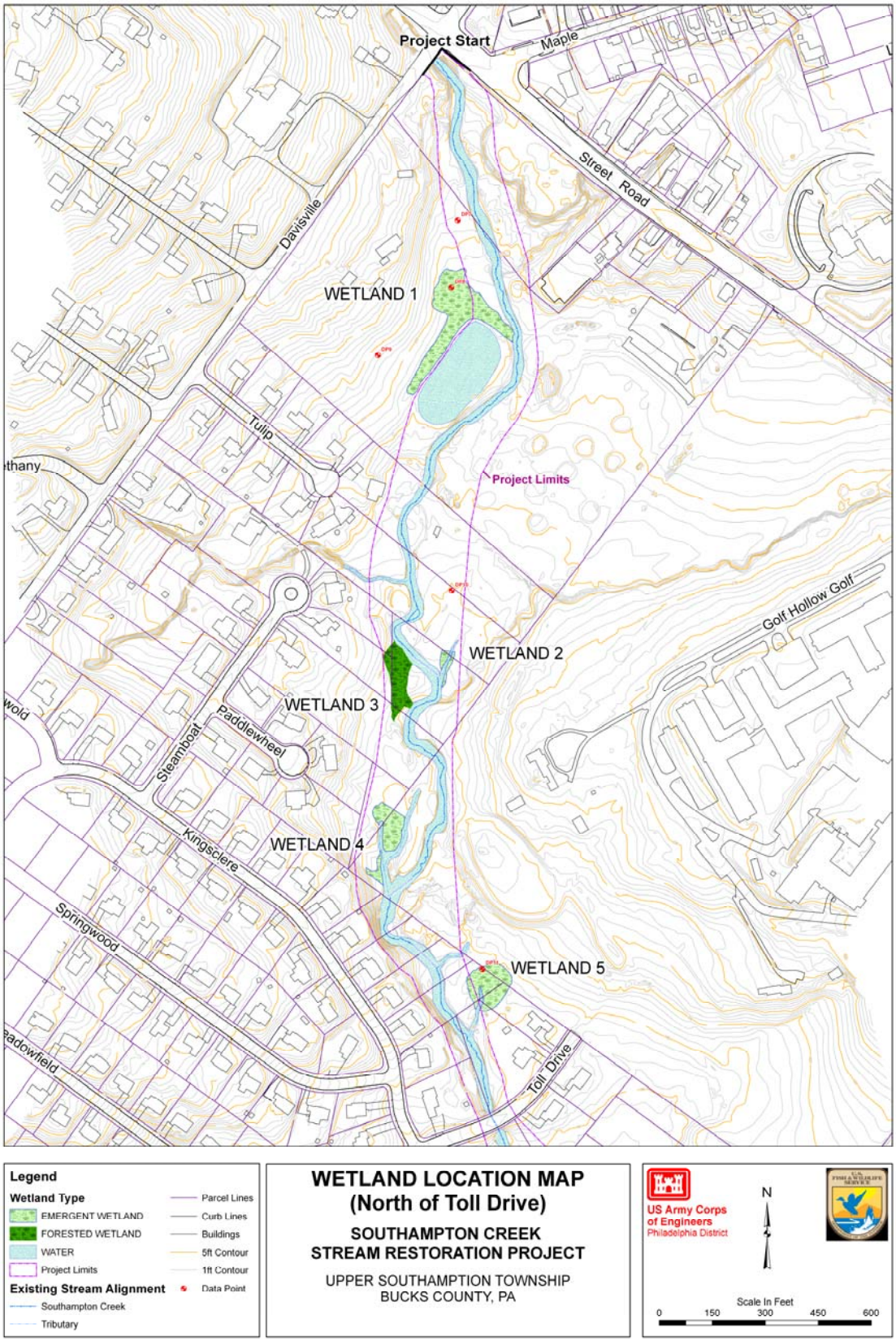

Figure 5. Wetlands located in the northern portion of the project area.

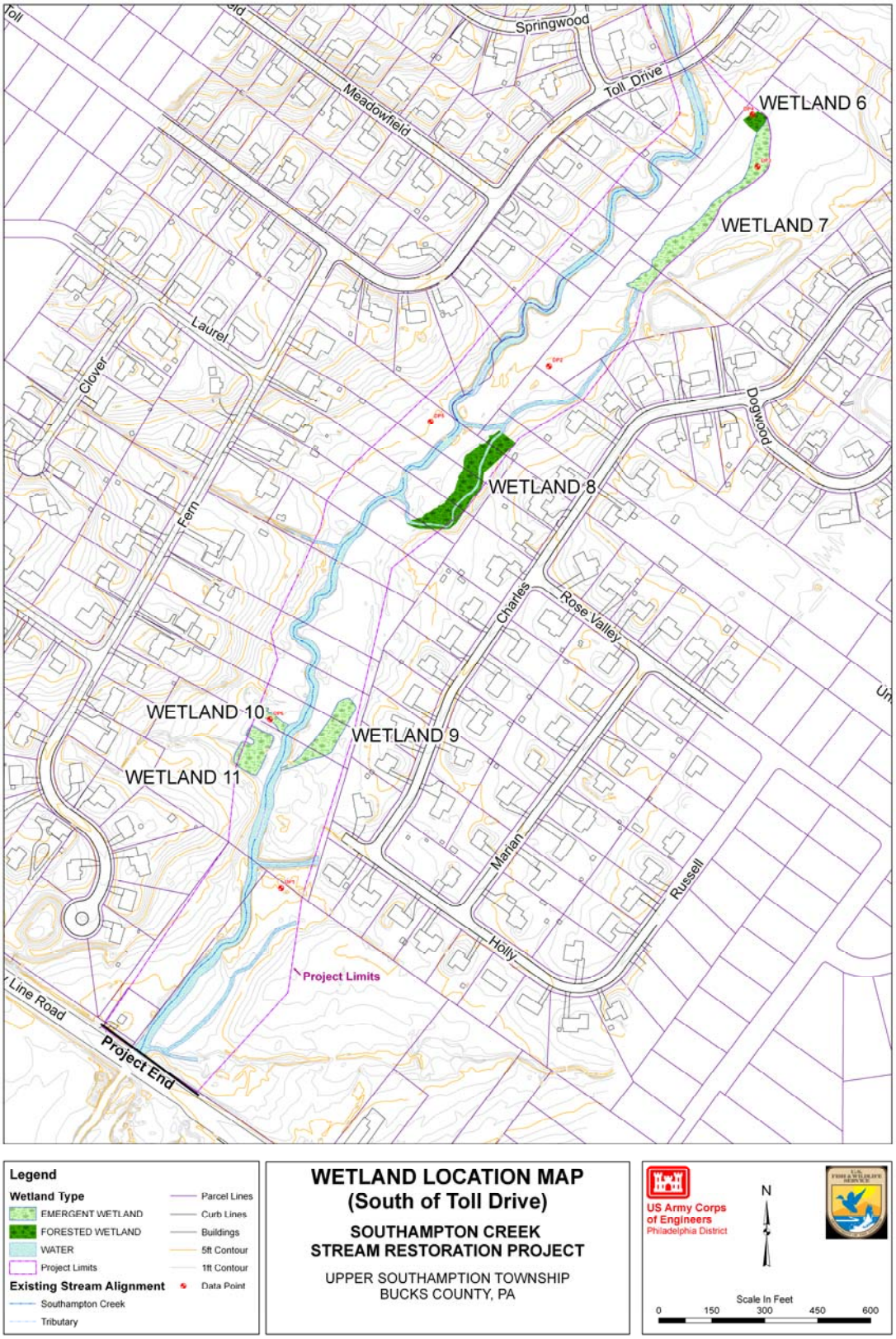

Figure 6. Wetlands located in the southern portion of the project area.

APPENDIX A
Data Sheets

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project Site:	Southampton Creek	Date:	3/25/10
Applicant/Owner:	Southampton Township	County:	Bucks
Investigator:	Hayduk	State:	Pennsylvania
		Municipality	Southampton

Do Normal Circumstances exist on the site?	☒ Yes	☐ No	Community ID:	
Is the site significantly disturbed (Atypical Situation)?	☒ Yes	☐ No	Transect ID:	
Is Area a Potential Problem Area? *(if needed, explain on reverse)*	☐ Yes	☒ No	Plot ID:	DP# 1

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Acer rubrum - Red Maple	Tree	FAC	8			
2	Celastrus scandens - Bittersweet	Liana	FACU-	9			
3	Vitus labrusca - Fox Grape	Liana	FACU	10			
4	Toxicodendron radicans - Poison Ivy	Herb	FAC	11			
5	Rosa multiflora - Multiflora Rose	Shrub-Sapling	FACU	12			
6	Ranunculus ficaria - Lesser Celendine	Herb	NL-UPL	13			
7				14			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 2/6 - 33%

Remarks:

HYDROLOGY

☐ Recorded Data (describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☐ No recorded data available

Field Observations:
- Depth of Surface Water: _____ (In.)
- Depth to Free Water in Pit: _____ (In.)
- Depth to Saturated Soil: _____ (In.)

Wetland Hydrology Indicators:

Primary Indicators:
- ☐ Inundated
- ☐ Saturated in Upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ☐ Oxidized Root Channels in Upper 12"
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (explain in remarks)

Remarks: no indicators of hydrology at this location

SOILS

Map Unit Name (Series and Phase): _____
Taxonomy (Subgroup): _____

Drainage Class: ☐
Field Observations Confirm Mapped Type? Yes ☐ No ☐

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-6	a	10YR 3/4			silt loam
6-12	b	10YR 4/6			sandy clay loam

Hydric Soil Indicators:
- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ Organic Streaking in Sandy Soils
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Listed on National Hydric Soils List
- ☐ Listed on Local Hydric Soils List
- ☐ Other (explain in remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	☐ Yes	☒ No	Is this Sampling Point Within a Wetland?	☐ Yes ☒ No
Wetland Hydrology Present?	☐ Yes	☒ No		
Hydric Soils Present?	☐ Yes	☒ No		

Remarks:

Form Content Approved by HQUSACE 3/92

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project Site:	Southampton Creek	Date:	3/25/10
Applicant/Owner:	Southampton Township	County:	Bucks
Investigator:	Hayduk	State:	Pennsylvania
		Municipality	Southampton
Do Normal Circumstances exist on the site?	☒ Yes ☐ No	Community ID:	
Is the site significantly disturbed (Atypical Situation)?	☒ Yes ☐ No	Transect ID:	
Is Area a Potential Problem Area? *(if needed, explain on reverse)*	☐ Yes ☒ No	Plot ID:	DP# 2

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Acer rubrum - Red Maple	Tree	FAC	8			
2	Lindera benzoin - Spicebush	Shrub-Sapling	FACW-	9			
3				10			
4				11			
5	Rosa multiflora - Multiflora Rose	Shrub-Sapling	FACU	12			
6	Ranunculus ficaria - Lesser Celendine	Herb	NL-UPL	13			
7				14			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 2/4

Remarks:

HYDROLOGY

☐ Recorded Data (describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☐ No recorded data available

Field Observations:
- Depth of Surface Water: _____ (In.)
- Depth to Free Water in Pit: _____ (In.)
- Depth to Saturated Soil: _____ (In.)

