Mathew, Shiny

From: Sara Holmes <Sara.Holmes@nv5.com>
Sent: Thursday, October 24, 2019 1:06 PM
To: Mathew, Shiny
Subject: [EXTERNAL] FW: [External] Adelphia_Updated PNDI Review Request

Follow Up Flag: Follow up
Flag Status: Flagged

Confirmation of receipt from PFBC – please see below.

Sara Holmes | Environmental Compliance Program Specialist | FERC Permitting Project Manager | **NV5**
813 N. Dupont St. | Wilmington, DE 19805 | C: 727.565.9895

From: Lech, Gregory <glech@pa.gov>
Sent: Thursday, October 24, 2019 1:04 PM
To: Sara Holmes <Sara.Holmes@nv5.com>
Subject: RE: [External] Adelphia_Updated PNDI Review Request

Hi Sara,

I have received the update, thank you for your continued coordination with the PA Fish and Boat Commission.

Regards,

Gregory Lech | Fisheries Biologist
PA Fish & Boat Commission | Division of Environmental Services
P.O. Box 356 | Revere, PA 18953
Phone: 610.847.8772
www.fishandboat.com

From: Sara Holmes <Sara.Holmes@nv5.com>
Sent: Thursday, October 24, 2019 12:38 PM
To: Lech, Gregory <glech@pa.gov>
Subject: [External] Adelphia_Updated PNDI Review Request

Good afternoon, Greg –
Please see attached an updated PNDI review request for the Adelphia Gateway Project. Since our last request, Adelphia has added an additional temporary workspace at the proposed Quakertown Compressor Station Site. Please let me know if you have any questions.

Also, will you please let me know you received this email? We need confirmation of receipt from PNDI jurisdictional agencies in order to move forward with other parts of Project permitting.
Thanks,
Sara

Sara Holmes | Environmental Compliance Program Specialist | FERC Permitting Project Manager | **NV5**
813 N. Dupont St. | Wilmington, DE 19805 | C: 727.565.9895

October 20, 2019

U.S. Fish and Wildlife Service
Pennsylvania Field Office
110 Radnor Road, Suite 101
State College, PA 16801

Mr. Robert Anderson
Assistant Field Office Supervisor

Subject: **Revised PNDI Review**

Dear Mr. Anderson,

This submittal is to notify you of a change to the proposed Adelphia Gateway Project (Project) since your agency's September 10, 2019 review (**USFWS Project #2017-1465**). Adelphia Gateway, LLC (Adelphia) proposes to use approximately 6 acres of agricultural and residential land to the east and adjacent of the existing Quakertown Meter Station in Bucks County as additional temporary workspace (ATWS) and an associated temporary access road during Project construction. The ATWS would be used for office space, parking, equipment staging, and light fabrication activities. The ATWS and access road would be returned to pre-construction conditions upon Project completion. No other Project changes are proposed at this time.

NV5, LLC conducted wetland and waterbody surveys at the site in July 2019 and identified two wetlands that would be crossed by the ATWS and access road. The ATWS would temporarily affect 2.1 acres of wetlands, and the access road would temporarily affect 0.2 acre of wetlands. There are no waterbodies at the site. Mr. Scott Angus of NV5 conducted a Phase I Bog Turtle Assessment and determined that there is no suitable bog turtle present at the site. NV5, LLC (on behalf of Adelphia) is requesting an additional Large Project PNDI review to confirm that your earlier determination is not affected. Appendix A contains a PNDI Review Form. Appendix B contains a map of the proposed ATWS and access road. Appendix C contains a summary of the wetland surveys conducted at the site, and Appendix D contains the Phase I Bog Turtle Survey report.

If you have any questions or require additional information, please contact me at (727) 565-9895 or via e-mail at sara.holmes@nv5.com.

Sincerely,

Sara Holmes

Sara Holmes
Environmental Scientist
NV5, LLC

Appendix A

PNDI Review Form

Pennsylvania Natural Diversity Inventory
MANUAL PROJECT SUBMISSION FORM

This form provides site information necessary to perform an Environmental Review for special concern species and resources listed under the Endangered Species Act of 1973, the Wild Resource Conservation Act, the Pennsylvania Fish and Boat Code or the Pennsylvania Game and Wildlife Code.

Applicant Information

Name: Adelphia Gateway, LLC
Address: 1415 Wyckoff Rd, Wall, NJ 07719
Phone Number: 800-483-3179 Email: info@adelphiagateway.com

Contact Person Information - if different from applicant

Name: Sara Holmes (NV5)
Address: 813 N. Dupont St., Wilmington, DE 19805
Phone Number: 727-565-9895
Email: sara.holmes@nv5.com

Project Information

Project Name: Adelphia Gateway Project
Project Reference Point: Latitude:40°19'4.92"N Longitude: 75°24'43.90"W Datum: WGS84
Municipality: Multiple County: Delaware, Chester, Bucks, Montgomery, Northampton
[X] Attach a portion of a U.S.G.S. 7 ½ Minute Quadrangle Map with Project Boundaries clearly marked.
U.S.G.S. Quad Name: Multiple
Provide GIS shapefiles showing the project boundary (strongly recommended)

Project Description

Proposed Project Activity (including ALL earth disturbance areas and current conditions) Adelphia Gateway, LLC (Adelphia) proposes to use and enhance Interstate Energy Company's (IEC) existing natural gas and oil pipeline system located in eastern Pennsylvania. The existing system includes 84.2 miles of 18-inch outer diameter (OD) pipeline (Mainline); 4.4 miles of 20-inch OD pipeline; and four meter stations. Adelphia would construct the following new facilities along the Mainline: two 5,625 horsepower compressor stations; one 4.4 mile 16-inch OD pipeline lateral (the Tilghman Lateral); one 0.3 mile 16-inch OD pipeline lateral (the Parkway Lateral); five meter stations; two mainline valves (MLVs); seven blowdown assembly valves at existing MLVs; four pig launcher/receiver facilities; two new tap valves; and one wareyard within the limits of IEC's existing Marcus Hook Pump Station for the storage of pipe and contractor facilities.

Total Acres of Property: 53.9 Acreage to be Impacted: 53.9 This includes 37.5 acres of paved/graveled industrial/commercial-use land.

