

Wetland Identification and Delineation Report

Liberty Hollow Trail

Northumberland Borough
Northumberland County, PA

Prepared for:

Northumberland Borough
175 Orange Street
Northumberland, PA 17857

Submitted by:

Stahl Sheaffer Engineering, LLC
106 North High Street
Selinsgrove, PA 17870

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State College, PA • 814-689-1562

Pittsburgh, PA • 724-960-1111

Selinsgrove, PA • 570-374-4813

Clearfield, PA • 814-205-4012

Akron, OH • 330-794-5490

Cambridge, OH • 740-421-4216

Morgantown, WV • 304-381-4281

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Liberty Hollow Trail

Northumberland Borough, Northumberland County, PA

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I. INTRODUCTION

On October 13th, 2015 Jason D. Reed, environmental scientist of Stahl Sheaffer Engineering, LLC investigated the Liberty Hollow Trail project site for jurisdictional wetlands and waters. The project site is located in Northumberland Borough in Northumberland County, Pennsylvania. This investigation was performed in anticipation of the construction of a recreational trail along the existing sewer line right-of-way. The identification and delineation was performed in accordance with The 1987 Army Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (April 2012 Version 2.0).

II. METHODOLOGY

Vegetation, hydrology and soil sampling was based on the methodology described in 1987 Army Corps of Engineers Wetland Delineation Manual and the applicable regional supplement for the specific region of work. The on-site “routine” method was used in delineating the wetland-upland boundary within the “area of investigation” (AOI). The AOI was reviewed to determine the presence or absence of the three wetland criteria: a dominance of hydrophytic vegetation, appropriate wetland hydrologic indicators and hydric soils. All three criteria must be present to confirm the area as a wetland. All recorded data as described below was recorded on the appropriate regional supplement “Wetland Determination Data Forms”.

Any wetland boundaries that were identified were delineated with pink flagging tied to vegetation or with pink pin flags. All placed flagging was sequentially numbered with a (#)-(#) designation. Any wetland boundary flags that were placed to delineate wetland boundaries were surveyed with Sokkia Total Station ground survey equipment.

a. Vegetation Sampling

Vegetation sampling was based on the plant-community approach and utilized the four-stratum sampling design to assess the plant community at each designated data point or plot. At each plot a standard sampling radius of five feet for herbaceous, 15 feet for shrub/saplings, 30 feet for trees and 30 feet for vines was reviewed. The radii for shrub/saplings, trees and vines was reduced if portions of the standard radius consisted of plants that were not representative of the wetland or upland community at that sampling location. The delineator employs professional judgment when revising the sampling radii after reviewing all characteristics of the area including but not limited to topographic changes, landscape alterations, and hydrologic conditions. All plant species were recorded on the Wetland Determination Data Form and the hydrophytic vegetation indicators were applied to determine which plant species were considered dominant in the particular plot. If facultative or wetter species dominated the plot, as determined from the indicators test, a “Yes” rating was recorded on The Wetland Determination Data Form under the hydrophytic vegetation section.

b. Hydrology

In accordance with the Manual and applicable Regional Supplement the plot area was reviewed for primary and secondary hydrologic indicators. If one primary indicator was observed or two secondary indicators were observed the plot was positive for wetland hydrology. If the plot was positive for wetland hydrology a “Yes” rating was recorded on The Wetland Determination Data Form under the hydrology section.

c. Soils

In accordance with the Manual and applicable Regional Supplement the plot area was reviewed for the presence of hydric soils indicators. In locations where obligate plant species dominated the vegetative community, contained an abrupt boundary to the uplands and had no signs of recent hydrologic alteration, the soils were assumed to be hydric. When these conditions were not found a soil test pit was excavated with a sharp shooter shovel to review the soil profile. The pit was excavated to the depth necessary to verify hydric indicators or to a maximum depth of 20 inches.

III. BACKGROUND DATA REVIEW

A background mapping review of this area was conducted. A review of the Northumberland-PA topographic quadrangle did not indicated any streams or waterbodies within the area of investigation. Contour crenulations in the form of a channel were noted within the AOI. Figure 1. Location Map is from Northumberland-PA 7.5 minute quadrangle and is attached in Appendix A. The National Wetlands Inventory (NWI) Map was reviewed for the presence of mapped wetlands. No wetlands were indicated on the NWI mapping. Figure 2. The National Wetland Inventory Map is attached in Appendix A.

Soils were reviewed from the NRCS Web Soil Survey located at <http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>. Wiekert-Klinsville shaly silt loam, Berks channery silt loam, Hartleton channery silt loam and Bedington silt loam soils were identified within the AOI. According to the web soil survey none of the soils are listed as hydric or as containing hydric inclusions. All of the soils are listed as well drained, except Wiekert-Klinesville series which is somewhat excessively well drained. All soils in the AOI are greater than six feet from encountering a water table. Figure 3. The Soils Map is attached in Appendix A.

IV. RESULTS OF INVESTIGATION

a. Site Description

The site consisted of the area along and adjacent to an existing sewer line right-of-way (ROW) located in Northumberland Borough, Northumberland County,

Pennsylvania. The ROW contained an area of meadow/shrub cover, mature woods and maintained lawn. The site coordinates are 40° 53' 51.58" N and 76° 47' 31.50" W (datum WGS 84). The AOI for this site consisted of a 50 foot width along the existing sewer line right-of-way and then along the eastern edge of a residential yard and included a wooded slope to the east of the yard, ending at the south end of Buchanan Avenue. The AOI was widened in the northern portion of the ROW to allow for potential trail alignment and grading adjustments. The AOI is depicted on Figure 4. Wetland Delineation Plan and Photo Location Map located in Appendix B.

The vegetative conditions within the southern section of the AOI consisted of meadow and shrub cover. Mature forest consisting mainly of trees dominated both the western and eastern hillslopes immediately adjacent to the sewer line within this area. This section appeared to be periodically mowed, possibly with hand trimmers. Within the central section of the AOI a residential lawn bordered the right-of-way immediately to the west and mature forest cover and shrub understory dominated the east side. Mature forest and shrub understory dominated the northern section of the AOI.

b. Waters and Wetlands Descriptions

Watercourses:

One perennial/intermittent stream, UNT 1, was identified within the AOI. UNT 1 is an unnamed tributary to the Susquehanna River. UNT flows into the Susquehanna River approximately 0.5 miles south of the southern end of the AOI. UNT 1 is shown on Figure 4. Wetland Delineation Plan and Photo Location Map attached in Appendix B.

Wetlands:

Wetland 1

Wetland 1 was a palustrine emergent/palustrine scrub shrub (PEM/PSS) wetland located along the cleared sewer line right-of-way in the southern section of the AOI. This wetland consisted of approximately 97% PEM and 3% PSS. Portions of Wetland 1 extended west beyond the AOI due to a connection to hillside seeps that entered from the west. Unknown grass, Nepal grass (*Microstegium vimineum*), clearweed (*Pilea pumila*) and unknown sedges dominated the PEM portions of Wetland 1. Spicebush (*Lindera benzoin*) and multiflora rose (*Rosa multiflora*) occupied the minor PSS portion of Wetland 1. Groundwater discharges from the adjacent hillslope provided the principal supply of hydrology to the Wetland. Wetland 1 is positioned upslope of UNT-1. UNT-1 does not provide hydrology to this wetland. The soil pits were only able to be excavated between five and ten

inches due to an extremely hard clay/rock layer encountered at those depths. Water was found to be running laterally rather than downward due to this nearly impermeable layer. This condition is likely a result of the sewer line construction in combination with the fact that the Web Soil Survey lists Wiekert-Klinsville shaly silt loam soils as having a depth to bedrock of 15 to 19 inches.