Wetland Hydrology Indicators:

Primary Indicators:
- ☐ Inundated
- ☐ Saturated in Upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ☐ Oxidized Root Channels in Upper 12"
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (explain in remarks)

Remarks: no indicators of hydrology at this location

SOILS

Map Unit Name (Series and Phase): _____
Taxonomy (Subgroup): _____

Drainage Class: ☐ ☐
Field Observations Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-12	a	7.5YR 4/2			silt loam
12-16	b	10YR 4/2			clay loam

Hydric Soil Indicators:
- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ Organic Streaking in Sandy Soils
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Listed on National Hydric Soils List
- ☐ Listed on Local Hydric Soils List
- ☐ Other (explain in remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	☐ Yes	☒ No	Is this Sampling Point Within a Wetland?	☐ Yes ☒ No
Wetland Hydrology Present?	☐ Yes	☒ No		
Hydric Soils Present?	☐ Yes	☒ No		

Remarks:

Form Content Approved by HQUSACE 3/92

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project Site:	Southampton Creek	Date:	3/25/10
Applicant/Owner:	Southampton Township	County:	Bucks
Investigator:	Hayduk	State:	Pennsylvania
		Municipality	Southampton
Do Normal Circumstances exist on the site?	☒ Yes ☐ No	Community ID:	
Is the site significantly disturbed (Atypical Situation)?	☒ Yes ☐ No	Transect ID:	
Is Area a Potential Problem Area? *(if needed, explain on reverse)*	☐ Yes ☒ No	Plot ID:	DP# 3

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Symplocarpus foetidus - Skunk Cabbage	Herb	OBL	8			
2	Phalaris arundinacea - Canary Reed Grass	Herb	FACW	9			
3				10			
4				11			
5				12			
6				13			
7				14			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 2/2

Remarks: non-dominant presence of tussuk sedge and touch-me-not.

HYDROLOGY

☐ Recorded Data (describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☐ No recorded data available

Field Observations:
- Depth of Surface Water: _____ (In.)
- Depth to Free Water in Pit: _____ (In.)
- Depth to Saturated Soil: _____ (In.)

Wetland Hydrology Indicators:

Primary Indicators:
- ☒ Inundated
- ☒ Saturated in Upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ☐ Oxidized Root Channels in Upper 12"
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (explain in remarks)

Remarks: soil saturated to the surface. Surface water present in sporadic locations.

SOILS

Map Unit Name (Series and Phase): _____
Taxonomy (Subgroup): _____

Drainage Class: ☐ ☐
Field Observations Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-8	O	10YR 2/2			peat (organic material)
8-16	A	10YR 5/1	10YR 4/3	few/faint	silt loam

Hydric Soil Indicators:
- ☐ Histosol
- ☒ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☒ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ Organic Streaking in Sandy Soils
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Listed on National Hydric Soils List
- ☐ Listed on Local Hydric Soils List
- ☐ Other (explain in remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	☒ Yes	☐ No	Is this Sampling Point Within a Wetland?	☒ Yes	☐ No
Wetland Hydrology Present?	☒ Yes	☐ No			
Hydric Soils Present?	☒ Yes	☐ No			

Remarks:

Form Content Approved by HQUSACE 3/92

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project Site:	Southampton Creek	Date:	3/25/10
Applicant/Owner:	Southampton Township	County:	Bucks
Investigator:	Hayduk	State:	Pennsylvania
		Municipality	Southampton
Do Normal Circumstances exist on the site?	☒ Yes ☐ No	Community ID:	
Is the site significantly disturbed (Atypical Situation)?	☒ Yes ☐ No	Transect ID:	
Is Area a Potential Problem Area? *(if needed, explain on reverse)*	☐ Yes ☒ No	Plot ID:	DP# 4

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Symplocarpus foetidus - Skunk Cabbage	Herb	OBL	8			
2	Onoclea sensibilis - Sensitive fern	Herb	FACW	9			
3	Quercus palustris - Pin Oak	Tree	FACW	10			
4	Fraxinus pennsylvanica - Green Ash	Tree	FACW	11			
5	Ranunculus ficaria - Lesser Celendine	Herb	NL-UPL	12			
6				13			
7				14			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 4/5

Remarks:

HYDROLOGY

☐ Recorded Data (describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☐ No recorded data available

Field Observations:
- Depth of Surface Water: _____ (In.)
- Depth to Free Water in Pit: _____ (In.)
- Depth to Saturated Soil: _____ (In.)

Wetland Hydrology Indicators:

Primary Indicators:
- ☐ Inundated
- ☒ Saturated in Upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ☐ Oxidized Root Channels in Upper 12"
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (explain in remarks)

Remarks:

SOILS

Map Unit Name (Series and Phase): _____
Taxonomy (Subgroup): _____

Drainage Class: ☐
Field Observations Confirm Mapped Type? ☐ Yes ☐ No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-10	A	7.5YR 4/3			silt loam
10-16	B	7.5YR 5/2	10YR 5/6	few/prom	silt loam

Hydric Soil Indicators:
- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☒ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ Organic Streaking in Sandy Soils
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Listed on National Hydric Soils List
- ☐ Listed on Local Hydric Soils List
- ☐ Other (explain in remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	☒ Yes	☐ No	Is this Sampling Point Within a Wetland?	☒ Yes	☐ No
Wetland Hydrology Present?	☒ Yes	☐ No			
Hydric Soils Present?	☒ Yes	☐ No			

Remarks:

Form Content Approved by HQUSACE 3/92

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project Site:	Southampton Creek	Date:	3/25/10
Applicant/Owner:	Southampton Township	County:	Bucks
Investigator:	Hayduk	State:	Pennsylvania
		Municipality	Southampton

			Community ID:	
Do Normal Circumstances exist on the site?	☒ Yes	☐ No		
Is the site significantly disturbed (Atypical Situation)?	☒ Yes	☐ No	Transect ID:	
Is Area a Potential Problem Area? *(if needed, explain on reverse)*	☐ Yes	☒ No	Plot ID:	DP# 5

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Ranunculus ficaria - Lesser Celendine	Herb	NL-UPL	8			
2	Poa pratensis - Kentucky Bluegrass	Herb	FACU	9			
3				10			
4				11			
5				12			
6				13			
7				14			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 0/2

Remarks:

HYDROLOGY

☐ Recorded Data (describe in Remarks)
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☐ No recorded data available

Field Observations:
Depth of Surface Water: _____ (In.)
Depth to Free Water in Pit: _____ (In.)
Depth to Saturated Soil: _____ (In.)

Wetland Hydrology Indicators:

Primary Indicators:
☐ Inundated
☐ Saturated in Upper 12 inches
☐ Water Marks
☐ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized Root Channels in Upper 12"
☐ Water-Stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in remarks)

Remarks: no indicators of hydrology at this location.

SOILS

Map Unit Name (Series and Phase): _____
Taxonomy (Subgroup): _____

Drainage Class: ☐ ☐
Field Observations Confirm Mapped Type? Yes ☐ No ☐

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-6	A	10YR 3/3			silt loam
6-12	B	10YR 3/4			silt loam

Hydric Soil Indicators:
☐ Histosol
☐ Histic Epipedon
☐ Sulfidic Odor
☐ Aquic Moisture Regime
☐ Reducing Conditions
☐ Gleyed or Low-Chroma Colors
☐ Concretions
☐ Organic Streaking in Sandy Soils
☐ High Organic Content in Surface Layer in Sandy Soils
☐ Listed on National Hydric Soils List
☐ Listed on Local Hydric Soils List
☐ Other (explain in remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	☐ Yes	☒ No	Is this Sampling Point Within a Wetland? ☐ Yes ☒ No
Wetland Hydrology Present?	☐ Yes	☒ No	
Hydric Soils Present?	☐ Yes	☒ No	

Remarks:

Form Content Approved by HQUSACE 3/92

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project Site:	Southampton Creek	Date:	3/25/10
Applicant/Owner:	Southampton Township	County:	Bucks
Investigator:	Hayduk	State:	Pennsylvania
		Municipality	Southampton
Do Normal Circumstances exist on the site?	☒ Yes ☐ No	Community ID:	
Is the site significantly disturbed (Atypical Situation)?	☒ Yes ☐ No	Transect ID:	
Is Area a Potential Problem Area? *(if needed, explain on reverse)*	☐ Yes ☒ No	Plot ID:	DP# 6

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Ranunculus ficaria - Lesser Celendine	Herb	NL-UPL	8			
2	Symplocarpus foetidus - Skunk Cabbage	Herb	OBL	9			
3	Impatiens capensis - Touch-me-not	Herb	FACW	10			
4				11			
5				12			
6				13			
7				14			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 2/3

Remarks:

HYDROLOGY

☐ Recorded Data (describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☐ No recorded data available

Field Observations:
- Depth of Surface Water: _____ (In.)
- Depth to Free Water in Pit: _____ (In.)
- Depth to Saturated Soil: _____ (In.)

Wetland Hydrology Indicators:

Primary Indicators:
- ☐ Inundated
- ☒ Saturated in Upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ☐ Oxidized Root Channels in Upper 12"
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (explain in remarks)

Remarks:

SOILS

Map Unit Name (Series and Phase): _____
Taxonomy (Subgroup): _____

Drainage Class: ☐ ☐
Field Observations Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-3	A	2.5Y 3/1			silt loam
3-12	B	2.5Y 3/1	10YR 3/4	common/distinct	silt loam

Hydric Soil Indicators:
- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☒ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ Organic Streaking in Sandy Soils
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Listed on National Hydric Soils List
- ☐ Listed on Local Hydric Soils List
- ☐ Other (explain in remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	☒ Yes	☐ No	Is this Sampling Point Within a Wetland?	☒ Yes	☐ No
Wetland Hydrology Present?	☒ Yes	☐ No			
Hydric Soils Present?	☒ Yes	☐ No			

Remarks:

Form Content Approved by HQUSACE 3/92

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project Site:	Southampton Creek	Date:	3/25/10
Applicant/Owner:	Southampton Township	County:	Bucks
Investigator:	Hayduk	State:	Pennsylvania
		Municipality	Southampton
Do Normal Circumstances exist on the site?	☒ Yes ☐ No	Community ID:	
Is the site significantly disturbed (Atypical Situation)?	☒ Yes ☐ No	Transect ID:	
Is Area a Potential Problem Area? *(if needed, explain on reverse)*	☐ Yes ☒ No	Plot ID:	DP# 7

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Ranunculus ficaria - Lesser Celendine	Herb	NL-UPL	8			
2	Rosa multiflora - Multiflora Rose	Shrub-Sapling	FACU	9			
3	Robinia pseudoacacia - Black Locust	Tree	FACU-	10			
4	Picea abies - Norway Spruce	Tree	NL-UPL	11			
5				12			
6				13			
7				14			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 0/4

Remarks:

HYDROLOGY

☐ Recorded Data (describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☐ No recorded data available

Field Observations:
- Depth of Surface Water: _____ (In.)
- Depth to Free Water in Pit: _____ (In.)
- Depth to Saturated Soil: _____ (In.)