1. Will the entire project occur in or on an existing building, parking lot, driveway, road, maintained road shoulder, street, runway, paved area, railroad bed, or maintained lawn? Yes [ ] N [X]
2. Are there any waterways or waterbodies (intermittent or perennial rivers, streams, creeks, tributaries, lakes or ponds) in or near the project area, or on the land parcel? If so, how many feet away is the project?
   Yes [X] No [ ] The project would cross two creeks: Marcus Hook Creek (HDD) and Stoney Creek (aerial crossing).
3. Are wetlands located in or within 300 feet of the project area? Yes [X] If No, is this the result of a wetland delineation?
4. How many acres of tree removal, tree cutting or forest clearing will be necessary to implement all aspects of this project? 3.5 acres

Dept. of Conservation and Natural Resources
Bureau of Forestry, Ecological Services Section
400 Market St., PO Box 8552
Harrisburg, PA 17105
Email: RA-HERITAGEREVIEW@state.pa.us
fax: 717-772-0271

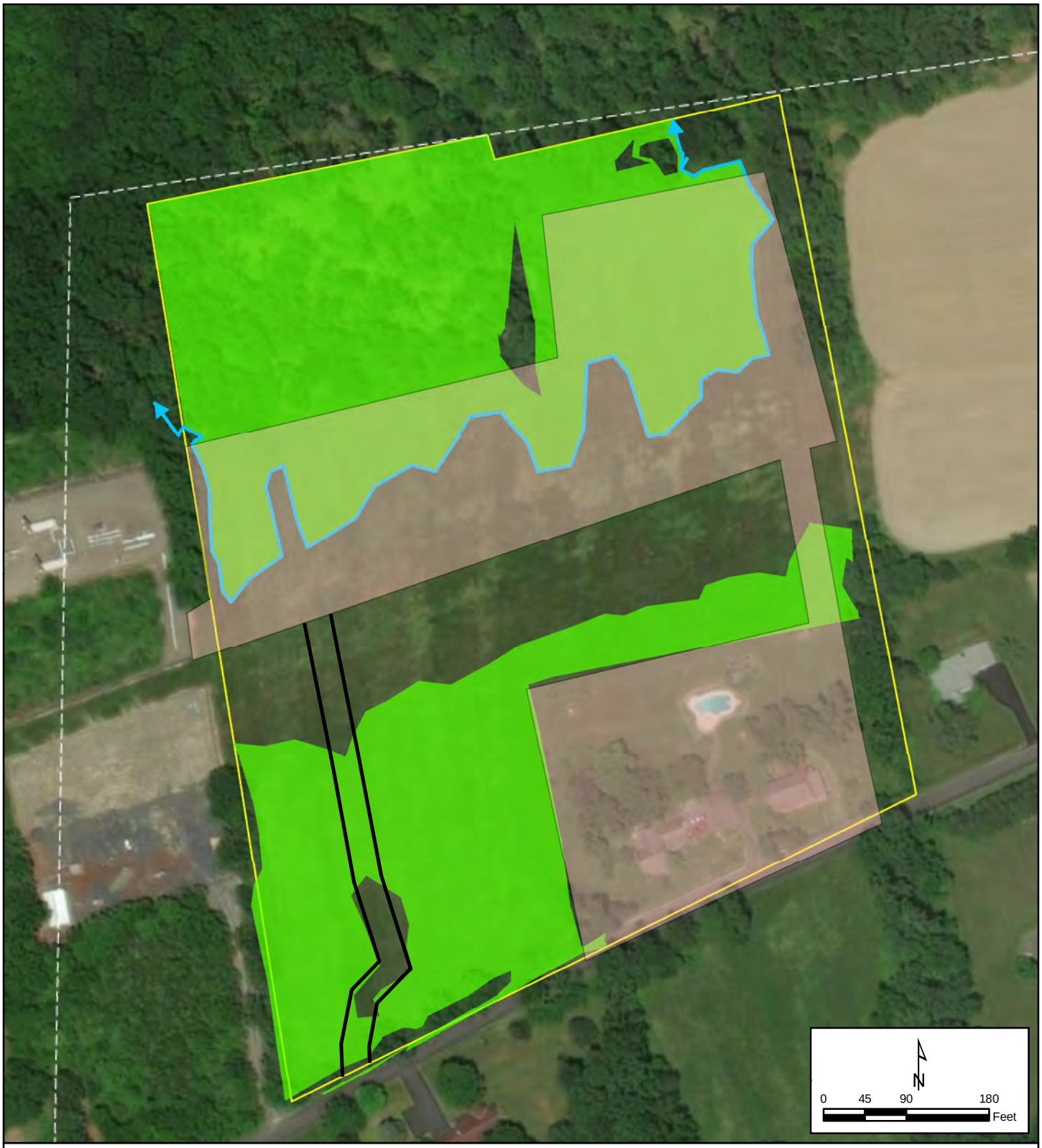
PA Game Commission
Bureau of Wildlife Habitat Management
Division of Environmental Planning & Habitat Protection
2001 Elmerton Avenue
Harrisburg, PA 17110-9797
RA-PGC_PNDI@pa.gov

PA Fish and Boat Commission
Natural Diversity Section
450 Robinson Lane
Bellefonte, PA 16823
Email: RA-FBPACENOTIFY@pa.gov

US Fish and Wildlife Service
Pennsylvania Field Office
110 Radnor Rd; Suite 101
State College, PA 16801
no faxes please

Appendix B

Map of Proposed ATWS and Access Road



LEGEND

- Open Ended Wetland
- Wetland
- Proposed Additional Temporary Workspace
- Proposed Access Road

NV5
www.NV5.com

REV	DESCRIPTION	CHK	DATE	APP	DATE

DRAWN BY	DD	10/4/2019
DESIGNED BY	DD	10/4/2019
CHECKED BY	XXX	XX/XX/18
APPROVED BY	XXX	XX/XX/18
NV5 JOB NO.	527317-0000050.00	
PLOT SCALE	1:1	
MODEL ID	XXXXXX	

Adelphia Gateway Project
Quakertown ATWS and Access Road
Quakertown, PA

SCALE	DRAWING NUMBER	REV
AS SHOWN	Quakertown_ENV_Map_080219	1

10/4/2019 12:24:13 PM Kuder

Appendix C

Summary of Conducted Wetland Surveys

NV5

August 12, 2019

Ms. Sara Holmes
NV5
1315 Walnut Street, Suite 900
Philadelphia, PA 191017

Via Electronic Mail to Sara.Holmes@nv5.com

Re: Wetland Delineation
Quakertown Compressor Station Area Site
West Rockhill Township
Bucks County, Pennsylvania

Dear Ms. Holmes:

At your request, a wetland delineation was performed on the referenced site. This letter summarizes the results of the wetland investigation.