A minor swale connects the northern portion of Wetland 1 with the southern portion. This swale was sparsely vegetated likely due to heavy shading from the tree canopy located over the swale. The swale was delineated as part of Wetland 1 since hydric soils and subsurface hydrologic flows were discovered within the swale. Wetland 1 was delineated with flags W1-1 to W1-22 OE, W1-23 OE to W1-34 OE, and W1-35 OE to W1-64. Wetland 1 is shown on Figure 4. Wetland Delineation Plan and Photo Location Map attached in Appendix B. Additional details regarding the vegetation, soils and hydrology is found on Data Sheet 2 (DP-2) and Data Sheet 3 (DP-3) located in Appendix D.

c. Upland Communities

Upland vegetation which dominated the non-wetland areas was located along on the hillslopes and in the existing sewer line ROW. Nepal grass (*Microstegium vimineum*) and oriental lady's thumb (*Persicaria posumba*) were the most common upland meadow species. Nepal grass is found mainly in moist shaded areas including under tree canopy. Nepal grass is common in disturbed areas and spreads well through moist floodplain areas. The grass is occasionally found in wetlands. Red oak (*Quercus rubra*), red maple (*Acer rubrum*), spicebush (*Lindera benzoin*) and black cherry (*Prunus serotina*) dominated the forested areas to the east and west of the southern section. Red maple (*Acer rubrum*), spicebush (*Lindera benzoin*), black cherry (*Prunus serotina*), black locust (*Robinia pseudoacacia*), white ash (*Fraxinus americana*), tree of heaven (*Ailanthus altissima*), black walnut (*Juglans nigra*), greenbrier (*Smilax rotundifolia*), and Japanese barberry (*Berberis thunbergii*) dominated the forested area in the central and northern section of the AOI.

V. SUMMARY

On October 13th, 2015 Jason D. Reed, environmental scientist of Stahl Sheaffer Engineering, LLC investigated the Liberty Hollow Trail project site for jurisdictional wetlands and waters. The project site is located in Northumberland Borough in Northumberland County, Pennsylvania. This investigation was performed in anticipation of the construction of a recreational trail along the existing sewer line right-of-way. The identification and delineation was performed in accordance with The 1987 Army Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (April 2012 Version 2.0).

The following water resources were identified within the AOI.

Watercourses:

Unnamed Tributary 1. Unnamed Tributary 1 (UNT 1) was a perennial watercourse identified within and immediately adjacent to the AOI. UNT 1 is an unnamed tributary of the Susquehanna River.

Wetlands:

Wetland 1. Wetland 1 was identified within the AOI. Wetland 1 was described as 97% PEM and 3% PSS. Wetland 1 equals 0.13 acres within the AOI.

UNT-1, Wetland 1, data points and photo locations are indicated on Figure 4. Wetland Delineation Plan and Photo Location Map attached in Appendix B. The photographs of identified wetlands and streams, as well as representative photographs of the AOI, are located in Appendix C.

VI. CONTRIBUTORS

Jason D. Reed

Wetland Experience: 18 years (PA, MD and Delaware)
Training: -38 hour Wetland Delineator Preparatory Training
-2 days Grasses, Sedges and Rushes
-Eastern Mountains and Piedmont Regional Supplement, V 2.0
-NRCS Field Indicators of hydric soils in the United States V 7.0
-Level I-IV Natural Stream Channel Assessment and Design
(Rosgen equivalent)

VII. REFERENCES

Environmental Laboratory. 1987. *Corps of Engineers wetlands delineation manual*. Technical Report Y-87-1. Vicksburg, MS: U.S. Army Engineer Waterways Experiment Station. (<http://el.erdc.usace.army.mil/wetlands/pdf/wlman87.pdf>)

Figure 1. Location Map Liberty Hollow Trail. 1"=2000 feet. Source: Pennsylvania Spatial Data Access Penn State Institutes of Energy and the Environment. Created by Sheaffer, Chad. AutoCAD Civil 3D, Autodesk.

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Munsell Color. 2009. *Munsell Soil-Color Charts with genuine Munsell color chips*. X-rite. Grand Rapids, MI.

Peterson, R.T., and McKenny, M. 1968. *A Field Guide to Wildflowers Northeastern and North-central North America*. Houghton Mifflin Company. New York, NY.

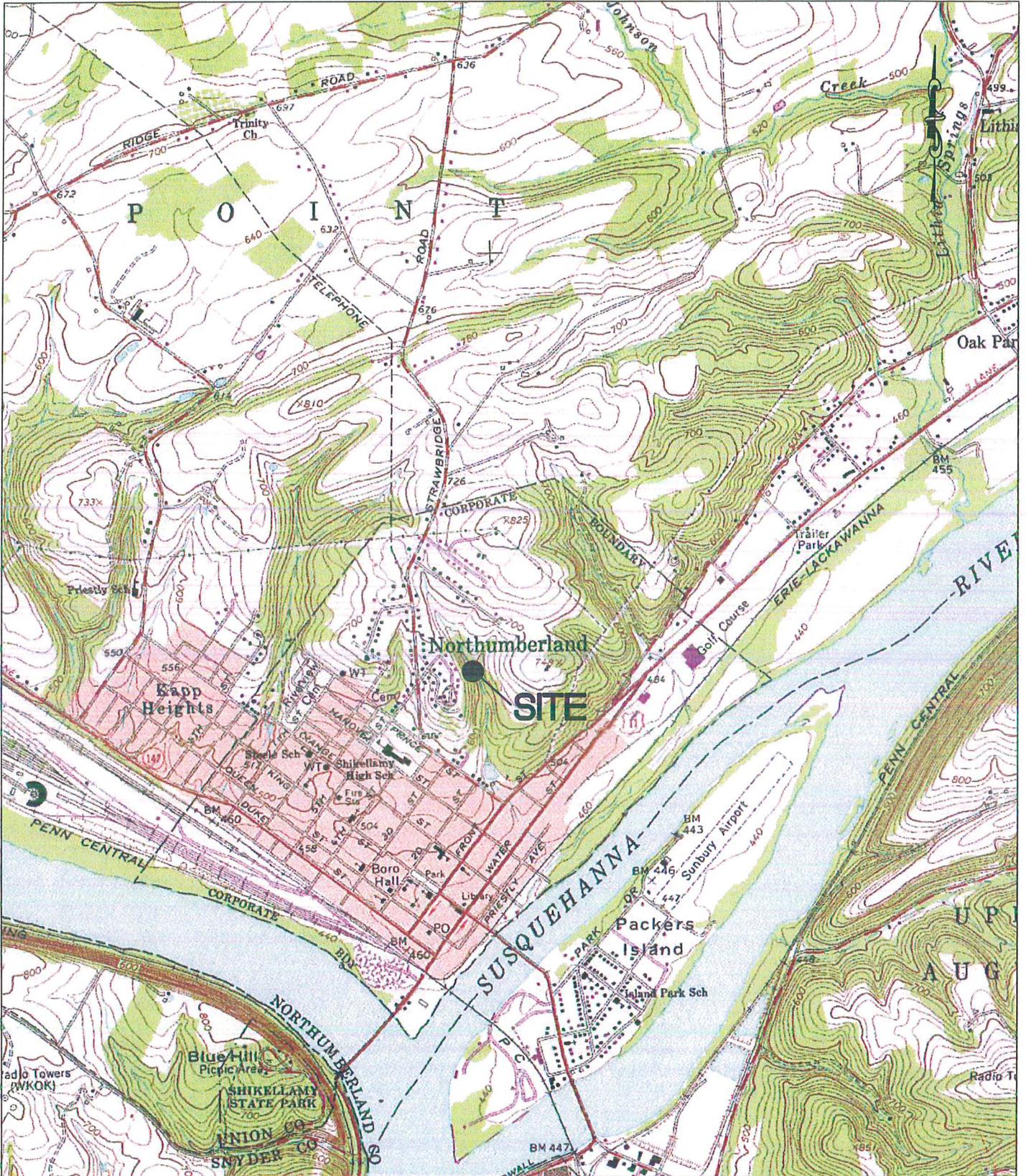
Petrides, G.A., 1958. *A Field Guide to Trees and Shrubs, Northeastern and north-central United States and southeastern and south-central Canada*. 2nd Ed., Houghton Mifflin Company. New York, NY.