Wetland Hydrology Indicators:

Primary Indicators:
- ☐ Inundated
- ☐ Saturated in Upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ☐ Oxidized Root Channels in Upper 12"
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (explain in remarks)

Remarks: no indicators of hydrology at this location.

SOILS

Map Unit Name (Series and Phase): _____
Taxonomy (Subgroup): _____

Drainage Class: ☐
Field Observations Confirm Mapped Type? ☐ Yes ☐ No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-3	A	10YR 3/3			silt loam
3-11	B	10YR 4/4			silt loam

Hydric Soil Indicators:
- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ Organic Streaking in Sandy Soils
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Listed on National Hydric Soils List
- ☐ Listed on Local Hydric Soils List
- ☐ Other (explain in remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	☐ Yes	☒ No	Is this Sampling Point Within a Wetland?	☐ Yes ☒ No
Wetland Hydrology Present?	☐ Yes	☒ No		
Hydric Soils Present?	☐ Yes	☒ No		

Remarks:

Form Content Approved by HQUSACE 3/92

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project Site:	Southampton Creek	Date:	3/25/10
Applicant/Owner:	Southampton Township	County:	Bucks
Investigator:	Hayduk	State:	Pennsylvania
		Municipality	Southampton

			Community ID:	
Do Normal Circumstances exist on the site?	☒ Yes	☐ No	Transect ID:	
Is the site significantly disturbed (Atypical Situation)?	☒ Yes	☐ No	Plot ID:	DP# 8
Is Area a Potential Problem Area? *(if needed, explain on reverse)*	☐ Yes	☒ No		

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Ranunculus ficaria - Lesser Celendine	Herb	NL-UPL	8			
2	Juncus effusus - soft rush	Herb	FACW+	9			
3	Epilobium coloratum - willow herb	Herb	OBL	10			
4	Salix nigra - willow	Shrub-Sapling	FACW+	11			
5				12			
6				13			
7				14			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 3/4

Remarks:

HYDROLOGY

☐ Recorded Data (describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☐ No recorded data available

Field Observations:
- Depth of Surface Water: _____ (In.)
- Depth to Free Water in Pit: _____ (In.)
- Depth to Saturated Soil: _____ (In.)

Wetland Hydrology Indicators:

Primary Indicators:
- ☐ Inundated
- ☒ Saturated in Upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ☐ Oxidized Root Channels in Upper 12"
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (explain in remarks)

Remarks:

SOILS

Map Unit Name (Series and Phase): _____
Taxonomy (Subgroup): _____

Drainage Class: ☐ ☐
Field Observations Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-5	A	10YR 3/1			silt loam
5-12	B	10YR 3/2	10YR 4/4	common/distinct	silt loam

Hydric Soil Indicators:
- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☒ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ Organic Streaking in Sandy Soils
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Listed on National Hydric Soils List
- ☐ Listed on Local Hydric Soils List
- ☐ Other (explain in remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	☒ Yes	☐ No	Is this Sampling Point Within a Wetland?	☒ Yes ☐ No
Wetland Hydrology Present?	☒ Yes	☐ No		
Hydric Soils Present?	☒ Yes	☐ No		

Remarks:

Form Content Approved by HQUSACE 3/92

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project Site:	Southampton Creek	Date:	3/25/10
Applicant/Owner:	Southampton Township	County:	Bucks
Investigator:	Hayduk	State:	Pennsylvania
		Municipality	Southampton
Do Normal Circumstances exist on the site?	☒ Yes ☐ No	Community ID:	
Is the site significantly disturbed (Atypical Situation)?	☒ Yes ☐ No	Transect ID:	
Is Area a Potential Problem Area? *(if needed, explain on reverse)*	☐ Yes ☒ No	Plot ID:	DP# 9

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Andropogon virginicus - little bluestem	Herb	FACU	8			
2	Plantago lanceloata - English Plantain	Herb	NL-UPL	9			
3	Potentilla symplex - Common Cinquefolia	Herb	NL-UPL	10			
4	Lotus comiculatus - Birds-foot Trefoil	Herb	FACU	11			
5				12			
6				13			
7				14			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 0/4

Remarks:

HYDROLOGY

☐ Recorded Data (describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☐ No recorded data available

Field Observations:
- Depth of Surface Water: _____ (In.)
- Depth to Free Water in Pit: _____ (In.)
- Depth to Saturated Soil: _____ (In.)

Wetland Hydrology Indicators:

Primary Indicators:
- ☐ Inundated
- ☐ Saturated in Upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ☐ Oxidized Root Channels in Upper 12"
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (explain in remarks)

Remarks: no indicators of hydrology at this location.

SOILS

Map Unit Name (Series and Phase): _____
Taxonomy (Subgroup): _____

Drainage Class: ☐ ☐
Field Observations Confirm Mapped Type? Yes ☐ No ☐

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-5	A	10YR 3/4			silt loam
5-8	B	10YR 4/6			silt loam

Hydric Soil Indicators:
- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ Organic Streaking in Sandy Soils
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Listed on National Hydric Soils List
- ☐ Listed on Local Hydric Soils List
- ☐ Other (explain in remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	☐ Yes	☒ No	Is this Sampling Point Within a Wetland?	☐ Yes ☒ No
Wetland Hydrology Present?	☐ Yes	☒ No		
Hydric Soils Present?	☐ Yes	☒ No		

Remarks:

Form Content Approved by HQUSACE 3/92

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project Site:	Southampton Creek	Date:	3/25/10
Applicant/Owner:	Southampton Township	County:	Bucks
Investigator:	Hayduk	State:	Pennsylvania
		Municipality	Southampton
Do Normal Circumstances exist on the site?	☒ Yes ☐ No	Community ID:	
Is the site significantly disturbed (Atypical Situation)?	☒ Yes ☐ No	Transect ID:	
Is Area a Potential Problem Area? *(if needed, explain on reverse)*	☐ Yes ☒ No	Plot ID:	DP# 10

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Acer rubrum - Red Maple	Tree	FAC	8			
2	Fraxinus americana - White Ash	Tree	FACU	9			
3	Prunus serotina - Black Cherry	Shrub-Sapling	FACU	10			
4	Rosa multiflora - Multiflora Rose	Shrub-Sapling	FACU	11			
5				12			
6				13			
7				14			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 1/4

Remarks:

HYDROLOGY

☐ Recorded Data (describe in Remarks)
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☐ No recorded data available

Field Observations:
Depth of Surface Water: _____ (In.)
Depth to Free Water in Pit: _____ (In.)
Depth to Saturated Soil: _____ (In.)

Wetland Hydrology Indicators:

Primary Indicators:
☐ Inundated
☐ Saturated in Upper 12 inches
☐ Water Marks
☐ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized Root Channels in Upper 12"
☐ Water-Stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in remarks)

Remarks: no indicators of hydrology at this location.

SOILS

Map Unit Name (Series and Phase):
Taxonomy (Subgroup):

Drainage Class:
Field Observations Confirm Mapped Type? ☐ Yes ☐ No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-10	A	10YR 3/3			silt loam
10->20	B	10YR 5/1	10YR 4/6		silty clay loam

Hydric Soil Indicators:
☐ Histosol
☐ Histic Epipedon
☐ Sulfidic Odor
☐ Aquic Moisture Regime
☐ Reducing Conditions
☒ Gleyed or Low-Chroma Colors
☐ Concretions
☐ Organic Streaking in Sandy Soils
☐ High Organic Content in Surface Layer in Sandy Soils
☐ Listed on National Hydric Soils List
☐ Listed on Local Hydric Soils List
☐ Other (explain in remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	☐ Yes	☒ No	Is this Sampling Point Within a Wetland?	☐ Yes ☒ No
Wetland Hydrology Present?	☐ Yes	☒ No		
Hydric Soils Present?	☒ Yes	☐ No		

Remarks:

Form Content Approved by HQUSACE 3/92

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project Site:	Southampton Creek	Date:	3/25/10
Applicant/Owner:	Southampton Township	County:	Bucks
Investigator:	Hayduk	State:	Pennsylvania
		Municipality	Southampton
Do Normal Circumstances exist on the site?	☒ Yes ☐ No	Community ID:	
Is the site significantly disturbed (Atypical Situation)?	☒ Yes ☐ No	Transect ID:	
Is Area a Potential Problem Area? *(if needed, explain on reverse)*	☐ Yes ☒ No	Plot ID:	DP# 11

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Symplocarpus foetidus - Skunk Cabbage	Herb	OBL	8			
2	Ranunculus ficaria - Lesser Celendine	Herb	NL-UPL	9			
3	Lindera benzoin - Spicebush	Shrub-Sapling	FACW-	10			
4				11			
5				12			
6				13			
7				14			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 2/3

Remarks:

HYDROLOGY

☐ Recorded Data (describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☐ No recorded data available

Field Observations:
- Depth of Surface Water: _____ (In.)
- Depth to Free Water in Pit: _____ (In.)
- Depth to Saturated Soil: _____ (In.)

Wetland Hydrology Indicators:

Primary Indicators:
- ☒ Inundated
- ☒ Saturated in Upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ☐ Oxidized Root Channels in Upper 12"
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (explain in remarks)

Remarks: soil saturated to the surface. Surface water present in sporadic locations.