NV5 performed a wetland investigation on a 14.4-acre parcel of agricultural and residential land located to the east of and adjacent to Interstate Energy Company's (IEC's) existing Quakertown Meter Station in West Rockhill Township, Bucks County, Pennsylvania (herein referred to as the Site). The wetland delineation was performed by Scott Angus of NV5 in July 2019. Vegetation, soils and hydrology were examined for evidence of wetland characteristics according to methodology outlined in the *Corps of Engineers Wetlands Delineation Manual (1987) and Eastern Mountains and Piedmont Regional Supplement to the Corps of Engineers Wetlands Delineation Manual* (2012). Use of this methodology is required by the US Army Corps of Engineers and the PA Department of Environmental Protection.

The wetland/upland boundaries within the Site were defined in the field with wetland flagging and then digitally recorded using a hand-held global positioning system (GPS).

Mr. Angus delineated two separate wetland areas:

- Wetland Area A (4.6 acres); and
- Wetland Area WZ (3.1 acres).

The wetlands are characterized by a dominance of hydrophytic vegetation, hydric soils, and presence of wetland hydrologic indicators. Upland areas lacked these characteristics. Attachment 1 includes a Map showing the wetland areas and upland inclusions at the Site.

Wetlands

Vegetation

Most of the onsite wetlands are palustrine emergent (PEM) found within an agricultural setting. Palustrine scrub-shrub wetlands (PSS) are found along the western edge of the site. A palustrine forested wetland (PFO) is located on the northern quarter of the site and is contiguous with one of the PEM wetland areas. Wetlands are dominated by hydrophytic vegetation.

Palustrine Emergent Wetlands - A PEM wetland is located across the northern portion of the site, and the second PEM wetland is located across the southern portion of the site. Dominant emergent vegetation includes redtop panic grass (*Panicum rigidulum*, facultative wetland [FACW]), redtop grass (*Agrostis gigantea*, FACW), reed canarygrass (*Phalaris arundinacea*, FACW), green bulrush (*Scirpus atrovirens*, obligate wetland [OBL]), yellow-fruited sedge (*Carex annectens*, FACW) and swamp milkweed (*Asclepias incarnate*, OBL), small carpetgrass (*Arthraxon hispidus*, facultative [FAC]), purple loosestrife (*Lythrum salicaria,* FACW), arrowleaf tearthumb (*Polygonum sagittatum*, OBL) and soft rush *(Juncus effusus*, OBL) are scattered throughout the wetland areas.[1] The majority of both Wetland Areas A and WZ are comprised of PEM wetlands.

Palustrine Forested Wetlands - The canopy layer in the PFO forested wetlands is dominated by dead and/or dying white ash (*Fraxinus americana*, facultative upland [FACU]) and green ash (*F. pennsylvanica*, FACW), live but stressed silver maple (*Acer saccharinum,* FACW) and red maple (*A. rubrum,* FAC), pin oak (*Quercus palustris*, FACW) and shagbark hickory (*Carya ovata*, FACU). The understory and groundcover layer is a monoculture of Japanese stiltgrass (*Microstegium vimineum,* FAC). The northern edge of Wetland Area A contains a PFO wetland.

Palustrine Scrub/Shrub Wetlands – The PSS portion of the wetland is dominated by pin oak and red maple saplings, silky dogwood *(Cornus amomum*, FACW*)*, poison ivy *(Toxicodendron radicans*, FAC) and southern arrowwood *(Viburnum dentatum,* FAC). The western edge of Wetland Area WZ is comprised of PSS wetlands.

Attachment 2 contains representative photographs of the wetland areas at the Site.

---

[1] The federal government assigns a wetland indicator status to plant species with the potential to occur in wetlands. The indicator codes and their descriptions are as follows:
OBL = almost always occur in wetlands
FACW = usually occur in wetlands, but may occur in non-wetlands
FAC = occur in wetlands and non-wetlands
FACU = usually occur in non-wetlands, but many occur in wetlands
UPL = almost never occur in wetlands

Soils

According to the Soil Survey Geographic Database (SSURGO) mapping, the Site is underlain by five soil types:

- Amwell silt loam, 0 to 3% slopes (AmA), which is a somewhat poorly drained soil;
- Amwell silt loam, 3 to 8% slopes (AmB), which is a somewhat poorly drained soil;
- Lehigh channery silt loam, 3 to 8% slopes (LmB), which is a moderately well drained soil;
- Mount Lucas silt loam, 3 to 8% slopes (MlB), which is a moderately well drained soil; and
- Towhee silt loam, 3 to 8% slopes (MlB), which is a poorly drained soil.

Only the Towhee soil, which is located in Wetland Area WZ is listed as a hydric soil, though the other four soils contain hydric inclusions. The field survey found that hydric soils are more widespread than the SSURGO mapping indicates.

Hydric soils characterized by a low chroma matrix with redox features were identified within the wetlands. Soils found during the Site visit contain subtle chroma changes and an increase of redox concentrations in in the wetlands. Generally, soils within wetlands exhibit a 7.5YR 4/1 matrix with redox features of 2.5Y 5/3 (depletion 10 percent) and 5YR 5/8 (concentration 5 percent). The soil texture is a silty clay.

Hydrology

Evidence of long-term wetland hydrology within wetland areas includes saturated soils and surface water within topographic depressions, drainage patterns, areas with stained leaves and vegetation, a shallow aquitard, geomorphic position, and microtopographic relief.

Uplands

Vegetation

Upland areas at the Site were very similar to the wetland areas, except hydrophytic vegetative species percentages decreased, and upland vegetation became dominant.

The main upland area is located between the two onsite wetland areas within a swath of early successional field that runs across the center of the site from east to west; this area corresponds with IEC's existing pipeline right-of-way. Vegetation within the early successional field is dominated by upland herbaceous species including common milkweed (*Asclepias syriaca*, FACU), purple milkweed (*Asclepias purpurascens*, FACU), poke milkweed (*Asclepias exaltata*, FACU), Indian hemp (*Apocynum cannabinum*, FACU), perennial rye (*Lolium perenne*, FACU), timothy (*Phleum pretense*, FACU), Indian grass (*Sorghastrum nutans*, FACU), meadow fescue (*Schedonorus pratensis*, FACU) and tall fescue (*Schedonorus arundinaceus*, FACU). In addition, upland woody vegetation is beginning to succeed into the early successional field including, multiflora rose (*Rosa multiflora*, FACU) and autumn olive (*Elaeagnus umbellate*, NL).