U.S. Army Corps of Engineers. 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Version 2.0*, ed. J. F. Berkowitz, J.S. Wakeley, R.W. Lichvar, C. V. Noble. ERDC/EL TR-12-9. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

U.S. Fish and Wildlife Service. May 2014. National Wetlands Inventory website. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. <http://www.fws.gov/wetlands/>

APPENDIX A

FIGURES



LOCATION MAP
LIBERTY HOLLOW TRAIL

BOROUGH OF NORTHUMBERLAND
 NORTHUMBERLAND COUNTY, PA

SCALE: 1"=2000'

FIGURE 1

STAHL
SHEAFFER
ENGINEERING, LLC

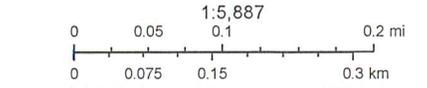
WWW.SSE-LLC.COM

Liberty Hollow Trail



February 18, 2016

- | | | |
|--|---|--|
|  Estuarine and Marine Deepwater |  Freshwater Forested/Shrub Wetland |  Other |
|  Estuarine and Marine Wetland |  Freshwater Pond |  Riverine |
|  Freshwater Emergent Wetland |  Lake | |



Source: Eeri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and

Figure 2

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

Liberty Hollow Trail

Soil Map

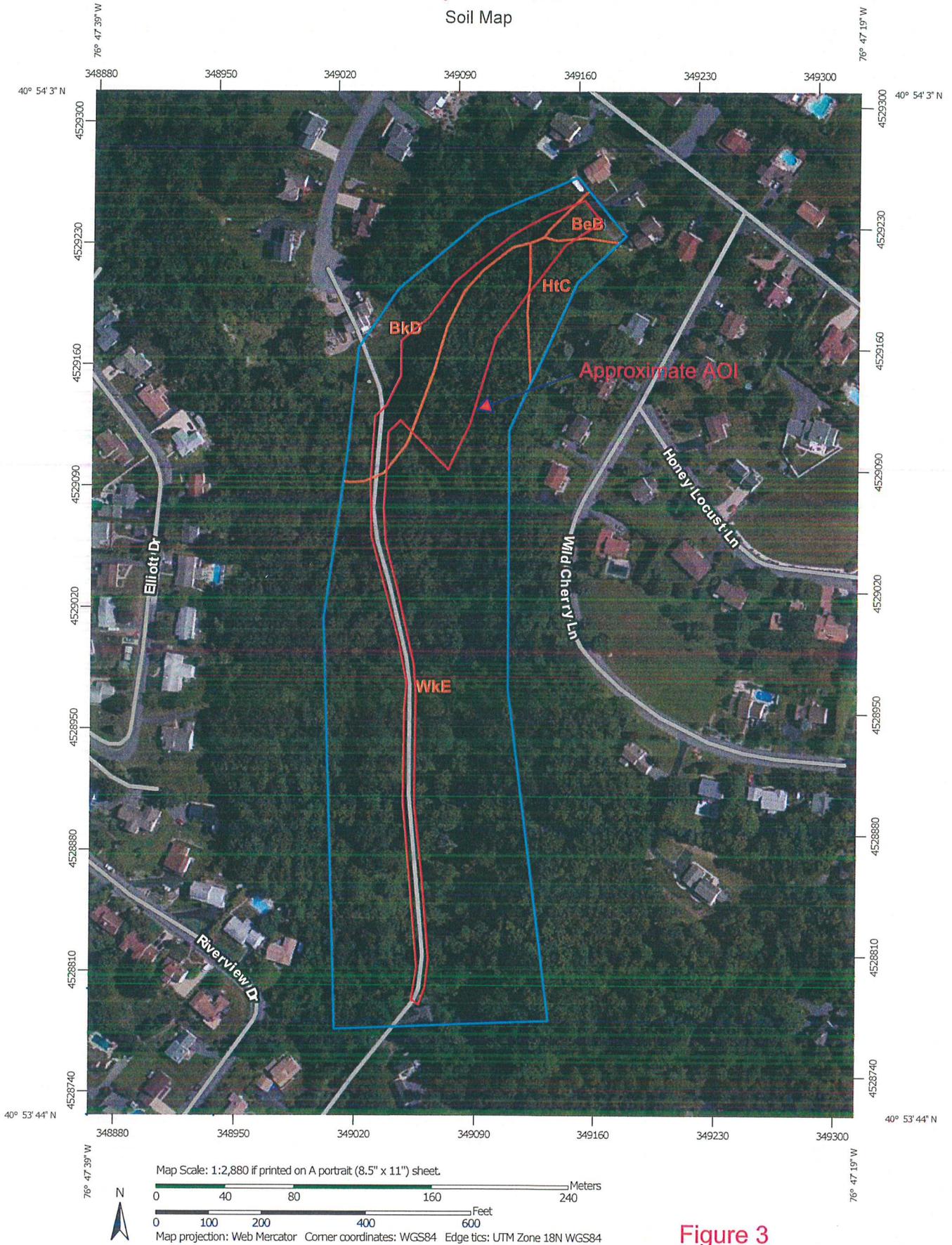


Figure 3
page 1 of 3

Custom Soil Resource Report

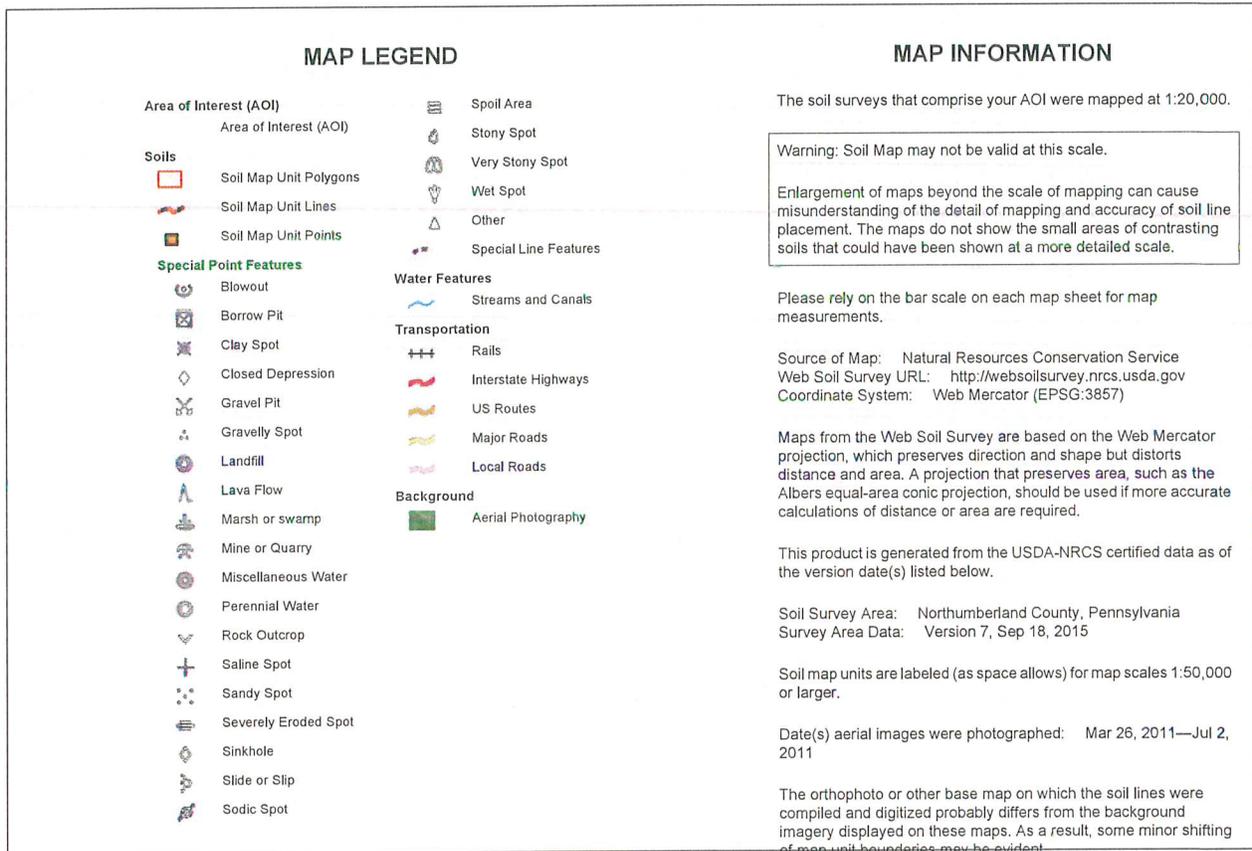


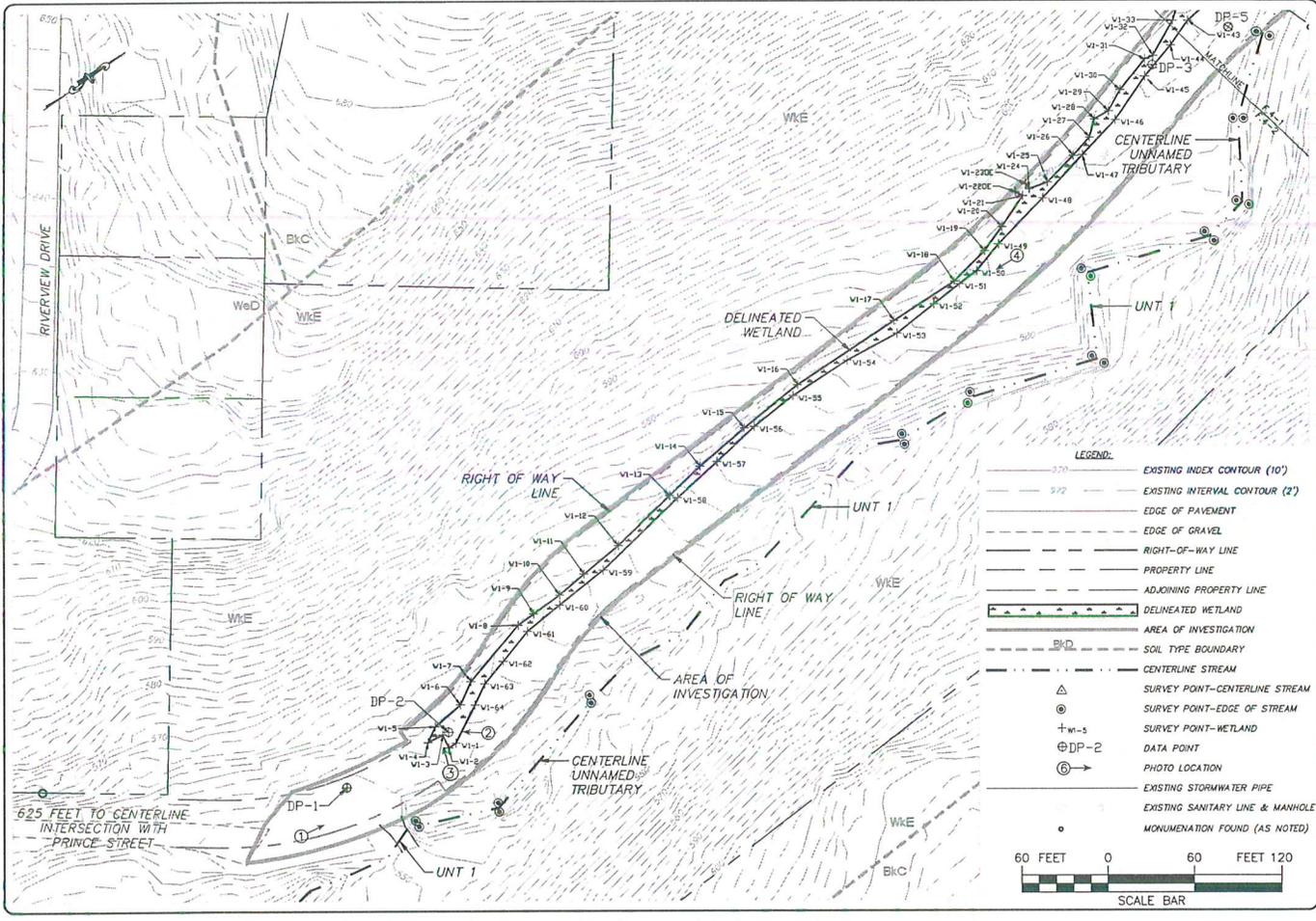
Figure 3
page 2 of 3

Map Unit Legend

| Northumberland County, Pennsylvania (PA097) | | | |
|---|--|--------------|----------------|
| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
| BeB | Bedington silt loam, 3 to 8 percent slopes | 0.2 | 1.4% |
| BkD | Berks channery silt loam, 15 to 25 percent slopes | 1.7 | 13.1% |
| HtC | Hartleton channery silt loam, 8 to 15 percent slopes | 0.5 | 3.6% |
| WkE | Weikert and Klinsville shaly silt loams, steep | 10.3 | 81.8% |
| Totals for Area of Interest | | 12.6 | 100.0% |