SOILS

Map Unit Name (Series and Phase): _____
Taxonomy (Subgroup): _____

Drainage Class: ☐ ☐
Field Observations Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-9	A	2.5Y 3/1	2.5Y	common/distinct	silt loam
9-16	B	10YR 4/2	10YR 3/4	common/distinct	silt loam

Hydric Soil Indicators:
- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☒ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ Organic Streaking in Sandy Soils
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Listed on National Hydric Soils List
- ☐ Listed on Local Hydric Soils List
- ☐ Other (explain in remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	☒ Yes	☐ No	Is this Sampling Point Within a Wetland?	☒ Yes	☐ No
Wetland Hydrology Present?	☒ Yes	☐ No			
Hydric Soils Present?	☒ Yes	☐ No			

Remarks:

Form Content Approved by HQUSACE 3/92

APPENDIX B
Photographs

Photo 1 - Southampton Creek at Street Road

Photo 2 - Upper portion of Southampton Creek

Photo 3 - Viewing Upstream near Toll Drive

Photo 4 - Vertical banks with gabion baskets

Southampton Creek Restoration Project

Photo 5 - Numerous pedestrian bridges across creek

Photo 6 - Downstream portion of project near County Line Road

Photo 7 - Side channel near County Line Road

Photo 8 - Stream under County Line Road

Southampton Creek Restoration Project

Southampton Creek Restoration Project

Photo 9 - Emergent upland in utility easement

Photo 10 - Forested uplands

Photo 11 - Emergent uplands within sewer easement

Photo 12 - GPS data collection with sewer easement

Photo 13 - Emergent uplands adjacent to pond

Photo 14 - Forested uplands

Photo 15 - Emergent wetlands

Photo 16 - Emergent wetlands within former basin

Photo 17 - Data collection within wetlands

Photo 18 - Samll creek in emergent wetlands

Photo 19 - Emergent wetlands near Toll Drive

Photo 20 - Forested wetlands near Toll Drive

Southampton Creek Restoration Project

Southampton Creek Restoration Project

Photo 21 - Emergent wetlands

Photo 22 - Saturated soils in wetlands

Photo 23 - Wetlands adjacent to pond

Photo 24 - Wetlands within former stream channel

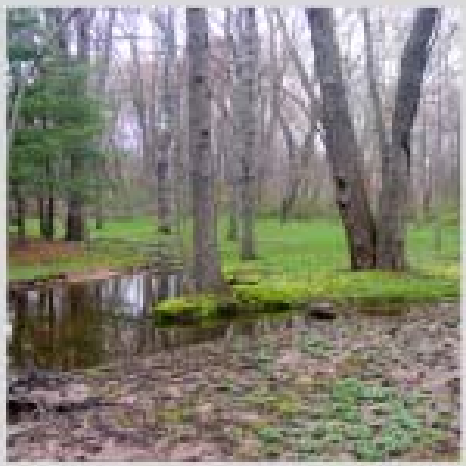

Photo 25 - Forested wetlands above Toll Drive

Photo 26 - Forested wetlands above Toll Drive

APPENDIX C
Wetland Acreage

NAME	AREA-SQ. FT	AREA - ACRES	PERIMETER-FT	TYPE
WETLAND 1	27571.60	0.633	1182.19	WETLAND
WETLAND 2	1715.73	0.039	143.82	WETLAND
WETLAND 3	9146.42	0.210	398.22	WETLAND
WETLAND 4	11986.20	0.275	557.52	WETLAND
WETLAND 5	23250.70	0.534	1364.47	WETLAND
WETLAND 6	11334.80	0.260	622.73	WETLAND
WETLAND 7	1890.09	0.043	229.26	WETLAND
WETLAND 8	8682.62	0.199	425.79	WETLAND
WETLAND 9	10159.90	0.233	537.50	WETLAND
WETLAND 10	2188.55	0.050	182.28	WETLAND
WETLAND 11	19672.07	0.452	828.50	WETLAND
WATER	264010.00	6.061		

Appendix E

Clean Air Assessment

General Conformity Analysis

Table 1. Project Emission Sources and Estimated Power

Table 2. Emission Estimates (NOx)

Table 3. Emission Estimates (HC)

Table 4. Emission Estimates ($PM_{2.5}$)

Table 5. Pollutant Emissions from Employee Vehicles

General Conformity Review and Emission Inventory for Southampton Creek
Table 1. Project Emission Sources and Estimated Power

hp-hr = # of engines*hp*LF*hrs of operation

Load Factor (LF) represents the average percentage of rated horsepower used during a source's operational profile.

Equipment/Engine Category	# of engines	hp	LF	hrs of operation	hp-hr
Ldr, F/E, Wheeled, 4.0 cy bkt, 4 x 4	1	200	0.59	1353	159654
Ldr, Backhoe, Wheeled, 0.8 cy frt end bkt	1	67	0.21	720	10130
Ldr, F/E, Crwler, 3.3 cy bkt	1	200	0.59	122	14396
Hydraulic Excav., crawler, 60,700#, 1.75 cy bkt.	1	168	0.59	1099	108933
Trk, HWY 8,600GVW 4 x4 suburban	1	165	0.59	948	92288
Trk, Off-HWY, R-Dump, 6 x 4, 18 CY, 75T	1	400	0.59	1099	259364
Dozer Crawler, D-7G, w/blade	1	200	0.59	1106	130508
Post Hole Drill, up to 8" diam., 30" deep	1	3	0.43	62	80
Light set, trailer mtd., w/gen. set, 2.5 kW2/1000 W	1	5	0.43	1740	3741
Brush Chipper, 12" cap., disk type, trailer mtd.	1	135	0.43	70	4064
Chainsaw, gas, 36" long	1	4	0.43	106	182
Compactor, vibroplate, 17.7" x 22" plate	1	6	0.43	844	2178
Roller, vibratory, self-propelled, 7.8T, 66.1" wide	1	108	0.59	422	26890
Air Compressor, 600 CFM, 150 psi, w/pav. breaker	1	250	0.43	634	68155
Hydraulic Excav., crawler, 60,700#, w/hammer	1	168	0.59	422	41829
Concrete saw, 6-5/8" depth, 18"blade	1	20	0.59	317	3741
Water pump, centrifugal, skid mtd, 3:dia., 293 GPM	1	8	0.43	53	182

Load Factors taken from Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling
Report No. NR-005c, revised April 2004, EPA420-P-04-005. Environmental Protection Agency, Office of Transportation and Air Quality

Table 2. Emission Estimates (NOx)

Emissions (g) = Power Demand (hp-hr) * Emission Factor (g/hp-hr)
Emissions (tons) = Emissions (g) * (1 ton/907200 g)
NOx Emissions Factor for Off-Road Construction Equipment is 6.9 g/hp-hr*

Equipment/Engine Category	hp-hr	EF (g/hp-hr)	Emissions (tons)
Ldr, F/E, Wheeled, 4.0 cy bkt, 4 x 4	159654	6.90	1.21
Ldr, Backhoe, Wheeled, 0.8 cy frt end bkt	10130	6.90	0.08
Ldr, F/E, Crwler, 3.3 cy bkt	14396	6.90	0.11
Hydraulic Excav., crawler, 60,700#, 1.75 cy bkt.	108933	6.90	0.83
Trk, HWY 8,600GVW 4 x4 suburban	92288	6.90	0.70
Trk, Off-HWY, R-Dump, 6 x 4, 18 CY, 75T	259364	6.90	1.97
Dozer Crawler, D-7G, w/blade	130508	6.90	0.99
Post Hole Drill, up to 8" diam., 30" deep	80	6.90	0.00
Light set, trailer mtd., w/gen. set, 2.5 kW2/1000 W	3741	6.90	0.03
Brush Chipper, 12" cap., disk type, trailer mtd.	4064	6.90	0.03
Chainsaw, gas, 36" long	182	6.90	0.00
Compactor, vibroplate, 17.7" x 22" plate	2178	6.90	0.02
Roller, vibratory, self-propelled, 7.8T, 66.1" wide	26890	6.90	0.20
Air Compress., 600 CFM, 150 psi, w/pav. breaker	68155	6.90	0.52
Hydraulic Excav., crawler, 60,700#, w/hammer	41829	6.90	0.32
Concrete saw, 6-5/8" depth, 18"blade	3741	6.90	0.03
Water pump, centrifig., skid mtd, 3:dia., 293 GPM	182	6.90	0.00
		Total NOx Project Emissions (tons) =	7.05

*Emission Factor taken from Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling-Compression-Ignition Report No. NR-009c, Revised April 2004, Assessment and Standards Division EPA, Office of Transportation and Air Quality

Table 3. Emission Estimates (HC)

Emissions (g) = Power Demand (hp-hr) * Emission Factor (g/hp-hr)
Emissions (tons) = Emissions (g) * (1 ton/907200 g)
VOC Emissions Factor for Off-Road Construction Equipment is 1.0 g/hp-hr

Equipment/Engine Category	hp-hr	EF (g/hp-hr)	Emissions (tons)
Ldr, F/E, Wheeled, 4.0 cy bkt, 4 x 4	159654	1.00	0.18
Ldr, Backhoe, Wheeled, 0.8 cy frt end bkt	10130	1.00	0.01
Ldr, F/E, Crwler, 3.3 cy bkt	14396	1.00	0.02
Hydraulic Excav., crawler, 60,700#, 1.75 cy bkt.	108933	1.00	0.12
Trk, HWY 8,600GVW 4 x4 suburban	92288	1.00	0.10
Trk, Off-HWY, R-Dump, 6 x 4, 18 CY, 75T	259364	1.00	0.29
Dozer Crawler, D-7G, w/blade	130508	1.00	0.14
Post Hole Drill, up to 8" diam., 30" deep	80	1.00	0.00
Lighting set, trailer mtd., w/gen. set, 2.5 kW2/1000 W	3741	1.00	0.00
Brush Chipper, 12" cap., disk type, trailer mtd.	4064	1.00	0.00
Chainsaw, gas, 36" long	182	1.00	0.00
Compactor, vibroplate, 17.7" x 22" plate	2178	1.00	0.00
Roller, vibratory, self-propelled, 7.8T, 66.1" wide	26890	1.00	0.03
Air Compressor, 600 CFM, 150 psi, w/pav. breaker	68155	1.00	0.08
Hydraulic Excav., crawler, 60,700#, w/hammer	41829	1.00	0.05
Concrete saw, 6-5/8" depth, 18"blade	3741	1.00	0.00
Water pump, centrifugal, skid mtd, 3:dia., 293 GPM	182	1.00	0.00
		Total HC Project Emissions (tons) =	1.02

*Emission Factor taken from Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling-Compression-Ignition Report No. NR-009c, Revised April 2004, Assessment and Standards Division EPA, Office of Transportation and Air Quality

Table 4. Emission Estimates (PM)

Emissions (g) = Power Demand (hp-hr) * Emission Factor (g/hp-hr)
Emissions (tons) = Emissions (g) * (1 ton/907200 g)
PM Emissions Factor for Off-Road Construction Equipment is 0.4 g/hp-hr*