Attachment 3 contains representative photographs of upland areas at the Site.

Soils

In the upland areas, soil samples exhibit a matrix with a chroma of 4 or higher and lack redox features. Soil colors are generally 7.5YR 4/4 without any redox features. Some upland soils exhibit a matrix of 7.5YR 4/2 with some features of 7.5YR 4/4 at around 30 to 40 percent and/or 2.5Y 5/3 at similar percentages. These areas did not contain hydrophytic vegetation and evidence of wetland hydrology. Soil textures in the upland areas are silty loam and a silty clay loam.

Hydrology

Evidence of wetland hydrology was not observed in upland areas.

Please do not hesitate to contact me at 610-844-1866 if you have any questions.

Sincerely,

Scott Angus
Senior Environmental Specialist

Cc: Tim McKellar, NV5

Attachment 1

Site Map

LEGEND

Open Ended Wetland

Site Boundary

Wetland

NV5

www.NV5.com

REV	DESCRIPTION	CHK	DATE	APP	DATE

DRAWN BY	DD	8/12/2019
DESIGNED BY	DD	8/12/2019
CHECKED BY	XXX	XX/XX/18
APPROVED BY	XXX	XX/XX/18
NV5 JOB NO.	527317-0000050.00	
PLOT SCALE	1:1	
MODEL ID	XXXXX	

Adelphia Gateway Project
Environmental Survey Area
Quakertown, PA

SCALE	DRAWING NUMBER	REV
AS SHOWN	Quakertown_ENV_Map_080219	1

8/12/2019 4:34:26 PM

Kuder

Attachment 2

Wetland Photos

Wetland photograph 1

Wetland photograph 2

Attachment 3

Upland Photos

Upland photograph 1

Upland photograph 2

Appendix D

Phase I Bog Turtle Survey Report

Quakertown East ATWS
Phase I Bog Turtle Survey Report
October 19, 2019

Prepared For:

Adelphia Gateway, LLC

NV5

Adelphia Gateway Project

TABLE OF CONTENTS

1.0 INTRODUCTION

On July 16, 2019 and on October 7, 2019, biologist Scott Angus of NV5 performed a Phase I Bog Turtle Habitat Survey on lands for the Quakertown Compressor Station Site in a rural portion of Bucks County, Pennsylvania for the proposed Adelphia Gateway Project (Project).

This Phase 1 Survey was completed on a portion of the Project identified as the Quakertown East Additional Temporary Workspace (ATWS). A previous Phase I Bog Turtle Habitat Survey was conducted On December 13, 2017 by Mr. Angus on an adjacent property for the same Project. This report was submitted to the U.S. Fish and Wildlife Service (USFWS) on December 23, 2108. The USFWS responded with a letter of concurrence of no effect dated September 10, 2019. An additional site (Quakertown East ATWS) is now being considered for use as ATWS for the Project.

Mr. Angus is a USFWS Recognized Qualified Bog Turtle Surveyor in Pennsylvania and the northeast. Wetlands within and adjacent to the proposed Project were evaluated in accordance with methodologies outlined in the USFWS's "Bog Turtle (Glyptemys {Clemmys} muhlenbergii) Northern Population Recovery Plan (May 2001, rev. March 2006)." In addition, Mr. Angus followed the, "Guidelines for Bog Turtle Surveys for the Northern Population Range" dated October 26, 2018. Where these two references did not correspond with each other, the October 26, 2018 Guidelines were used, and data was collected on the Phase 1 Bog Turtle Habitat Survey Data Form for the Northern Population Range revised on the same date.

2.0 STUDY PURPOSE

The bog turtle's northern population is listed as threatened by the USFWS under the Endangered Species Act (ESA) of 1973. USFWS guidelines require that surveys for bog turtle habitat (Phase I Bog Turtle Habitat Survey) be performed to determine if potential bog turtle habitat occurs near or within a proposed project limit, in a region where bog turtle habitat is known to be present. If potential bog turtle habitat is present then the USFWS may require additional studies including a visual bog turtle survey (Phase II Survey).

3.0 SURVEY METHODOLOGY

Mr. Angus used analysis of aerial photography, a review of the Bucks County Soil Survey and Soil Survey Geographic Database (SSURGO)/Natural Resource Conservation Service (NRCS) mapping, and an onsite field survey to assess the area for potential bog turtle habitat. The field survey was conducted on foot, and the entire property was searched. Wherever possible, inspections of adjacent property were performed from the periphery of the subject property. Copies of the Phase 1 Bog Turtle Habitat Survey Data Forms for the Northern Population Range (Revised Oct. 23, 2018) are attached to this report.

4.0 BOG TURTLE RANGE AND HABITAT

Bog turtles occur discontinuously in western, central and southern New York, adjacent Connecticut and Massachusetts, New Jersey, Pennsylvania, northern Delaware and Maryland. A disjunct southern population occurs in southwestern Virginia, eastern Tennessee and western North Carolina (Conant 1975). The southern population is listed as threatened under the ESA as well due to similar

appearance to the northern population; however, due to much less development and other anthropogenic stressors the southern population is stable and doing well.

In Pennsylvania, extant bog turtle populations are known from 15 counties including: Adams, Berks, Bucks, Chester, Cumberland, Delaware, Franklin, Lancaster, Lebanon, Lehigh, Monroe, Montgomery, Northampton, Schuylkill, and York. Populations have been extirpated from Philadelphia County and historic records occur for Mercer and Crawford Counties in western Pennsylvania.

The two most important characteristics of bog turtle are groundwater hydrology and soft, mucky substrates. Although open canopy wetlands with emergent vegetation are an important component of bog turtle habitats, recent radio telemetry and mark and recapture studies have demonstrated that a significant number of individual bog turtles spend considerable amounts of time outside this type of habitat. Generally, habitat for bog turtles include sunlit marshy meadows and fens; mucky forested and/or shrubby wetlands with areas of open canopy containing hummocky topography and emergent vegetation; mucky, groundwater fed cow pastures; cattail marshes and other emergent vegetated wetlands (USFWS 2001). Other characteristics of bog turtle habitat include clear, shallow, slow-moving rivulets or brooks (Conant 1975; Behler and King 1979; Ernst et al. 1994), subterranean tunnels and areas with root systems of shrubs and trees containing gentle persistent water flow and/or soft substrates.