APPENDIX B

**WETLAND DELINEATION PLAN AND
PHOTO LOCATION MAP**



STAHL SHEAFFER ENGINEERING
 10 HUNTERSFIELD DRIVE SUITE 100
 FORT LINDSEY PA 19030
 WWW.SSE.USA.COM



SURVEYOR: CEE
 CADD: GMD
 DESIGNER: CEE
 PROJ. MANAGER: CEE
 FILE: 15-144

| DATE | DESCRIPTION | REVISIONS |
|------|-------------|-----------|
| | | |
| | | |

PROJECT NAME

LIBERTY HOLLOW TRAIL

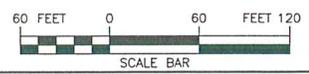
NORTHUMBERLAND BOROUGH
 SHEET NAME

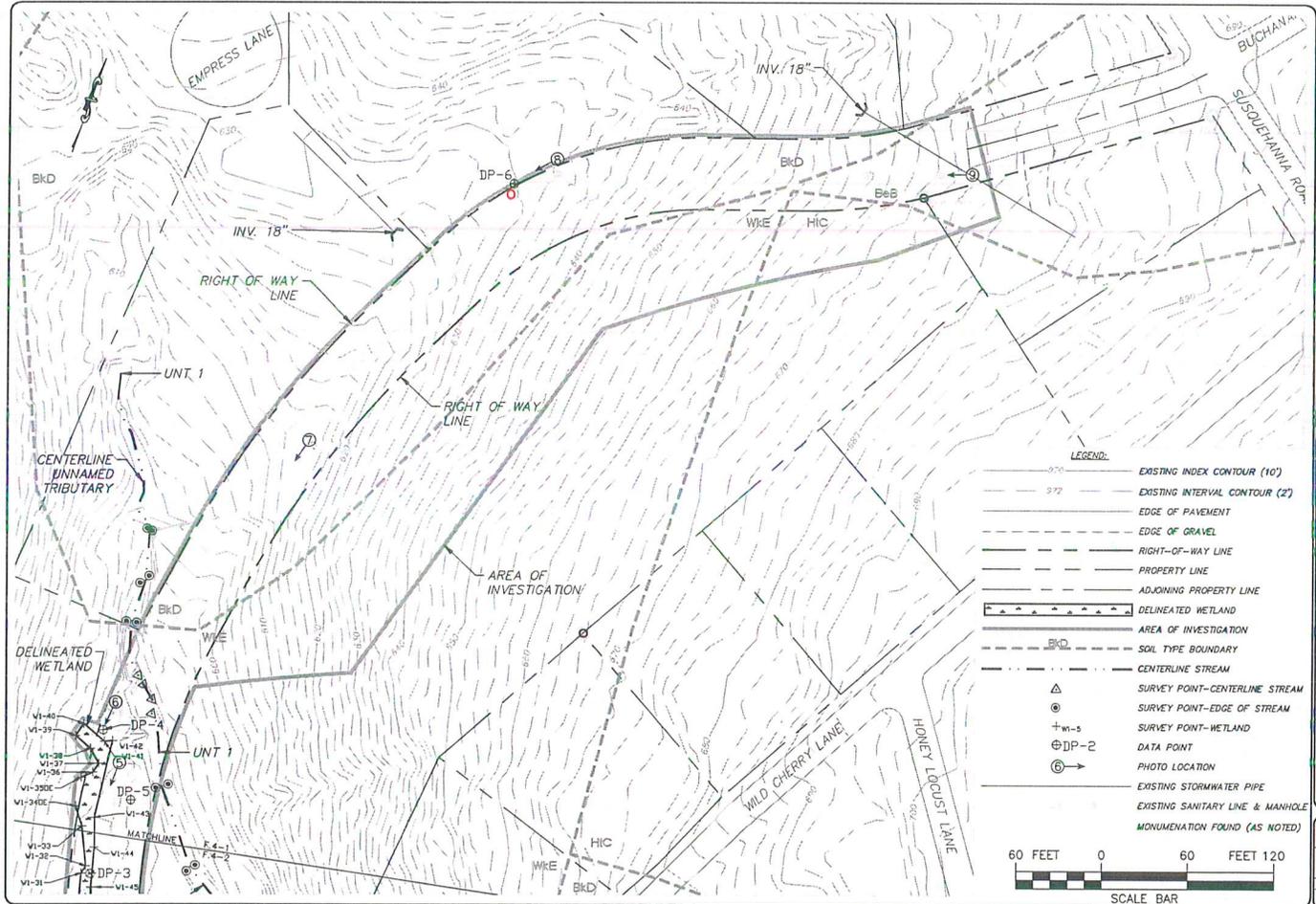
FIGURE 4
 WETLAND DELINEATION PLAN AND PHOTO LOCATION MAP

SHEET 1 OF 2

PROJECT NO: SSE 15-144
 DATE: FEBRUARY 24, 2016
 SCALE: SHEET NO. 1:60 F.4-1

- LEGEND:**
- EXISTING INDEX CONTOUR (10')
 - EXISTING INTERVAL CONTOUR (2')
 - EDGE OF PAVEMENT
 - EDGE OF GRAVEL
 - RIGHT-OF-WAY LINE
 - PROPERTY LINE
 - ADJOINING PROPERTY LINE
 - DELINEATED WETLAND
 - AREA OF INVESTIGATION
 - SOIL TYPE BOUNDARY
 - CENTERLINE STREAM
 - SURVEY POINT-CENTERLINE STREAM
 - SURVEY POINT-EDGE OF STREAM
 - SURVEY POINT-WETLAND
 - DATA POINT
 - PHOTO LOCATION
 - EXISTING STORMWATER PIPE
 - EXISTING SANITARY LINE & MANHOLE
 - MONUMENTATION FOUND (AS NOTED)





| | |
|---|-----------|
| STAHL SHEAFFER ENGINEERING <small>INCORPORATED</small> <small>1000 BUCHANAN AVENUE, SUITE 100</small> <small>WILKES BARRE, PA 18702</small> <small>WWW.SSE-LLC.COM</small> | |
| | |
| SURVEYOR | CES |
| CADD | GWJ |
| DESIGNER | CES |
| PROJ. MANAGER | CES |
| 15-144 | |
| DATE DESCRIPTION REVISIONS | |
| PROJECT NAME | |
| LIBERTY HOLLOW TRAIL | |
| NORTHUMBERLAND BOROUGH | |
| SHEET NAME | |
| FIGURE 4 | |
| WETLAND DELINEATION PLAN AND PHOTO LOCATION MAP | |
| SHEET 2 OF 2 | |
| PROJECT NO. SSE 15-144 | |
| DATE FEBRUARY 24, 2016 | |
| SCALE | SHEET NO. |
| 1:60 | F. 4-2 |

APPENDIX C
PHOTOGRAPHS



Photo 1. View of the south end of the study area. Data Point #1 is shown on the left. (10/13/15)



Photo 2. Soil profile showing the depleted matrix found at Data Point #2 of Wetland 1. (10/13/15)



Photo 3. View of Wetland 1 looking northwest near Data Point #2. (10/13/15)



Photo 4. View of the wetland swale portion of Wetland 1 looking south. (10/13/15)



Photo 5. View of Wetland 1 looking south toward Data Point #3. (10/13/15)



Photo 6. View of Wetland 1 looking south toward Data Point #4. (10/13/15)



Photo 7. View the study area adjacent to the maintained lawn looking south. (10/13/15).



Photo 8. View of Data Point 6 looking south. (10/13/15)



Photo 9. View of the northern extent of the study area at Buchanan Avenue looking south. (10/13/15)

APPENDIX D

WETLAND DETERMINATION DATA FORMS

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Liberty Hollow Trail City/County: Northumberland/Northumberland Sampling Date: 10/13/2015
 Applicant/Owner: Northumberland Borough State: PA Sampling Point: DP-1
 Investigator(s): Jason Reed - Stahl Sheaffer Engineering Section, Township, Range: Northumberland Borough
 Landform (hillslope, terrace, etc.): sewer line ROW Local relief (concave, convex, none): none Slope (%) 1%
 Subregion (LRR or MLRA): MLRA 147, LRR S Lat: 40° 53' 47.54" Long: 76° 47' 30.74" Datum: WGS 84
 Soil Map Unit Name: Wiekert Klinesville shaly silt loam, steep NWI classification: none
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" Yes x No
 Are Vegetation , Soil , or Hydrology naturally problematic? present? If needed, explain in remarks.

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

Hydrophytic Vegetation Present? Yes No x
 Hydric Soil Present? Yes No x Is the Sampled Area within a Wetland? Yes No X
 Wetland Hydrology Present? Yes x No

Remarks:
 The data point was recorded at the edge of the sewer line ROW. The soils was observed as 2 to 3 inches of loamy material underlain by compacted clay and rock.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

Surface Water (A1) Aquatic Fauna (B13)
 High Water Table (A2) True Aquatic Plants (B14)
 Saturation (A3) Hydrogen Sulfide Odor (C1)
 Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3)
 Sediment Deposits (B2) Presence of Reduced Iron (C4)
 Drift Deposits (B3) Recent Iron Reduction in Tilled Soils (C6)
 Algal Mats or Crust (B4) Thin Muck Surface (C7)
 Iron Deposits (B5) Other (Explain in Remarks)
 Inundation Visible on Aerial Imagery (B7)
 Water-Stained Leaves (B9)

Secondary Indicators (minimum of two required)

Surface Soil Cracks (B6)
 Sparsely Vegetated Concave Surface (B8)
 Drainage Patterns (B10)
 Moss Trim Lines (B16)
 Dry-Season Water Table (C2)
 Crayfish Burrows (C8)
 Saturation Visible on Aerial Imagery (C9)
 Stunted or Stressed Plants (D1)
 Geomorphic Position (D2)
 Shallow Aquitard (D3)
 Microtopographic Relief (D4)
 FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes x No Depth (inches): 0.25 to 0.5
 Water Table Present? Yes No x Depth (inches):
 Saturation Present? Yes No x Depth (inches):
 (includes capillary fringe)

Wetland Hydrology Present?

Yes x No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Water is flowing over the surface but not penetrating below approximately two inches. Water is released from upslope and flows over this gently sloping area. The water flows through but does not saturated the subsurface layers. Surface water is not a result of a water table.

| VEGETATION (Four Strata) - Use scientific names of plants. | | | | Sampling Point: DP-1 |
|--|------------------------------|-----------|-------------------------|---|
| Tree Stratum (Plot size: <u>10</u>) | | | | Dominance Test Worksheet: Numbers of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33</u> (A/B) |
| 1. | <u>none</u> | | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
| 5. | | | | |
| 6. | | | | |
| 7. | | | | |
| | | | = Total Cover | |
| Sapling/Shrub Stratum (Plot size <u>10</u>) | | | | |
| 1. | <u>Rosa multiflora</u> | <u>20</u> | <u>Y</u> <u>FACU</u> | |
| 2. | <u>Ligustrum vulgare</u> | <u>5</u> | <u>Y</u> <u>FACU</u> | |
| 3. | <u>Lindera benzoin</u> | <u>4</u> | <u>N</u> <u>FAC</u> | |
| 4. | | | | |
| 5. | | | | |
| 6. | | | | |
| 7. | | | | |
| | | | <u>29</u> = Total Cover | |
| Herb Stratum (Plot size: <u>5</u>) | | | | |
| 1. | <u>Unknown grass</u> | <u>35</u> | | |
| 2. | <u>Microstegium vimineum</u> | <u>20</u> | <u>Y</u> <u>FAC</u> | |
| 3. | <u>Onoclea sensibilis</u> | <u>15</u> | <u>N</u> <u>FACW</u> | |
| 4. | <u>Pilea pumila</u> | <u>5</u> | <u>N</u> <u>FACW</u> | |
| 5. | <u>Persicaria posumba</u> | <u>3</u> | <u>N</u> <u>FACU</u> | |
| 6. | <u>Unknown grass#2</u> | <u>3</u> | <u>N</u> | |
| 7. | | | | |
| 8. | <u>remainder bare ground</u> | | | |
| 9. | | | | |
| 10. | | | | |
| 11. | | | | |
| 12. | | | | |
| | | | <u>81</u> = Total Cover | |
| Woody Vine Stratum (Plot size: <u>10</u>) | | | | |
| 1. | <u>none</u> | | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
| | | | = Total Cover | |

| | |
|---|--|
| Prevalence Index Worksheet: Total % Cover of: Multiply by: OBL species <u>0</u> x1 <u>0</u> FACW species <u>20</u> x2 <u>40</u> FAC species <u>24</u> x3 <u>72</u> FACU species <u>28</u> x4 <u>112</u> UPL species <u>0</u> x5 <u>0</u> Column Totals: <u>72</u> (A) <u>224</u> (B) | |
| Prevalence Index = B/A <u>3.11</u> | |
| Hydrophytic Vegetation Indicators: Rapid Test for Hydrophytic Vegetation Dominance Test is >50% Prevalence Index is ≤3.0 ¹ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation ¹ (Explain) | |
| ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. | |
| Definitions of Vegetation Strata: Tree - Woody plants (excluding vines) 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft. (1 m) tall. Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft. tall. Woody vines - All woody vines greater than 3.28 ft. in height. | |
| Hydrophytic Vegetation Present? Yes <u> </u> No <u>x</u> | |

Remarks: (Include photo numbers here or on a separate sheet.)
 No trees contributed to the plot. They were rooted on the upslope hillslope not affected by conditions at this plot.