Equipment/Engine Category	hp-hr	EF (g/hp-hr)	Emissions (tons)
Ldr, F/E, Wheeled, 4.0 cy bkt, 4 x 4	159654	0.40	0.07
Ldr, Backhoe, Wheeled, 0.8 cy frt end bkt	10130	0.40	0.00
Ldr, F/E, Crwler, 3.3 cy bkt	14396	0.40	0.01
Hydraulic Excav., crawler, 60,700#, 1.75 cy bkt.	108933	0.40	0.05
Trk, HWY 8,600GVW 4 x4 suburban	92288	0.40	0.04
Trk, Off-HWY, R-Dump, 6 x 4, 18 CY, 75T	259364	0.40	0.11
Dozer Crawler, D-7G, w/blade	130508	0.40	0.06
Post Hole Drill, up to 8" diam., 30" deep	80	0.40	0.00
Light set, trailer mtd., w/gen. set, 2.5 kW2/1000 W	3741	0.40	0.00
Brush Chipper, 12" cap., disk type, trailer mtd.	4064	0.40	0.00
Chainsaw, gas, 36" long	182	0.40	0.00
Compactor, vibroplate, 17.7" x 22" plate	2178	0.40	0.00
Roller, vibratory, self-propelled, 7.8T, 66.1" wide	26890	0.40	0.01
Air Compress., 600 CFM, 150 psi, w/pav. breaker	68155	0.40	0.03
Hydraulic Excav., crawler, 60,700#, w/hammer	41829	0.40	0.02
Concrete saw, 6-5/8" depth, 18"blade	3741	0.40	0.00
Water pump, centrifig., skid mtd, 3:dia., 293 GPM	182	0.40	0.00
		Total PM Project Emissions (tons) =	0.41

*Emission Factor taken from Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling-Compression-Ignition Report No. NR-009c, Revised April 2004, Assessment and Standards Division EPA, Office of Transportation and Air Quality

Table 5. Pollutant Emissions from Employee Vehicles

Assumptions:

Average trip distance (1 way) is 25 miles.
Average NOx vehicle emission factor is 1.4 g/mile.
Average Hydrocarbons (HC) vehicle emission factor is 2.8 g/mile.
Work crew comprised of 32 people
Every member of the work crew drives their own vehicle.
Project construction period is 8 months.
Project construction occurs 5 days per week.
There are 3 holidays in the work period.
There are 4 weather days (no work).

Actual days = 240 days - 63 weekend days off - 3 holidays off - 4 weather days off.

Actual work days = 170 days

NOx Calculation: 32 workers * 2 trips/work day * 170 work days * 25 miles/trip * 1.4 g of NOx/mile* (1 ton/907200 g)

Total NOx resulting from employee vehicles = 0.42 tons.

HC Calculation: 32 workers * 2 trips/work day * 170 work days * 25 miles/trip * 2.8 g of VOC/mile* (1 ton/907200 g)

Total HC resulting from employee vehicles = 0.84 tons.

Pollutant emissions associated with employee vehicles derived from:
Emission Facts: Average Annual Emissions and Fuel Consumption for Passenger Cars and Light Trucks, EPA420-F-00-013, April 2000.

Total (construction and employess) NOx Project Emissions (tons) = 7.5

Total (construction and employees) HC Project Emissions (tons) = 1.9

Total PM Project Emissions (tons) = 0.41

Appendix F

Public and Agency Comments on the Draft Environmental Assessment with USACE Responses

Email from Walt Korzeniowski, Southampton, PA

-----Original Message-----
From: Walt Korzeniowski
Sent: Monday, June 28, 2010 8:39 PM
To: Rochette, Stephen NAP
Cc: Jensen, Heather N NAP
Subject: Southampton Creek - Public Notice

After the meeting on 6/14 and upon reviewing the material available on your site, I will not agree to or sign an easement for the Southampton Creek project.

I have attached my previous correspondence on the subject as a matter of record. After the meeting and review of the proposed plans, I am adding the following comments:

· The entire proposal is not a stream restoration; it is a stream relocation with significant negative impacts.

USACE Response: That statement is a personal opinion. The USACE views this project as a stream restoration project with temporary, minor impacts.

· Alternative 4 (Alignment B) is the worst of all bad alternatives. It would require removal of over 10 trees on my property, leave the existing stream bed as a dry storm drain, and locate the new stream bed on my property. Over 1/3 of my property would be turned into a drainage and retention basin.

USACE Response: The new stream alignment would avoid as many large trees as possible, however, there is a possibility that some trees would have to be removed for the preferred alternative. The USACE would work with landowners to make slight adjustments in the alignment of the new channel to save as many large trees as possible. The trees will be marked prior to construction.

Correct, the old stream channel would function to remove stormwater from the property and would also be partially restored into a wetland. Correct, the new stream bed would be relocated on your property; as is the existing stream bed. We will not build a retention basin on your property, but the old stream channel would function as a stormwater conveyance system. All of these lands (homeowner properties and the old channel) need to drain into the new channel at some point. Normally within 100-400 feet (depends on slope and land use) runoff morphs from sheet flow to shallow concentrated flow in swales and gullies. This is happening today on these same properties. The new channel will have to accommodate this concept as we proceed in construction. In some locations, the old channel will be a low spot. In others, the old channel will gradually slope to the new channel.

During construction of the project, there will be a need to get rid of the excavated material from the new channel. In some places, the old channel will be an intermittent stream. In other places, the old stream channel will look like a field until it grows into forest. There will be a lot of new channel excavation and so, in those places it is likely that the old channel will be almost completely filled with excavated soil.

Alternative 3 (Alignment A) would have reduced the impact on most properties along Toll Road but was rejected because of an impact on 0.5 acres of wetland. This is still not acceptable since the existing stream bed is left as a dry storm drain.

USACE Response: USACE ecosystem restoration projects cannot negatively impact wetlands, which is why Alternative 3 was eliminated. Correct, the old stream channel would function to remove stormwater from the property and would also be partially restored into a wetland (see previous response)

· Alternative 2 (Stream Restoration) in the existing course was rejected as too expensive and requiring too much fill to raise the stream bed. The selected alternative leaves an unrestored old stream bed on our properties to act as a storm drain and retention basins.

USACE Response: The old stream channel will be partially restored to a wetland and will function as a stormwater conveyance system (see previous response).

Some references from your Draft Environmental Assessment that support my objections to the stream relocation:

CHANNEL PLUG (CHANNEL BLOCK) (Section 4.6.4, pg9)

A channel plug is a large earthen berm constructed perpendicular to the existing channel. Along the

channel, the berm will have a top width of twenty (20) feet and side slopes of 4:1. Its height will be one foot lower than the existing channel top of banks. The old channel will have to carry stormwater runoff, and so the intention of the channel blocks is not to prevent water flow altogether. At the location of the channel plug, first any gabions will be removed, the cages opened, and the rock deposited in the old channel downstream of the channel plug location. The gabion metal basket will be crushed, removed, and disposed of properly as construction debris. Excavation will then occur at least five feet into either side of the existing channel banks at the location of the channel plug. Excavation material from the new channel will then be used to construct the channel plug, laying the material in 12-18 inch lifts and compacting to 95% compaction. The channel plug will be constructed to within 18 inches of its final height. An 18-inch deep trench will then be dug on the upstream and downstream sides and a geotextile fabric placed from the upstream trench over the top of the channel plug to the downstream trench. The last lift of cover over this geotextile should be lightly compacted, seeded, and mulched.

USACE Addition: At a minimum, the channel plugs are necessary to ensure that the new channel does not migrate to the old channel location. In between channel plugs, the old channel will be filled in as much as there is excavated material. Low spots will act as vernal pools or seasonal wetlands. As the new channel overflows its banks every year, sediments will fill-in these low spots.

6.3 Wetlands (pg18)

The preferred alternative (Stream Alignment B) will avoid impacts to all wetlands in the project area. In addition, channel plugs in the old stream channel will eventually capture enough sediment and flow to create wetlands in these old channel areas.

E. Description of Discharge Sites.(pg22)

2. Location: The excavated material will be used for channel plugs and filling behind the old dam.

3. Size (acres): The project site is 2 miles in length, but the actual amount of fill to be used within the old channel will be approximately 9,000 cubic yards.

A. Physical Substrate Determinations.

3. Fill Material Movement: Significant, excavate a new channel and use the material to plug existing the channel opening. Additional material excavated will be used to fill the pool behind the dam.

5. Effects on Special Aquatic Sites(pg25)

(b) Wetlands: the preferred plan will have no impacts to wetlands in the project area. In addition, the preferred plan may result in the natural development of additional wetlands in the old stream channel.

Email from Walt Korzeniowski, Southampton, PA

-----Original Message-----
From: Walt Korzeniowski
Sent: Thursday, June 03, 2010 12:17 PM
To: Joseph Golden
Subject: Southampton Creek

SOUTHAMPTON CREEK PLAN

Name: Walter Korzeniowski
Southampton, PA

To: Joseph Golden

As we discussed in the telephone conversation of 6/2/2010, I am sending some notes about the Southampton Creek Plan. My understanding of the current plan is based on a conversation on 5/27/2010 with a group conducting a walk-through. I had a brief look at the proposed new route for Southampton Creek that would relocate the creek about 50 feet back but still remain partially on the properties along Toll Drive.

* The week of 4/5/2010, the Army Corps conducted a survey for a New creek route that would relocate the creek to township property through the partial wetlands. I spoke to some of the individuals conducting the survey and saw the proposed plan. This seemed a reasonable choice since it would remove the potential of flooding from all properties along Toll Drive.

The size of the creek and riparian buffer could then be entirely on township property.

USACE Response: It is important to recognize that this project is flood neutral. The project objective is not flood control. Whether the stream is moved closer or farther from properties, flood elevations for base floods (10-year, 100-year, etc.) will be the same or slightly lower.

This plan was apparently abandoned because of potential EPA objections to disturbing the wetland. Is there documentation on the EPA rejection? Could the case be reviewed?

USACE Response: Based on Section 404 of the Clean Water Act, the USACE has to follow the process of avoiding, minimizing, and then mitigating impacts to wetlands. In our planning for this project, we are trying to avoid impacts to wetlands. EPA has not yet reviewed the project and has not issued any objection to the project as proposed in the draft EA.

* The new plan routes the creek along and across the buried sewageline that runs on all the properties along Toll Drive. On my property (240 Toll), there is a dog leg that will require routing the creek an additional 30-40 feet into my property. At a neighbor's property at 220 Toll Drive, there is an outflow bank that would spill excess water into his property.