In the herbaceous stratum general vegetative species that occur in bog turtle habitats can include but are not limited to: cattails (Typha latifolia, T. angustifolia), tussock sedge (Carex stricta), other sedge species (Carex spp., Cyperus spp., Dulichium spp.), rushes (Juncus spp.), bulrushes (Scirpus spp.), spikerushes (Eleocharis spp.), spotted jewelweed (Impatiens capensis), skunk cabbage (Symplocarpus foetidus), both tearthumbs (Polygonum sagittatum, P. arifolium), rice cut-grass (Leersia oryzoides), sphagnum mosses (Sphagnum spp.) and other open canopy wetland species (Cromartie, et al. 1982). The scrub/shrub stratum usually contains Poison Sumac (Toxicodendron vernix), alders (Alnus spp.), willows (Salix spp.) dogwoods (Cornus spp.), sweetgale (Myrica gale), maleberry (Lyonia ligustrina), winterberry (Ilex verticillata) and stunted red maple (Acer rubrum) and Eastern red cedar (Juniperus virginiana). Common tree species often associated with bog turtle habitats include: E. red cedar, red maple, black and green ash (Fraxinus nigra, F. pennsylvanica).

5.0 SITE DESCRIPTION

The site is located off Rich Hill Road in a rural section of West Rockhill Township, Bucks County Pennsylvania west of Route 309. This portion of Pennsylvania is within the Piedmont Physiographic Province characterized by rolling lowlands, shallow valleys and isolated hills and underlined with mainly red shale, siltstone and sandstone; along with some limited areas of conglomerate and diabase bedrock (PA DCNR Open/Data website). A Project location map is attached.

The region that the Quakertown East ATWS site is located in can be described as part of a large shallow valley within the floodplain of the Morgan Creek. The main land use within the surrounding area is agricultural and rural residential, however; only a short distance from the heavy commercial corridor of Route 309 within the developed portion of Quakertown.

The parcel is approximately 15 acres and contains an approximate 2-acre residential lot that includes a residence, a barn, an in-ground swimming pool, a paved driveway, a maintained lawn area, numerous large trees (both native and non-native) a small garden, a small grape arbor, and a few small fruit trees. The remaining approximate 13 acres contains actively managed agricultural fields apparently used for hay. Numerous shallow man-made wetland ditches line the boundary of the residential lot and the hay field. These ditches appear to have been disturbed by tilling and mowing so additional "drainages" have been created that expands the wetland area.

Two distinct wetlands occur on the property and were delineated by NV5 in July and October 2019. Both wetlands are dominated by emergent vegetation. The first wetland is located in the southern third of the property and is bounded by the residential lot and Rich Hill Road on the south, and an access road to a natural gas meter station on the west. The northern edge of this wetland is located near the center of the property and is adjacent to an existing natural gas pipeline right-of-way. This wetland was identified as Wetland WZ during the NV5 delineation and will be referred to as such in this report.

The second wetland is located in the northern third of the site. The west side of the wetland is bounded by the existing Quakertown Meter Station. The south side is mainly at the base of a slope that is below the aforementioned pipeline right-of-way. The north side of the wetland is a forested area at the property line, however; the wetland drains offsite and continues into the forested area. This wetland was identified as Wetland A during the NV5 delineation and will be referred to as such in this report.

5.1 WETLAND WZ

Wetland WZ is an emergent wetland that is dominated mostly by yellow-fruited sedge (*Carex annectens*), Redtop (*Agrostis gigantea*), Small Carpetgrass (Arthraxon hispidus), reed-canary grass (*Phalaris arundinacea*), and tall fescue (*Schendonorus arundinaceus*). Upland herbaceous vegetation is present at many locations within Wetland WZ, but it is not dominant. The upland species notably present include orchard grass (*Dactylis glomerata*), timothy (*Phleum pratense*), Indian hemp (*Apocynum cannabinum*, also known as dogbane), common and purple milkweed (Asclepias syriaca and A. purpurascens) and Queen-Anne's lace (*Daucus carota*). Along the ditches that line the southern limit of the wetland soft rush (Juncus effusus), purple loosestrife (*Lythrum salicaria*), swamp milkweed (*Asclepias incarnata*) and green bulrush *(Scirpus atrovirens*) receive enough hydrology to be present and locally dominant.

Wetland WZ receives hydrology exclusively from overland flow that ponds in depressions on top of dense soils. There is no evidence of groundwater hydrology in any location within Wetland WZ. Mucky and or muddy soils are not present within Wetland WZ as well. Soils within the wetland were extremely tight and dense. The same hydrology and soil composition was also noted in the ditches where herbaceous species more associated with natural wetland communities were present.

5.2 WETLAND A

Wetland A is an emergent wetland that is dominated mostly by redtop, Japanese wiregrass (*Microstegium vimineum*), small carpetgrass, and tall fescue. Wetland A contained many of the same upland herbaceous vegetation as did Wetland WZ, although it was also not dominant. Notable upland species included orchard grass, timothy, Indian hemp, and common milkweed.

Wetland A contains similar tight and dense soils as Wetland WZ. There is no muck within Wetland A, and although it is at the base of a slope, there are no muddy areas. Wetland A also receives hydrology exclusively from overland flow that ponds on top of the dense soils. There is no evidence of groundwater hydrology within Wetland A.

Where Wetland A drains offsite, it appears that similar soil and hydrology continues. The dominant herbaceous species are Japanese wiregrass and small carpetgrass. These species are growing below a mostly closed canopy, although the forested part that occurs onsite contain defoliated and dying ash trees that allows sunlight to reach the ground. Although access to the adjacent property is not granted, it can be seen from the periphery that downslope remains forested. This is also supported by aerial photography.

6.0 CONCLUSION

During the July 16, 2019 visit to perform the Phase 1 habitat survey, Wetland WZ and Wetland A were both heavily vegetated with emergent plant life. At some time between July and the October 7 site visit, the entire site was mowed and baled for hay. Although the site was altered, much of the herbaceous vegetation was re-sprouting vigorously as noted in the October 7 site visit. This mowing and baling explains the herbaceous species composition in both the wetlands and the uplands. In July, much of the wetland delineation was performed by the percentage of different grass species that were likely planted by the farmer in previous years. In the wetlands, redtop, tall fescue and reed-canary grass were dominant. In the uplands timothy, orchard grass and Indian hemp were dominant. All six of these species along with the small carpetgrass and Japanese wiregrass were found at some percentage in both uplands and wetlands. This composition of herbaceous species is very rare, if ever found in potential bog turtle habitats.