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Liberty Hollow Trail City/County: Northumberland/Northumberland Sampling Date: 10/13/2015
 Applicant/Owner: Northumberland Borough State: PA Sampling Point: DP-2
 Investigator(s): Jason Reed - Stahl Sheaffer Engineering Section, Township, Range: Northumberland Borough
 Landform (hillslope, terrace, etc.): sewer line ROW Local relief (concave, convex, none): none Slope (%) 1%
 Subregion (LRR or MLRA): MLRA 147, LRR S Lat: 40° 53' 48.59" Long: 40° 53' 47.54" Datum: WGS 84
 Soil Map Unit Name: Wiekert Klinesville shaly silt loam, steep NWI classification: none
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" Yes x No
 Are Vegetation , Soil , or Hydrology naturally problematic? present? If needed, explain in remarks.

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

Hydrophytic Vegetation Present? Yes x No
 Hydric Soil Present? Yes x No Is the Sampled Area within a Wetland? Yes x No
 Wetland Hydrology Present? Yes x No

Remarks:
 Normal circumstances are considered present due to the amount of time that has passed since the sewer line was installed. However, the shallow soil depth that remains does affect the ability of this area maintain hydrologic duration.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

| | |
|--|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Aquatic Fauna (B13) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> True Aquatic Plants (B14) |
| <input checked="" type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Water Marks (B1) | <input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Algal Mats or Crust (B4) | <input type="checkbox"/> Thin Muck Surface (C7) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | |
| <input type="checkbox"/> Water-Stained Leaves (B9) | |

Secondary Indicators (minimum of two required)

| |
|--|
| <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) |
| <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Moss Trim Lines (B16) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Stunted or Stressed Plants (D1) |
| <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> Microtopographic Relief (D4) |
| <input type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

| | | |
|--|--------------------------|--|
| Surface Water Present? Yes <u> </u> No <u>x</u> | Depth (inches): | Wetland Hydrology Present? Yes <u>x</u> No <u> </u> |
| Water Table Present? Yes <u> </u> No <u>x</u> | Depth (inches): | |
| Saturation Present? Yes <u>x</u> No <u> </u> (includes capillary fringe) | Depth (inches): <u>0</u> | |

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: The water at this location flows in from spring discharges at the surface and filters through this location. The water has saturated the upper 5 inches but moves along the 5 inches depth due to an impermeable layer of compacted clay and rock below.

| VEGETATION (Four Strata) - Use scientific names of plants. | | | | Sampling Point: DP-2 |
|--|------------------------------|----|--------------------------|---|
| Tree Stratum (Plot size: <u>15</u>) | | | | Dominance Test Worksheet: Numbers of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>67</u> (A/B) |
| 1. | <u>none</u> | | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
| 5. | | | | |
| 6. | | | | |
| 7. | | | | |
| | | | = Total Cover | |
| Sapling/Shrub Stratum (Plot size <u>15</u>) | | | | Prevalence Index Worksheet: Total % Cover of: Multiply by: OBL species <u> </u> x1 <u> </u> FACW species <u> </u> x2 <u> </u> FAC species <u> </u> x3 <u> </u> FACU species <u> </u> x4 <u> </u> UPL species <u> </u> x5 <u> </u> Column Totals: <u> </u> (A) (B) |
| 1. | <i>Rosa multiflora</i> | 8 | Y FACU | |
| 2. | <i>Lindera benzoin</i> | 3 | Y FAC | |
| 3. | | | | |
| 4. | | | | |
| 5. | | | | |
| 6. | | | | |
| 7. | | | | |
| | | | 11 = Total Cover | |
| Herb Stratum (Plot size: <u>5</u>) | | | | |
| 1. | <i>Microstegium vimineum</i> | 40 | Y FAC | |
| 2. | <i>unknown grass</i> | 35 | | |
| 3. | <i>Panicum sagittata</i> | 15 | N OBL | |
| 4. | <i>Panicum posumba</i> | 5 | N FACU | |
| 5. | <i>Ranunculus repens</i> | 3 | N FAC | |
| 6. | <i>Pilea pumila</i> | 2 | N FACW | |
| 7. | <i>Glechoma hederacea</i> | 1 | N FACU | |
| 8. | | | | |
| 9. | | | | |
| 10. | | | | |
| 11. | | | | |
| 12. | | | | |
| | | | 101 = Total Cover | |
| Woody Vine Stratum (Plot size: <u>15</u>) | | | | Definitions of Vegetation Strata: Tree - Woody plants (excluding vines) 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft. (1 m) tall. Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft. tall. Woody vines - All woody vines greater than 3.28 ft. in height. |
| 1. | <u>none</u> | | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
| | | | = Total Cover | |
| | | | | Hydrophytic Vegetation Present? Yes <u>x</u> No <u> </u> |

Remarks: (Include photo numbers here or on a separate sheet.)

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Liberty Hollow Trail City/County: Northumberland/Northumberland Sampling Date: 10/13/2015
 Applicant/Owner: Northumberland Borough State: PA Sampling Point: DP-3
 Investigator(s): Jason Reed - Stahl Sheaffer Engineering Section, Township, Range: Northumberland Borough
 Landform (hillslope, terrace, etc.): sewer line ROW Local relief (concave, convex, none): none Slope (%) 1%
 Subregion (LRR or MLRA): MLRA 147, LRR S Lat: 40° 53' 53.00" Long: 76° 47' 31.41" Datum: WGS 84
 Soil Map Unit Name: Wiekert Klinesville shaly silt loam, steep NWI classification: none
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" Yes x No
 Are Vegetation , Soil , or Hydrology naturally problematic? present? If needed, explain in remarks.

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

Hydrophytic Vegetation Present? Yes x No
 Hydric Soil Present? Yes x No Is the Sampled Area within a Wetland? Yes X No
 Wetland Hydrology Present? Yes x No

Remarks:
 Normal circumstances are considered present due to the amount of time that has passed since the sewer line was installed. However, the shallow soil depth that remains does affect the ability of this area to maintain hydrologic duration.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Aquatic Fauna (B13) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> True Aquatic Plants (B14) |
| <input checked="" type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Algal Mats or Crust (B4) | <input type="checkbox"/> Thin Muck Surface (C7) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | |
| <input type="checkbox"/> Water-Stained Leaves (B9) | |

Secondary Indicators (minimum of two required)

- | |
|--|
| <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) |
| <input checked="" type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Moss Trim Lines (B16) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Stunted or Stressed Plants (D1) |
| <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> Microtopographic Relief (D4) |
| <input type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

| | | |
|--|--------------------------|---|
| Surface Water Present? Yes <u> </u> No <u>x</u> | Depth (inches): | Wetland Hydrology Present? Yes <u>x</u> No <u> </u> |
| Water Table Present? Yes <u> </u> No <u>x</u> | Depth (inches): | |
| Saturation Present? Yes <u>x</u> No <u> </u> (includes capillary fringe) | Depth (inches): <u>0</u> | |

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: The plot was approximately 1.0 feet from flowing surface water.