USACE Response: The 5/12/10 plan set moves the stream farther from these specific properties and onto township-owned property. The new alignment has the stream still on the 240 Toll Road property and almost completely off the the 220 Toll Road property. It is unclear what the reference is to the "outflow bank". There is a proposed channel block at 220 and 230 Toll Road. Due to the amount of excavation of the new channel at this location, most of the old channel will be filled-in. Along the filled-in old stream channel, stormwater drainage will be incorporated.

o I have significant plantings and trees along the back of my propertyand in the direct path of the proposed dog leg in the new creek plan. The dogleg will cause flooding onto my property every time the creek fills up from storm run-off.

USACE Response: Every effort will be made to avoid large trees. Stormwater management in the project area should improve as a result of this project; however, the project is considered flood neutral. Flood neutral means that what floods before this project, will most likely flood after project completion.

o I pointed out my objection to the people on the 5/27/10 walk-through. I believe the plan should be revised to move the creek back about 20-30 feet back beyond the sewage pipe. All the planned dog legs, outflow banks, ox-bows should be designed to face in the direction of the wetlands as opposed to into our properties.

USACE Response: The proposed alignment that exists at this point in time is due to many constraints.

* When the current stream bed is filled in, will the Army Corps ensure that there is proper run-off from our properties to the new stream bed?

USACE Response: Stormwater management for the old stream channel will be accommodated in the project design.

Has anyone performed a survey of the slope of the properties? My concern is that we will end up with water accumulation in the middle of our properties.

USACE Response: The project is designed to be flood neutral, which means that properties that flood and pond water today will be similarly affected after the stream restoration is completed.

This happened when the township installed the new sewer line. I have water accumulation at the back of my property because of poor grading over the sewer line.

USACE Response: We will be only be working in the stream channel and the area immediately surrounding the channel. It is possible that at the time of stream restoration construction, issues like this one may be resolved in the performance of the project, if it lies within the project area.

* I will not agree to the current plan at the meeting on 6/14/10.

Thank you for responding to my call. I am ready to work on a constructive solution to the problems and a chance to improve Southampton Creek.

Walt K

Email from Jean & Robert Coccia, Southampton, PA

Sent: Friday, July 02, 2010 1:22 PM
To: Rochette, Stephen NAP
Subject: Southampton Creek Project

Dear Steve,

We believe the Southampton Creek project is something that needs to be dealt with but what about the property damage caused by the runoffs which flow into creek. Our property is in Southampton and we have a runoff in our yard that is getting wider and deeper every year. The drainage on the street is set up to flow into an easement on the side of our property and then into the runoff. When there is a big storm, this runoff looks like a raging river and is visibly wider afterwards. Is anyone going to be looking into this type of problem before working on the ecological project of Southampton Creek?

Thank you for your time.

Jean & Robert Coccia

USACE Response: Stormwater management is a separate issue from this ecological restoration project; however, the proposed realignment of part of Southampton Creek will result in the old stream channel being used for stormwater conveyance. This should assist to some extent with the stormwater drainage in the area. Upper Southampton Township has completed a number of improvement projects to the stormwater system in the township over the past 5 years. The USACE does not have the authority from Congress to work specifically on stormwater management, as this is considered a local issue. However, USACE understands that Upper Southampton Township has plans to complete future stormwater projects in the township to assist in resolving this issue.

Email from Beth and Greg Petrick, Southampton, PA

-----Original Message-----
From: greg petrick
Sent: Tuesday, July 20, 2010 1:05 PM
To: Joseph Golden
Subject: creek restoration

Since the last township mtg., in regards to the Southampton Creek restoration project, Greg and I have been discussing the pro's and con's and the effect it would have on our property, the environment, and the community of Southampton. At this time, we are leaning more towards making the decision to not allow the project to proceed on our property. We would like more concrete information as to the exact location of the first barrier to block the creek and the path it will take through our property and where the second barrier will be located on reentry to the original creek. Is there someone who could come out and walk us through the plans before we make our final decision? We also have other concerns in regards to the existing runoff from numerous sources during storms, that now enter the present creek and how that will reach the creek that is proposed.Our home #215-355-0570 Thank you, Beth and Greg Petrick

USACE Response: A team member can be made available to walk your property area and discuss how the project design will affect your property. Stormwater management in Upper Southampton Township is a local issue, but the proposed project should result in some improvement since the old stream channel would be used for stormwater conveyance.

Email from Richard and Lynn Lippin, Southampton, PA

-----Original Message-----
From: Richard and Lynn Lippin
Sent: Tuesday, June 29, 2010 12:46 PM
To: Rochette, Stephen NAP; Jensen, Heather N NAP
Cc: administration@southamptonpa.com
Subject: Southampton Stream Restoration Project- Intent to Not Sign Easement Rights

Mr. Rochette and Ms. Jensen,

After the Upper Southampton Township/Army Corp of Engineers meeting on 14 June 2010 which my wife and I attended, and upon reviewing the material available on your web sites, I am formally informing you that my wife, Lynn Lippin nor myself (Richard Lippin), of Southampton, Pa. will not agree to or sign an easement onto our private property for the proposed Southampton Creek project.

Your proposal is not a stream restoration project in my opinion. It is a stream relocation project with significant negative impacts to me and my wife and my property.

USACE Response: That statement is a personal opinion. The USACE views this project as a stream restoration project with temporary, minor impacts.

It would require removal of several important plantings on my property, leave the existing stream bed as a dry storm drain, and locate the new stream bed on my property. About 1/3 of my property would be turned into a drainage and retention basin.

USACE Response: The new stream alignment would try to avoid as many large trees as possible, however, some trees would have to be removed for the preferred alternative. The USACE would work with landowners to make slight adjustments in the alignment of the new channel to save as many large trees as possible. Correct, the old stream channel would function to remove stormwater from the property and would also be partially restored into a wetland. Correct, the new stream bed would be relocated on your property; as is the existing stream bed.

We will not build a retention basin on your property, but the old stream channel would function as a stormwater conveyance system. All of these lands (homeowner properties and the old channel) need to drain into the new channel at some point. Normally within 100-400 feet (depends on slope and land use) runoff morphs from sheet flow to shallow concentrated flow in swales and gullies. This is happening today on these same properties. The new channel will have to accommodate this concept as we proceed in construction. In some locations, the old channel will be a low spot. In others, the old channel will gradually slope to the new channel.

During construction of the project, there will be a need to get rid of the excavated material from the new channel. In some places, the old channel will be an intermittent stream. In other places, the old stream channel will look like a

field until it grows into forest. There will be a lot of new channel excavation and so, in those places it is likely that the old channel will be almost completely filled with excavated soil.

This is totally unacceptable to us.

Thank you.

Sincerely,

Richard and Lynn Lippin

Email from Robert Shaffer, Southampton, PA

From: Robert A. Shaffer
To: Rochette, Stephen NAP
Sent: Fri Jul 02 12:56:14 2010
Subject: Comments on the Southampton Creek Project

Comments on the Southampton Creek Restoration Project
July 2, 2010

It is my understanding that about $1.4 million in federal economic stimulus money will be used to return the physical condition of the Southampton Creek to a more ecologically stable and healthy system. I further understand that Upper Southampton Township had to borrow $350,000 in matching funds.

It should be obvious to everyone that this project will do absolutely nothing to stimulate the economy of Upper Southampton. It won't provide a significant number of jobs, if any, for its unemployed residents and it won't create a tourist attraction that would bring outside money into the township. To me this represents a misappropriation of federal and local funds. I suspect that this effort is a make-work project to keep a number of local Army Corps of Engineers and U.S. Fish and Wildlife Service personnel gainfully employed during this difficult economic time that our country is experiencing. The focus of these federal agencies should be on cleaning-up the disastrous oil spill in the Gulf of Mexico not on wasting precious taxpayer dollars on a nice-to-have creek restoration project.

USACE Response: That statement is a personal opinion. The USACE views this project as an important stream restoration project that will benefit the Southampton Creek Watershed, as well as Pennypack Creek. The project will stimulate the local economy by creating construction jobs and the workers on this project may frequent local restaurants and may require local lodging during the estimated 8-month construction period. These activities will infuse money into the local economy. This project has been on-going since the late 1990s when the Township approached the USACE; however, funding has been intermittent until this project received Stimulus funds.

Efforts in the Gulf of Mexico related to the oil spill are currently being led by BP, the U.S. Coast Guard and a unified command of federal, state and local officials. The spill is not within a mission area for USACE; however, the U.S. Fish and Wildlife Service does have personnel deployed in the Gulf assisting with recovery efforts. For more information on the response, visit:
http://www.deepwaterhorizonresponse.com/go/site/2931

I assume that a Cost Benefit Analysis was conducted as a part of the justification for funds documentation for this federally funded project. While the cost is known, I am hard pressed to come up with any quantifiable benefits other than the increase in property values of those residents living along the length of the renovated creek. Since this is not a flood control project, the protection of property/homes should not have been designated as a benefit.

USACE Response: A cost benefit analysis was not completed for this project. The USACE does not complete a cost benefit analysis on ecosystem restoration projects. That methodology is used only for flood control and navigation projects. This project was justified by an internal evaluation of the ecosystem benefits and using our standing authority (Section 206 of the Water Resources Development Act of 1996) to complete aquatic ecosystem restoration.

The goal of the project is not to increase the property values of residents living along Southampton Creek, but to restore the ecosystem of Southampton Creek.

It seems to me that in this very difficult economic time where able bodied people are unemployed due to the lack of meaningful jobs, home foreclosures are at an all time high, bridges, roadways and public buildings are in dire need of repair, spending any public money to restore the ecosystem of a minor, inaccessible creek is reprehensible. This non-critical, non-essential project can wait a few more years until, hopefully, the economy recovers and the funding of such projects is feasible.

USACE Response: That statement is a personal opinion. The USACE views this project as an important stream restoration project for the benefit of Upper Southampton Township. The Township has provided its required non-federal cost-share match for this project.

One only needs to walk this stream to see the impairments, both physical and ecological, to the stream. The stream will require decades to centuries to heal itself, whereas the stream restoration project places the stream on this path in a much shorter time. Most suburban Philadelphia streams display signs of impairment, and they cannot all be restored at once. The Southampton Creek restoration is one opportunity to regain lost ecosystem services in the Pennypack Creek and Delaware River watersheds.

In the meantime the township should start educating the residents living along the creek on such topics as storm water management, flooding, ecosystem riparian buffer zones and how to take care of their properties to help control the creek's water flow and stabilize the eroding creek banks.

USACE Response: As part of this project, the USACE and Upper Southampton with assistance from the township Environmental Advisory Council, have provided residents with an educational brochure about living along the creek and suggestions on stormwater, the floodplain, and riparian buffers.