In addition, the absence of groundwater hydrology and mucky soils in both Wetland A and Wetland WZ shows the lack of these two important criteria for potential bog turtle habitat. Based upon the findings of the Phase 1 survey for these two wetland areas, especially the absence of suitable hydrology and suitable soils, Wetland WZ and Wetland A are not classified as potential bog turtle habitat.

Where Wetland A drains offsite into a forested area, it most likely does not drain to or are adjacent to potential bog turtle habitats based on similar soils and hydrology, as well as the presence of a closed forest canopy. There are no potential bog turtle habitats within 1000 feet or more of the entire parcel. This information is gathered from the periphery of the parcel, from roadside views of surrounding properties and is supported by a review of aerial photography.

NV5 is respectfully requesting that a “no effect” of the Project be determined on bog turtles and/or potential bog turtle habitats by the USFWS.

7.0 REFERENCES

Behler, J. L., and F. W. King. 1979. The Audubon Society Field Guide to North American Reptiles and Amphibians. Alfred A. Knopf, New York. 744 pp.

Conant, R. 1975. A Field Guide of Reptiles and Amphibians of Eastern and Central North America, second edition. Houghton Mifflin Company, Boston. 429 pp.

Ernst, C. H., J. E. Lovich, and R. W. Barbour. 1994. Turtles of the United States and Canada. Smithsonian Institution Press, Washington, 578 pp.

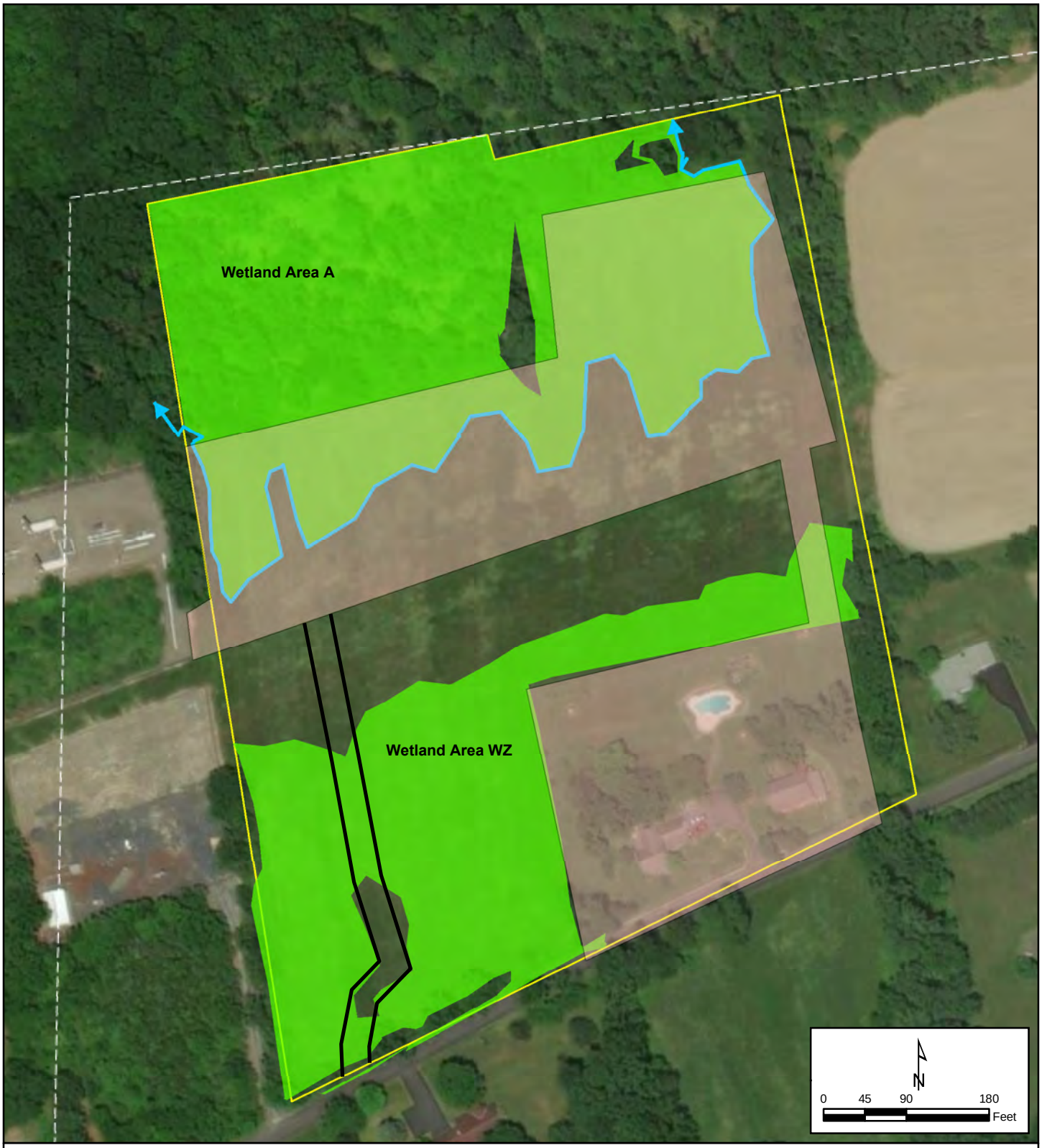
U.S. Fish and Wildlife Service. 1997. Final rule to list the northern population of the bog turtle as threatened and the southern population as threatened due to similarity of appearance. Federal Register November 4, 1997. Vol.62, No. 213.

U.S. Fish and Wildlife Service. May 2001. Bog Turtle (*Clemmys muhlenbergii*) Northern Population Recovery Plan. Revised April 2006.