| VEGETATION (Four Strata) - Use scientific names of plants. | | | | Sampling Point: DP-3 |
|--|-----------------------------------|-----------|-------------------------|---|
| Tree Stratum (Plot size: <u>5</u>) | | | | Dominance Test Worksheet: Numbers of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B) |
| 1. | <u>none</u> | | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
| 5. | | | | |
| 6. | | | | |
| | | | = Total Cover | |
| Sapling/Shrub Stratum (Plot size <u>5</u>) | | | | Prevalence Index Worksheet: Total % Cover of: Multiply by: OBL species _____ x1 _____ FACW species _____ x2 _____ FAC species _____ x3 _____ FACU species _____ x4 _____ UPL species _____ x5 _____ Column Totals: _____ (A) (B) |
| 1. | <u>none</u> | | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
| 5. | | | | |
| 6. | | | | |
| | | | = Total Cover | |
| Herb Stratum (Plot size: <u>5</u>) | | | | Hydrophytic Vegetation Indicators: Rapid Test for Hydrophytic Vegetation x Dominance Test is >50% Prevalence Index is ≤ 3.0 ¹ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 1. | <u>Pilea pumila</u> | <u>22</u> | <u>Y</u> <u>FACW</u> | |
| 2. | <u>sedge</u> | <u>22</u> | | |
| 3. | <u>Microstegium vimineum</u> | <u>22</u> | <u>Y</u> <u>FAC</u> | |
| 4. | <u>Bohemaria cylindrica</u> | <u>15</u> | <u>Y</u> <u>FACW</u> | |
| 5. | <u>Persicaria posumba</u> | <u>8</u> | <u>N</u> <u>FACU</u> | |
| 6. | | | | |
| 7. | <u>remainder bare, leaf cover</u> | | | |
| 8. | | | | |
| 9. | | | | |
| 10. | | | | |
| 11. | | | | |
| 12. | | | | |
| | | | <u>89</u> = Total Cover | |
| Woody Vine Stratum (Plot size: <u>5</u>) | | | | Definitions of Vegetation Strata: Tree - Woody plants (excluding vines) 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft. (1 m) tall. Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft. tall. Woody vines - All woody vines greater than 3.28 ft. in height. |
| 1. | <u>none</u> | | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
| | | | = Total Cover | |
| Hydrophytic Vegetation Present? Yes <u>x</u> No _____ | | | | |

Remarks: (Include photo numbers here or on a separate sheet.)
 Sampling radius was 5 feet for all stratum due to the close proximity of the plot location to the steep hillslope and the area downslope of the ROW which was not characteristic of this location. This was a confined area between slightly higher ground of the ROW and the steep upland hillslope.

SOIL **Sampling Point: DP-3**

Profile Description: (Describe the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|-----|----------------|----|-------------------|------------------|-----------|-----------|
| | Color (moist) | % | Color (moist) | % | Type ¹ | Loc ² | | |
| 0-2.5 | 10 YR 2/1 | 100 | | | | | loam | |
| 2.5-4.5 | 7.5 YR 4/1 | 95 | 7.5 YR 3/4 | 5 | C | M | silt loam | |
| 4.5- 8.0 | 10 YR 4/2 | 89 | 7.5 YR 3/4 | 9 | C | M | silt loam | |
| 8.0-10.0 | 10 YR 5/1 | 70 | 10 YR 4/6 | 25 | C | M | clay loam | |
| 10+ | refusal | | | | | | | rock/clay |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: **Indicators for Problematic Hydric Soils³:**

| | | |
|---|---|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> 2 cm Muck (A10) (MLRA 147) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Dark Surface (S7) | <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 147, 148) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148) | <input type="checkbox"/> Piedmont Floodplain Soils (F19)(MLRA 136, 147) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Thin Dark Surface (S9) (LLR R, MLRA 149B) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> 2 cm Muck (A10) (LRR N) | <input checked="" type="checkbox"/> Depleted Matrix (F3) | |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Redox Dark Surface (F6) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Depleted Dark Surface (F7) | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)(LRR N, MLRA 147, 148) | <input type="checkbox"/> Redox Depressions (F8) | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Iron-Manganese Masses (F12)(LRR N, MLRA 136) | |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122) | |
| | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148) | |
| | <input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147) | |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: clay/rock

Depth (inches): 10

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Liberty Hollow Trail City/County: Northumberland/Northumberland Sampling Date: 10/13/2015
 Applicant/Owner: Northumberland Borough State: PA Sampling Point: DP-4
 Investigator(s): Jason Reed - Stahl Sheaffer Engineering Section, Township, Range: Northumberland Borough
 Landform (hillslope, terrace, etc.): sewer line ROW Local relief (concave, convex, none): none Slope (%) 1%
 Subregion (LRR or MLRA): MLRA 147, LRR S Lat: 40° 53' 55.16" Long: 76° 47' 32.05" Datum: WGS 84
 Soil Map Unit Name: Wiekert Klinesville shaly silt loam, steep NWI classification: none
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" Yes x No
 Are Vegetation , Soil , or Hydrology naturally problematic? present? If needed, explain in remarks.

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

Hydrophytic Vegetation Present? Yes No x
 Hydric Soil Present? Yes No x Is the Sampled Area within a Wetland? Yes No x
 Wetland Hydrology Present? Yes x No

Remarks:
 Upland data point

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

| | |
|--|---|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Aquatic Fauna (B13) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> True Aquatic Plants (B14) |
| <input checked="" type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Algal Mats or Crust (B4) | <input type="checkbox"/> Thin Muck Surface (C7) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | |
| <input type="checkbox"/> Water-Stained Leaves (B9) | |

Secondary Indicators (minimum of two required)

| |
|--|
| <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) |
| <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Moss Trim Lines (B16) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Stunted or Stressed Plants (D1) |
| <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> Microtopographic Relief (D4) |
| <input type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

| | | |
|--|--------------------------|---|
| Surface Water Present? Yes <u> </u> No <u>x</u> | Depth (inches): | Wetland Hydrology Present? Yes <u>x</u> No <u> </u> |
| Water Table Present? Yes <u> </u> No <u>x</u> | Depth (inches): | |
| Saturation Present? Yes <u>x</u> No <u> </u> (includes capillary fringe) | Depth (inches): <u>0</u> | |

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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

| Tree Stratum (Plot size: <u>15</u>) | Absolute % Cover | Dominant Species? | Indicator Status |
|--------------------------------------|------------------|-------------------|------------------|
| 1. <u>none</u> | | | |
| 2. _____ | | | |
| 3. _____ | | | |
| 4. _____ | | | |
| 5. _____ | | | |
| 6. _____ | | | |
| 7. _____ | | | |

| Sapling/Shrub Stratum (Plot size <u>15</u>) | Absolute % Cover | Dominant Species? | Indicator Status |
|--|------------------|-------------------|------------------|
| 1. <u>Rosa multiflora</u> | <u>10</u> | <u>Y</u> | <u>FACU</u> |
| 2. _____ | | | |
| 3. _____ | | | |
| 4. _____ | | | |
| 5. _____ | | | |
| 6. _____ | | | |
| 7. _____ | | | |

| Herb Stratum (Plot size: <u>5</u>) | Absolute % Cover | Dominant Species? | Indicator Status |
|-------------------------------------|------------------|-------------------|------------------|
| 1. <u>Microstegium vimineum</u> | <u>70</u> | <u>Y</u> | <u>FAC</u> |
| 2. <u>Panicum polyanthemum</u> | <u>6</u> | <u>N</u> | <u>FACU</u> |
| 3. <u>Pilea pumila</u> | <u>5</u> | <u>N</u> | <u>FACW</u> |
| 4. <u>Lindera benzoin</u> | <u>3</u> | <u>N</u> | <u>FAC</u> |
| 5. <u>Boehmeria cylindrica</u> | <u>3</u> | <u>N</u> | <u>FACW</u> |
| 6. <u>sedge</u> | <u>3</u> | <u>N</u> | |
| 7. <u>Impatiens capensis</u> | <u>2</u> | <u>N</u> | <u>FACW</u> |
| 8. _____ | | | |
| 9. _____ | | | |
| 10. _____ | | | |
| 11. _____ | | | |
| 12. _____ | | | |

| Woody Vine Stratum (Plot size: <u>15</u>) | Absolute % Cover | Dominant Species? | Indicator Status |
|--|------------------|-------------------|------------------|
| 1. <u>none</u> | | | |
| 2. _____ | | | |
| 3. _____ | | | |
| 4. _____ | | | |

Sampling Point:

Dominance Test Worksheet:

Numbers of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index Worksheet:

| Total % Cover of: | Multiply by: |
|--------------------------|--------------------|
| OBL species <u>0</u> | x1 <u>0</u> |
| FACW species <u>10</u> | x2 <u>20</u> |
| FAC species <u>73</u> | x3 <u>219</u> |
| FACU species <u>16</u> | x4 <u>64</u> |
| UPL species <u>0</u> | x5 <u>0</u> |
| Column Totals: <u>99</u> | (A) <u>303</u> (B) |

Prevalence Index = B/A 3.1

Hydrophytic Vegetation Indicators:

_____ Rapid Test for Hydrophytic Vegetation

_____ Dominance Test is >50%

_____ Prevalence Index is ≤3.0¹

_____ Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

_____ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants (excluding vines) 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft. (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft. tall.