Since public funds will be used for this creek ecosystem restoration project, I assume that the public will have access along the entire restored area so that they can enjoy the beauty and serenity of the restored creek. I also assume that the homeowners living along the length of the restored creek will be responsible for maintaining its pristine condition once the project is completed.

USACE Response: Upper Southampton Township owns a number of large parcels along Southampton Creek. One large parcel is located at the northern section of the project and one located along the southern section of the project. You will have to contact the township to determine the approved public uses of those parcels. Some of this project traverses private property and public access will not be made available to those lands after the project is completed.

The operation and maintenance of the restored project, after constructed, will be the responsibility of Upper Southampton Township and not homeowners living along Southampton Creek.

Respectfully submitted,
Robert A. Shaffer
Southampton, PA

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Habitat Conservation Division
James J. Howard Marine
Sciences Laboratory
74 Magruder Road
Highlands, NJ 07732

June 8, 2010

Minas M. Arabatzis, Chief
Planning Branch
U.S. Army Corps of Engineers
Philadelphia District
Wanamaker Building
100 Penn Square East
Philadelphia, PA 19107-3390

ATTN: Mr. Mark Eberle

Dear Mr. Arabatzis:

This responds to your letter dated June 1, 2010 concerning the Draft Environmental Assessment (DEA) for the Southampton Creek Ecosystem Restoration Project, Upper Southampton Township, Bucks County, PA. The goal of the project is to restore bank stability, improve the aquatic and riparian habitat and to improve sediment transport in Southampton Creek.

Although NOAA resources do not occur in the project area, we support fully the efforts of the Army Corps and Upper Southampton Township to restore Southampton Creek. Southampton Creek is tributary to Pennypack Creek. Portions of Pennypack Creek provide habitat for a variety of resources under our jurisdiction including American shad (*Alosa sapidissima*), blueback herring (*Alosa aestivalis*), alewife (*Alosa pseudoharengus*), white perch (*Morone americana*), hickory shad (*Alosa mediocris*), gizzard shad (*Dorosoma cepedianum*) and striped bass (*Morone saxatilis*). Any efforts to restore bank stability, improve aquatic habitat and re-establish the sediment transport cycle in Southampton Creek will likely have downstream benefits.

Thank you for the opportunity to participate in the scoping process for this project. If you have any questions, please contact Karen Greene at 732 872-3023.

Sincerely,

Stanley W. Gorski
Field Offices Supervisor

cf: PRD – J. Crocker
RC- B. Bearmore

USACE Response: No response necessary.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
55 Great Republic Drive
Gloucester, MA 01930-2276

JUN 21 2010

Minas M. Arabatzis, Chief
Planning Division
Department of the Army
Philadelphia District, Corps of Engineers
Wanamaker Building, 100 Penn Square East
Philadelphia, Pennsylvania 19107-3390

Dear Mr. Arabatzis,

This is in response to your letter dated June 1, 2010 providing the Draft Environmental Assessment (DEA) for the Southampton Creek Ecosystem Restoration Project located in Upper Southampton Township, Bucks County, Pennsylvania. The DEA has been prepared by the Army Corps of Engineers (ACOE) to address potential environmental effects from the restoration of Southampton Creek.

As you know, while several species of listed sea turtles occur seasonally in Delaware waters, including Delaware Bay, and there is a population of endangered shortnose sturgeon (*Acipenser brevirostrum*) in the Delaware River, no listed species are known to occur in Indian Creek or the Cobbs Creek Watershed. It is my understanding that coordination with NMFS' Habitat Conservation Division is currently ongoing. However, as no listed species occur in the action area, NMFS Protected Resources Division (PRD) is not offering any comments on the DEA. Additionally, no further coordination with PRD regarding the proposed project is necessary. Should project plans change or new information become available that changes the basis for this determination, further coordination should be pursued. If you have any questions regarding these comments, please contact Julie Crocker of my staff at (978)282-8480 or by e-mail (Julie.Crocker@Noaa.gov).

Sincerely,

Mary A. Colligan
Assistant Regional Administrator
for Protected Resources

File Code: Sec 7 No Species Present 2010

USACE Response: No response necessary.

BUCKS COUNTY CONSERVATION DISTRICT
1456 FERRY ROAD, SUITE 704
DOYLESTOWN, PA 18901-5550

In Pursuit of Environmental Excellence

July 1, 2010

Mr. Minas M. Arabatzis
Department of Army
Philadelphia District, Corps of Engineers
Wannamaker Building, 100 Penn Square East
Philadelphia, PA 19107-3390

Re: Comment on Environmental Assessment for the Southampton Creek Ecosystem Restoration Project, Upper Southampton Township

Dear Mr. Arabatzis:

The Bucks County Conservation District has reviewed the Draft Environmental Assessment for the proposed Southampton Creek Ecosystem Restoration Project. The following items outline permitting requirements addressed following a walk of the entire reach on May 27, 2010:

1. Per the District's delegation agreement with Pennsylvania Department of Environmental Protection and the anticipated areal extent of earth disturbance, a Notice of Intent (NOI) and complete Individual NPDES permit application is required to be submitted to the Bucks County Conservation District for the entire proposed project area. A detailed checklist for submittal of the Individual NPDES permit can be found at http://www.bckscd.org/cms/files/Individual_NPDES_Checklist_ONLY_ID29191.pdf
2. All plans submitted for District review must identify location and construction details of all best management practices to mitigate transport of sediment downstream of the construction area. In addition please provide a clear construction sequence on the plans.
3. Please be advised that the review period for NPDES applications is on average three months. The District urges the Corps to submit materials with a sufficient timeframe to allow for revisions per recommendations of and correspondence with plan reviewer(s). Please note that the review process for NPDES applications cannot be expedited.
4. Please be advised the District should be copied on all plan revisions whether or not the erosion and sediment controls are modified to ensure all parties maintain the most current plans on file. Major plan revisions require a complete resubmission and full review period.
5. The Corps is advised to obtain additional permits as required per Pennsylvania Department of Environmental Protection Chapter 105 regulations.

BUCKS COUNTY CONSERVATION DISTRICT
1456 FERRY ROAD, SUITE 704
DOYLESTOWN, PA 18901-5550

In Pursuit of Environmental Excellence

The District appreciates the investment of resources and effort already committed by the Corps and Upper Southampton Township to restore this degraded section of the Southampton Creek. We look forward to working with you toward achieving the goals of this ambitious project.

Sincerely,

Meghan K. Rogalus
District Watershed Specialist

cc: Jacob Borden, BCCD CNPPS
Gretchen Schatschneider, BCCD District Manager

USACE Response:

1. **Concur. The USACE will provide BCCD with a NPDES permit application for this project.**
2. **Concur. The final plans for the project will have this information and US Fish and Wildlife Service will provide a construction sequence narrative.**
3. **This project is funded by Stimulus funding and we request that the review process be expedited for this project.**
4. **Concur.**
5. **The USACE is currently working with the PADEP, Southeast Regional Office to obtain a Section 401 State Water Quality certificate.**

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pennsylvania Field Office
315 South Allen Street, Suite 322
State College, Pennsylvania 16801-4850

July 8, 2010

Heather Jensen
U.S. Army Corps of Engineers
Wanamaker Building
100 Penn Square East
Philadelphia, PA 19107

RE: USFWS Project #2010-1095

Dear Ms. Jensen:

This responds to your e-mail of June 25, 2010, requesting information about federally listed and proposed endangered and threatened species within the area affected by the proposed Southampton Creek stream restoration project located in Bucks County, Pennsylvania. The following comments are provided pursuant to the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) to ensure the protection of endangered and threatened species, and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 *et seq.*) to ensure the protection of other fish, wildlife, and habitats.

Except for occasional transient species, no federally listed or proposed threatened or endangered species under our jurisdiction are known to occur within the project impact area. Therefore, based on currently available information, no biological assessment or further consultation under the Endangered Species Act is required with the Fish and Wildlife Service. Should project plans change, or if additional information on listed or proposed species becomes available, this determination may be reconsidered.

Please note that a field survey may reveal previously undocumented populations of one or more species of concern within a project area. Refer to the enclosed list of *Federally Listed, Proposed, and Candidate Species in Pennsylvania* to determine which species may be found in your project area if suitable habitat is present. If surveys or further information reveals that a federally listed, proposed, or candidate species exists in your project area, contact the Fish and Wildlife Service immediately to discuss measures to avoid or minimize potential impacts to the species prior to initiating your project.

In addition, this project is not expected to have significant impacts on other fish, wildlife or habitats of federal concern. Accordingly, no report pursuant to the Fish and Wildlife Coordination Act will be submitted. However, if project circumstances change, or new information regarding impacts to fish and wildlife becomes available in the future, the Service may determine that a report to the Corps of Engineers on the proposed project is appropriate.

USACE Response: No response necessary.

Please contact Bonnie Dershem of my staff at 814-234-4090 if you have any questions or require further assistance.

Sincerely,

Clinton Riley
Field Office Supervisor

Enclosure

USACE Response: No response necessary.

Pennsylvania Fish & Boat Commission

established 1866

Division of Environmental Services
Natural Diversity Section
450 Robinson Lane
Bellefonte, PA 16823-9620
(814) 359-5237 Fax: (814) 359-5175

June 29, 2010

IN REPLY REFER TO
SIR # 34346

MARK EBERLE
DEPARTMENT OF THE ARMY
WANAMAKER BUILDING
100 PENN SQUAGE EAST
PHILADELPHIA, PA 19107-3390

RE: Species Impact Review (SIR) - Rare, Candidate, Threatened and Endangered Species
SOUTHAMPTON CREEK RESTORATION PROJECT
UPPER SOUTHAMPTON Township, BUCKS County, Pennsylvania

This responds to your inquiry about a Pennsylvania Natural Diversity Inventory (PNDI) Internet Database search "potential conflict" or a threatened and endangered species impact review. These projects are screened for potential conflicts with rare, candidate, threatened or endangered species under Pennsylvania Fish & Boat Commission jurisdiction (fish, reptiles, amphibians, aquatic invertebrates only) using the Pennsylvania Natural Diversity Inventory (PNDI) database and our own files. These species of special concern are listed under the Endangered Species Act of 1973, the Wild Resource Conservation Act, and the Pennsylvania Fish & Boat Code (Chapter 75), or the Wildlife Code. The absence of recorded information from our files does not necessarily imply actual conditions on site. Future field investigations could alter this determination. The information contained in our files is routinely updated. A Species Impact Review is valid for one year only.

__X__ ***NO ADVERSE IMPACTS EXPECTED FROM THE PROPOSED PROJECT***

__X__ Except for occasional transient species, rare, candidate, threatened or endangered species under our jurisdiction are not known to exist in the vicinity of the project area. Therefore, no biological assessment or further consultation regarding rare species is needed with the Commission. Should project plans change, or if additional information on listed or proposed species becomes available, this determination may be reconsidered.