U.S. Fish and Wildlife Service, "Guidelines for Bog Turtle Surveys for the Northern Population Range" dated October 26, 2018

NV5

Delivering Solutions
Improving Lives



LEGEND

- Open Ended Wetland
- Wetland
- Proposed Additional Temporary Workspace
- Proposed Access Road

NV5
www.NV5.com

REV	DESCRIPTION	CHK	DATE	APP	DATE

DRAWN BY	DD	10/4/2019
DESIGNED BY	DD	10/4/2019
CHECKED BY	XXX	XX/XX/18
APPROVED BY	XXX	XX/XX/18
NV5 JOB NO.	527317-0000050.00	
PLOT SCALE	1:1	
MODEL ID	XXXXXX	

Adelphia Gateway Project
Quakertown ATWS and Access Road
Quakertown, PA

SCALE	DRAWING NUMBER	REV
AS SHOWN	Quakertown_ENV_Map_080219	1

10/4/2019 12:24:13 PM Kuder

Phase 1 Bog Turtle Habitat Survey Data Form Wetland ID: WZ
For the Northern Population Range
(Revised October 23, 2018)

General Info

Property/Project Name Quakertown East **County** Bucks

Entity Requesting Phase 1 Survey (landowner, developer, agency): Adelphia

Township/Municipality: East Rockhill Township

Lead Surveyor: Scott Angus **Affiliation:** NV5, LLC

Other Assistants Present: None

Date/Condition

Date of Survey: 7/16/19 **Time In**: 0700 **Time Out**: 1700 ** **Air Temp**. 95 (F°) C°

Last Precipitation: X* < 24 hours __ 1-7 days __ > 1 week __ unknown **Drought conditions?** __ YES X NO __ Unknown

Drought Index*[1] (Circle): D0 D1 D2 D3 D4 **Notes** (*e.g.*, details about drought, flood, abnormally dry, seasonal conditions):

* Heavy rain for 2 days prior.

**Time in and time out included some wetland delineation time

Wetland Info

Wetland ID: WZ **Wetland Size:** _____ acres, if known **# Wetlands w/in Project Area[2]:** 2

If estimating wetland size: __ < 0.1 acre __ 0.1-0.5 acre __ 1-2 acres X 2-4 acres __ 5+ acres __ 10+ acres

% Canopy Cover*[3] __ 0% X ≤ 5 __ 6-20 __21-40 __41-60 __ > 60

Although this is a wetland, the soils are too dense for satuation. Water sits on top and runs off, does not permeate

Hydrology and Soils (check all that apply):

__ Springs/Seeps __ Springhouse __ Trib/Stream __ Pond __ Stormwater __ Iron Bacteria

__ Rivulets (how many_____) (_____inches deep) __ Subsurface Tunnel/Rivulets X Tire Ruts (2 inches deep)

__Saturated soils present? If yes, year-round? __ Likely X Unlikely __ Unknown

X Yes __ No water visible on surface? X Small Puddles/Depressions (2 inches deep)

Puddles sitting on suface in tire ruts and other surface drainage from prior two days of rain

X Yes __ No Are there any signs of disturbance to *hydrology* (*e.g.*, drainage ditches, tile drainages, berms, culverts, fill material, ponds, roads, beaver impoundment, evidence of flooding)? If yes, describe (if possible, include how recent disturbance is*):

The entire wetland gets mowed annually and was historically tilled and ditched. Two ditches and a swale remain along the southern edge. Although the soils are dense, the tractor is heavy enough to make ruts that also contribute to hydrology disturbance. However, if this was bog turtle habitat, the tractor would not make ruts, it would not get out of the muck. There is no muck.

For ditches that may be present, is there bog turtle habitat? If yes, describe:

The ditches are not potential bog turtle habitat

X*** Yes __ No Are there any signs of disturbance to *vegetation* (*e.g.*, mowing, pasturing, burning)? If yes, describe (if possible, include level of disturbance*):***Mowing was not evident during the July site visit, however; between July and the October 7 site visit the entire area was mowed, including the wetland.**

Soil types present*:

AmA - Amwell Silt Loam 0-3% slopes
AmB - Amwell Silt Loam 3-8% slopes
ToB - Towhee Silt Loam 3-8% slopes
MlB - Mount Lucas Silt Loam 3-8% slopes

[1] (*) Denotes reference to the **Supplemental Information** document that provides more details on this particular question.
[2] Each wetland must have a separate Phase 1 habitat assessment data form completed.
[3] Determine percent cover of abundant species for the wetland, not by wetland type. Abundant species are those that are

PEM Portion of Wetland: Approx. Acre(s) 3 — Mucky soils depth (inches) None

PSS Portion of Wetland: Approx. Acre(s) 0.25 — Mucky soils depth (inches) None

PFO Portion of Wetland: Approx. Acre(s) 0 — Mucky soils depth (inches) None

PO Portion of Wetland: Approx. Acre(s) 0

Wetland Type/Vegetation

CIRCLE all vegetation* from list below that is dominant ≥ 20% for each wetland type listed above. Also, CIRCLE calciphiles[4] present even if not a dominant species.

Sphagnum Moss	Grass-of-Parnassus	Rice Cutgrass	Tussock Sedge	Shrubby Cinquefoil	Red Maple
Arrowhead	Japanese Stiltgrass	Rough-leaved Goldenrod	White Turtlehead	Spicebush	Viburnum Spp.
Carpetgrass	Jewelweed	Sensitive Fern	Woolly-fruited Sedge	Swamp Rose	Non-native Honeysuckle
Cattail	Mile-A-Minute	Skunk Cabbage	Yellow Sedge	Alder Spp.	
Cinnamon Fern	Porcupine Sedge	Smooth Sawgrass	Alder-leaved Buckthorn	American Elm	
Common Boneset	Purple Loosestrife	Sweetflag	Dogwood Spp.	Eastern Red Cedar	
Common Reed	Reed Canary Grass	Tearthumb Spp.	Multiflora Rose	Poison Sumac	

Notes on additional plant species (Are there other sedges/rushes/other species dominant that are not on the list above?):

Redtop (*Agrostis gigantea*) Tall Fescue (*Schendonoris aroundinceus*)

Landscape Info

Describe surrounding landscape (*e.g.*, wetlands, forest, subdivision, agricultural field, fallow field, etc.):

How much of this wetland is located **off-site** (*i.e.*, outside the property boundaries or right-of-way)?

X None of it – the entire wetland is within the property boundaries

__ Some of it – _____ Acres or _____% of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the **off-site portion** was surveyed (on foot)?

__ None of it __ All of it __ Part of it (____ acres or ____% of the off-site portion)

Is there potential bog turtle habitat **off-site**? __ Yes X No __ Unknown If yes, how did you conclude this?

Species

Were any bog turtles observed? __ Yes X No If yes, how many?_____

Other herps observed? __ Yes X No If yes, which ones?

*Note that you must be permitted by the state you are conducting the survey in to handle bog turtles.

*Report bog turtle observations to your local FWS Field Office and state wildlife office within 48 hrs.

Lead Surveyor Opinion

__ Yes X No __ Unsure The **hydrology** criterion for bog turtle habitat is met.

__ Yes X No __ Unsure The **soils** criterion for bog turtle habitat is met.

X Yes __ No __ Unsure The **vegetation** criterion for bog turtle habitat is met.