Woody vines - All woody vines greater than 3.28 ft. in height.

Hydrophytic Vegetation Present? Yes _____ No x

Remarks: (Include photo numbers here or on a separate sheet.)

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Liberty Hollow Trail City/County: Northumberland/Northumberland Sampling Date: 10/13/2015
 Applicant/Owner: Northumberland Borough State: PA Sampling Point: DP-5
 Investigator(s): Jason Reed - Stahl Sheaffer Engineering Section, Township, Range: Northumberland Borough
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%) 1%
 Subregion (LRR or MLRA): MLRA 147, LRR S Lat: 40° 53' 53.81" Long: 76° 47' 31.23" Datum: WGS 84
 Soil Map Unit Name: Berks Channery silt loam, 15 to 25% NWI classification: none
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" Yes x No
 Are Vegetation , Soil , or Hydrology naturally problematic? present? If needed, explain in remarks.

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

Hydrophytic Vegetation Present? Yes x No
 Hydric Soil Present? Yes No x Is the Sampled Area within a Wetland? Yes No X
 Wetland Hydrology Present? Yes No x

Remarks:
 This area was located immediately downslope of the ROW and on a high terrace above the stream channel. Since this area is located close and much higher than the stream channel, this location is unlikely to maintain hydrology for a sufficient duration to create wetland conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Aquatic Fauna (B13) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> True Aquatic Plants (B14) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Algal Mats or Crust (B4) | <input type="checkbox"/> Thin Muck Surface (C7) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | |
| <input type="checkbox"/> Water-Stained Leaves (B9) | |

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- Microtopographic Relief (D4)
- FAC-Neutral Test (D5)

Field Observations:

| | | |
|--|-----------------------------|---|
| Surface Water Present? Yes <u> </u> No <u>x</u> | Depth (inches): <u> </u> | Wetland Hydrology Present? Yes <u> </u> No <u>X</u> |
| Water Table Present? Yes <u> </u> No <u>x</u> | Depth (inches): <u> </u> | |
| Saturation Present? Yes <u> </u> No <u>x</u> (includes capillary fringe) | Depth (inches): <u> </u> | |

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Liberty Hollow Trail City/County: Northumberland/Northumberland Sampling Date: 10/13/2015
 Applicant/Owner: Northumberland Borough State: PA Sampling Point: DP-6
 Investigator(s): Jason Reed - Stahl Sheaffer Engineering Section, Township, Range: Northumberland Borough
 Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): none Slope (%) 3%
 Subregion (LRR or MLRA): MLRA 147, LRR S Lat: 40° 53' 59.66" Long: 76° 47' 29.82" Datum: WGS 84
 Soil Map Unit Name: Wiekert Klinesville shaly silt loam, steep NWI classification: none
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes x No
 Are Vegetation , Soil , or Hydrology naturally problematic? If needed, explain in remarks.

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

Hydrophytic Vegetation Present? Yes No x
 Hydric Soil Present? Yes No x Is the Sampled Area within a Wetland? Yes No x
 Wetland Hydrology Present? Yes No x

Remarks:
 This plot is located adjacent to a swale. The swale is an ephemeral swale that only conveys flow during storm events. It collects runoff from local streets located upslope.

HYDROLOGY

Wetland Hydrology Indicators:

| Primary Indicators (minimum of one is required; check all that apply) | Secondary Indicators (minimum of two required) |
|---|---|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Aquatic Fauna (B13) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> True Aquatic Plants (B14) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Algal Mats or Crust (B4) | <input type="checkbox"/> Thin Muck Surface (C7) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) |
| | <input type="checkbox"/> Drainage Patterns (B10) |
| | <input type="checkbox"/> Moss Trim Lines (B16) |
| | <input type="checkbox"/> Dry-Season Water Table (C2) |
| | <input type="checkbox"/> Crayfish Burrows (C8) |
| | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| | <input type="checkbox"/> Stunted or Stressed Plants (D1) |
| | <input type="checkbox"/> Geomorphic Position (D2) |
| | <input type="checkbox"/> Shallow Aquitard (D3) |
| | <input type="checkbox"/> Microtopographic Relief (D4) |
| | <input type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

Surface Water Present? Yes No x Depth (inches):
 Water Table Present? Yes No x Depth (inches):
 Saturation Present? Yes No x Depth (inches):
 (includes capillary fringe)

Wetland Hydrology Present?
Yes No x

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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

Sampling Point: DP-6

| Tree Stratum (Plot size: <u>30</u>) | Absolute % Cover | Dominant Species? | Indicator Status |
|--------------------------------------|------------------|-------------------|------------------|
| 1. <i>Ailanthus altissima</i> | 20 | Y | FACU |
| 2. <i>Robinia pseudoacacia</i> | 8 | Y | FACU |
| 3. <i>Platanus occidentalis</i> | 6 | N | FACW |
| 4. <i>Fraxinus americana</i> | 5 | N | FACU |
| 5. _____ | | | |
| 6. _____ | | | |
| 7. _____ | | | |
| | 39 | = Total Cover | |

Dominance Test Worksheet:

Numbers of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

| Sapling/Shrub Stratum (Plot size <u>15</u>) | Absolute % Cover | Dominant Species? | Indicator Status |
|--|------------------|-------------------|------------------|
| 1. <i>Lindera benzoin</i> | 45 | Y | FAC |
| 2. <i>Acer negundo</i> | 3 | N | FAC |
| 3. _____ | | | |
| 4. _____ | | | |
| 5. _____ | | | |
| 6. _____ | | | |
| 7. _____ | | | |
| | 48 | = Total Cover | |

Prevalence Index Worksheet:

| Total % Cover of: | Multiply by: | |
|-------------------|--------------|---------|
| OBL species | x1 | |
| FACW species | x2 | 12 |
| FAC species | x3 | 339 |
| FACU species | x4 | 188 |
| UPL species | x5 | |
| Column Totals: | (A) | 539 (B) |

Prevalence Index = B/A 3.24

| Herb Stratum (Plot size: <u>5</u>) | Absolute % Cover | Dominant Species? | Indicator Status |
|-------------------------------------|------------------|-------------------|------------------|
| 1. <i>Microstegium viminum</i> | 65 | Y | FAC |
| 2. <i>Panicum polyanthemum</i> | 8 | N | FACU |
| 3. <i>Ageratina altissima</i> | 4 | N | FACU |
| 4. <i>Rosa multiflora</i> | 2 | N | FACU |
| 5. _____ | | | |
| 6. _____ | | | |
| 7. leaf matting remainder | | | |
| 8. _____ | | | |
| 9. _____ | | | |
| 10. _____ | | | |
| 11. _____ | | | |
| 12. _____ | | | |
| | 79 | = Total Cover | |

Hydrophytic Vegetation Indicators:

Rapid Test for Hydrophytic Vegetation

Dominance Test is >50%

Prevalence Index is ≤3.0¹

Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants (excluding vines) 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft. (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft. tall.

Woody vines - All woody vines greater than 3.28 ft. in height.

| Woody Vine Stratum (Plot size: <u>15</u>) | Absolute % Cover | Dominant Species? | Indicator Status |
|--|------------------|-------------------|------------------|
| 1. none | | | |
| 2. _____ | | | |
| 3. _____ | | | |
| 4. _____ | | | |
| | | = Total Cover | |

Hydrophytic Vegetation Present? Yes _____ No **X**

Remarks: (Include photo numbers here or on a separate sheet.)

The vine stratum radius was reduced to 15' since the area beyond that radius is not characteristic of this plot location.