____ An element occurrence of a rare, candidate, threatened, or endangered species under our jurisdiction is known from the vicinity of the proposed project. However, given the nature of the proposed project, the immediate location, or the current status of the nearby element occurrence(s), no adverse impacts are expected to the species of special concern.

If you have any questions regarding this review, please contact the biologist indicated below:

____	Chris Urban	814-359-5113	__X__	Kathy Gipe	814-359-5186
____	Nevin Welte	814-359-5234	____	Bob Morgan	814-359-5129

Thank you in advance for your cooperation and attention to this important matter of species conservation and habitat protection.

SIGNATURE: _____ DATE: June 29, 2010
Christopher A. Urban
Chief, Natural Diversity Section

Our Mission: **www.fish.state.pa.us**

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

USACE Response: No response necessary.

Pennsylvania Department of Environmental Protection

Rachel Carson State Office Building
P.O. Box 8468
Harrisburg, PA 17105-8468
June 30, 2010

Bureau of Air Quality 717-787-9702

Minas M. Arabatzis, Chief
Environmental Resources Branch
U.S. Army Corps of Engineers
Wanamaker Building
100 Penn Square East
Philadelphia, PA 19107-3390

Re: Draft Environmental Assessment for the Southampton Creek Ecosystem Restoration Project (June 2010), Bucks County, Pennsylvania

Dear Mr. Arabatzis:

The Pennsylvania Department of Environmental Protection (Department) has reviewed the above-referenced Draft Environmental Assessment (DEA) prepared by the United States Army Corps of Engineers (USACE or Corps) for the Southampton Creek Ecosystem Restoration Project (hereinafter Southampton Creek Project) in Bucks County, Pennsylvania. Our review has been conducted in accordance with Section 176 of the Clean Air Act and its implementing regulation in CFR Part 93, Subpart B (relating to determining conformity of general Federal actions to state or Federal implementation plans) and the Department's General Conformity regulation codified in 25 *Pa. Code* Subchapter J (relating to general conformity). To this end, detailed comments on the draft environmental assessment for the Southampton Creek Project are enclosed for your consideration.

As you know, the proposed Southampton Creek Project is located in Bucks County, which is included in the Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE (Philadelphia-Wilmington-Atlantic City Area) "moderate" ozone nonattainment area for the 1997 8-hour ozone national ambient air quality standard (NAAQS). Additionally, it is important to note that Bucks County is also included in the "Philadelphia-Wilmington, PA-NJ-DE Area (Philadelphia-Wilmington Area) which was designated by the U.S. Environmental Protection Agency (EPA) in April 2005 as a nonattainment area for the 1997 fine particulate matter ($PM_{2.5}$) NAAQS; this area was subsequently designated in December 2009, as nonattainment for the 2006 24-hour $PM_{2.5}$ health-based standard.

Based on your analysis, the Southampton Creek Project is not subject to the General Conformity requirements because direct and indirect emissions of oxides of nitrogen (NO_x) and volatile organic compounds (VOC) over the life of the project are estimated to be approximately 8.80 tons and 1.30 tons, respectively. However, the DEA prepared by the USACE for this

USACE Response: No response necessary.

project does not adequately address the direct and indirect $PM_{2.5}$ emissions or its precursor emissions.

We greatly appreciate the Corps' cooperation and effort to address general conformity requirements in the draft environmental assessment for the Southampton Creek Project. Should you have questions or need additional information, please contact me by e-mail at jeepps@state.pa.us or by telephone at 717-787-9702. You may also contact Chris Trostle, Chief of the Mobile Sources Section by e-mail at dtrostle@state.pa.us or by telephone at 717-787-9495.

Sincerely,

Joyce E. Epps,
Director

USACE Response: No response necessary.

ENCLOSURE

PA Department of Environmental Protection's Comments on the Draft Environmental Assessment for the Southampton Creek Ecosystem Restoration Project (June 2010), Bucks County, Pennsylvania

1. Need for an Adequate Assessment of $PM_{2.5}$ and Precursor Emissions

On July 16, 2006, EPA promulgated a final rule which establishes the *de minimis* emission levels for General Conformity applicability, specifically relating to the direct emissions of $PM_{2.5}$, emissions and sulfur dioxide (SO_2), NO_x, VOC and ammonia precursor emissions. (See 71 FR 40420-40427). However, because the Department did not make a demonstration to the EPA showing that VOC and ammonia were significant precursors to $PM_{2.5}$ formation, the DEA should be revised to adequately address $PM_{2.5}$, SO_2 and NOx emissions. While the draft assessment briefly discussed $PM_{2.5}$, the USACE did not calculate potential emissions from the equipment to be utilized for the duration of the project. In addition, the draft assessment does not include calculations for SO_2 emissions. Therefore, the Department recommends that USACE include calculations for the emissions of $PM_{2.5}$ and SO_2 in the final assessment or identify and explain why those pollutants do not have any significant impact on the attainment of the $PM_{2.5}$ NAAQS in the Philadelphia-Wilmington Area.

2. Need for Current Values Used in Median Life, Annual Activity and Load Factor Values for Nonroad Engine Emissions Modeling

The load factors utilized to calculate horsepower-hour for each piece of nonroad equipment were taken from the 1998 Median Life, Annual Activity and Load Factor Values for Nonroad Emissions Modeling Report No. NR-005a. The nonroad model and associated guidance has been updated numerous times since 1998. The Department recommends that the USACE use the most current report[1] and evaluate whether or not there are more current factors available for the horsepower-hour calculations.

Additionally, the emission factors used by the USACE to calculate the nonroad engine/equipment emissions were taken from previous reviews of general conformity and emission inventories. Depending on the age of the previous analyses and reports, the factors should be outdated. While the factors appear to be on the conservative side, the USACE should utilize the most current factors available. Further, when calculating the emissions specified in Appendix E (relating to Clean Air Assessment), Tables 2 and 3 concerning emission estimates for NOx and VOCs, respectively, the horsepower-hour values were incorrectly carried from Table 1 (relating to project emission sources and estimated power) for four pieces of nonroad equipment. Therefore, the Department recommends that the USACE recalculate emissions to reflect the project's accurate emissions totals for the purposes of the general conformity analysis.

---

[1] EPA420-P-005 April 2004 NR-005c, *Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling.*

In addition, we are unable to verify the emissions calculations due to a lack of information identifying equipment age and the equipment's emission control tier level. The USACE should provide information about equipment age and the emission control tier level to allow the Department to accurately verify the emissions estimates provided in the assessment. Verification of the emission estimates would also allow the general public to comprehend the extent of the emissions that will be produced by the project.

3. Clarifying Revisions Needed in Section 5.1 (relating to air quality)

In Section 5.1 (relating to air quality), pages 10-11 of the draft assessment, the Department is identified incorrectly as the "PA Department of Natural Resources and Environmental Control." The "Department of Natural Resources and Environmental Control" is an agency in the State of Delaware. The USACE needs to revise Section 5.1 to correctly identify and reference the Pennsylvania Department of Environmental Protection.

Additionally, Section 5.1 includes incorrect references to ozone and $PM_{2.5}$ nonattainment areas. The Philadelphia-Wilmington-Atlantic City Area is currently designated as a "moderate" nonattainment area for the 1997 8-hour ozone NAAQS. The USACE should also assess the implications for the NOx and VOC *de minimis* thresholds to ensure that "*backsliding*" does not occur in the "severe" 1-hour ozone maintenance area.

In April 2005, EPA designated the Philadelphia-Wilmington Area as a nonattainment area for the 1997 $PM_{2.5}$ NAAQS; this area was subsequently designated in December 2009 as a nonattainment areas for the 2006 24-hour $PM_{2.5}$ NAAQS. Although there is no approved SIP revision for the 1997 $PM_{2.5}$ standard, the air quality implications of the project should be addressed; the SIP revision for the 2006 standard will be due to EPA in December 2012.

4. Clarifying Revisions Needed in Section 6.1 (relating to air quality)

The Department recommends that Section 6.1 be revised. The first sentence states, "Air Quality within the project area is reflective of a developed suburb of Philadelphia." It is unclear what this sentence means and allows readers to reach different conclusions about the air quality—the area is designated nonattainment for both the ozone and $PM_{2.5}$ standards.

The discussion pertaining to "General Conformity Review and Emission Inventory" should also be clarified. Section 176(c) of the Clean Air Act states that no agency of the federal government may "engage in, support in any way or provide financial assistance for, license or permit, or approve, any activity which does not conform to an implementation plan after it has been approved or promulgated under section 110." A review of applicable provisions of EPA's general conformity regulations at 40 CFR Parts 51, Subpart W and 93, Subpart B, is recommended prior to clarifying the general conformity discussion.

Lastly, the draft assessment states that the "Southampton Creek project site is within the Philadelphia-Wilmington-Trenton Nonattainment Area (PA-NJ-DE-MD); the referenced area was formerly the 1-hour ozone nonattainment area. Therefore, the DEA should be revised to reflect that the Southampton Creek Project is located in the "Philadelphia-Wilmington-Atlantic City Area" moderate 8-hour ozone nonattainment area and the $PM_{2.5}$ Philadelphia-Wilmington Area.

USACE Response:

1. **The USACE has added $PM_{2.5}$ calculations to our General Conformity review. Please see Section 6.1 of the Final Environmental Assessment (EA) for this information. The $PM_{2.5}$ emissions were well below the General Conformity trigger levels for this pollutant. Since the project is not located in a nonattainment area for SO_2, we did not complete SO_2 calculations for this project.**
2. **Concur. Emission factors have been changed to reflect the most current information. Also, horsepower-hour value errors from the draft EA have been corrected, and Tables 2 & 3 have been recalculated.**

   The USACE cannot verify the equipment age of machines used to construct our projects. We do not yet know what contractor will be awarded this construction contract. For government cost estimate purposes the average equipment age is estimated to be 3 years old. This is a reasonable assumption to use for air quality purposes too. In addition, since our emission outputs are well below the General Conformity trigger levels, it is unlikely that a change in equipment age would significantly change the project emissions.

3. **Concur. Reference for PADEP has been corrected.**
   Concur. There will be no "backsliding " for NOx and VOC *de minimis* thresholds associated with this project. The project is a one-time construction and this will not undo any other air quality improvement measures or commitments to improving air quality as committed to in their federally approved state implementation plans.
   Concur, $PM_{2.5}$ air quality implications for this project have been addressed.
4. **Concur. A review of EPA's general conformity regulations has been performed prior to completing the Final EA.**
   Concur. The nonattainment area reference has been corrected.