__ Yes X No __ Unsure This wetland has potential bog turtle habitat (fair to good quality).

__ Yes X No __ Unsure This wetland has potential bog turtle habitat (low to very low quality).

X Yes __ No __ Unsure This wetland does **NOT** have potential bog turtle habitat. **Correct it does not.**

The only reason the vegetation criterion is met is because the veg is herbaceous. This site is like saying a wet corn field meets the criteria

Notes (How did you reach this opinion?):

Absence of suitable hydrology, soils and poor herbaceous vegetation composition in the emergent vegetation layer.

Lead Surveyor – please sign below certifying to the best of your knowledge that all of the information provided herein is accurate and complete.

Signature _____ **Date** **10/18/19**

Transcribed from 7/16/19 & 10/7/19 field sheets

most prominent in the wetland and have the highest percent of coverage compared to other species.

[4] Pertinent to bog turtle sites found in Connecticut, Massachusetts, New Jersey, New York, and Pennsylvania. See Supplemental Information – Suitable Vegetation section.

Phase 1 Bog Turtle Habitat Survey Data Form
For the Northern Population Range

Sketch wetland (or attach printed map with each wetland type carefully outlined; include all wetland types (PEM, PSS, PFO, POW), streams/ditches, north arrow and property/project borders, and areas of core bog turtle habitat. Include **color photos** for each wetland assessed when submitting to agencies.

See Figures

Additional space for notes, sketches, photos, etc.

Phase 1 Bog Turtle Habitat Survey Data Form Wetland ID: A
For the Northern Population Range
(Revised October 23, 2018)

General Info

Property/Project Name Quakertown East **County** Bucks

Entity Requesting Phase 1 Survey (landowner, developer, agency): Adelphia

Township/Municipality: East Rockhill Township

Lead Surveyor: Scott Angus **Affiliation:** NV5, LLC

Other Assistants Present: None

Date/Condition

Date of Survey: 7/16/19 **Time In**: 0700 **Time Out**: 1700 ** **Air Temp**. 95 F ° C°

Last Precipitation: X * < 24 hours __ 1-7 days __ > 1 week __ unknown **Drought conditions?** __ YES X NO __ Unknown

Drought Index*[1] (Circle): D0 D1 D2 D3 D4 **Notes** (*e.g.*, details about drought, flood, abnormally dry, seasonal conditions):

* Heavy rain for 2 days prior

**Time in and time out included some wetland delineation time

Wetland Info

Wetland ID: A **Wetland Size:** _____ acres, if known **# Wetlands w/in Project Area[2]:** 2

If estimating wetland size: __ < 0.1 acre __ 0.1-0.5 acre __ 1-2 acres X 2-4 acres __ 5+ acres __ 10+ acres

% Canopy Cover*[3] __ 0% __ ≤ 5 __ 6-20 X 21-40 __41-60 __ > 60

Although this is a wetland, the soils are too dense for satuation. Water sits on top and runs off, does not permeate.

Hydrology and Soils (check all that apply):

__ Springs/Seeps __ Springhouse __ Trib/Stream __ Pond __ Stormwater __ Iron Bacteria

__ Rivulets (how many_____) (_____inches deep) __ Subsurface Tunnel/Rivulets X Tire Ruts (2 inches deep)

__Saturated soils present? If yes, year-round? __ Likely X Unlikely __ Unknown

Puddles sitting on suface in tire ruts and other surface drainage from prior two days of rain

X Yes __ No water visible on surface? X Small Puddles/Depressions (2 inches deep)

X Yes __ No Are there any signs of disturbance to *hydrology* (*e.g.*, drainage ditches, tile drainages, berms, culverts, fill material, ponds, roads, beaver impoundment, evidence of flooding)? If yes, describe (if possible, include how recent disturbance is*):

The entire wetland gets mowed annually and was historically tilled. Although the soils are dense, the tractor is heavy enough to make ruts that also contribute to hydrology disturbance. However, if this was bog turtle habitat, the tractor would not make ruts, it would not get out of the muck. There is no muck.

For ditches that may be present, is there bog turtle habitat? If yes, describe:

No ditches present

X *** Yes __ No Are there any signs of disturbance to *vegetation* (*e.g.*, mowing, pasturing, burning)? If yes, describe (if possible, include level of disturbance*): ***Mowing was not evident during the July site visit, however; between July and the October 7 site visit the entire area was mowed, including the wetland.

Soil types present*: **AmB - Amwell Silt Loam 3-8% slopes**
LmB - Lehigh Channery Silt Loam 3-8% slopes

[1] (*) Denotes reference to the **Supplemental Information** document that provides more details on this particular question.
[2] Each wetland must have a separate Phase 1 habitat assessment data form completed.
[3] Determine percent cover of abundant species for the wetland, not by wetland type. Abundant species are those that are

PEM Portion of Wetland: Approx. Acre(s) 2 Mucky soils depth (inches) None

PSS Portion of Wetland: Approx. Acre(s) 0 Mucky soils depth (inches) None

PFO Portion of Wetland: Approx. Acre(s) 2.5 Mucky soils depth (inches) None

PO Portion of Wetland: Approx. Acre(s) 0

Wetland Type/Vegetation

CIRCLE all vegetation* from list below that is dominant ≥ 20% for each wetland type listed above. Also, CIRCLE calciphiles[4] present even if not a dominant species.

Sphagnum Moss	Grass-of-Parnassus	Rice Cutgrass	Tussock Sedge	Shrubby Cinquefoil	Red Maple
Arrowhead	Japanese Stiltgrass	Rough-leaved Goldenrod	White Turtlehead	Spicebush	Viburnum Spp.
Carpetgrass	Jewelweed	Sensitive Fern	Woolly-fruited Sedge	Swamp Rose	*Tall Fescue (Schendonorus aroundinaeus),*
Cattail	Mile-A-Minute	Skunk Cabbage	Yellow Sedge	Alder Spp.	
Cinnamon Fern	Porcupine Sedge	Smooth Sawgrass	Alder-leaved Buckthorn	American Elm	
Common Boneset	Purple Loosestrife	Sweetflag	Dogwood Spp.	Eastern Red Cedar	
Common Reed	Reed Canary Grass	Tearthumb Spp.	Multiflora Rose	Poison Sumac	

Notes on additional plant species (Are there other sedges/rushes/other species dominant that are not on the list above?):

Redtop (*Agrostis gigantea*), Green Ash (*Fraxinus pennsylvanica*), White Ash (*F. americana*), Shagbark Hickory (Carya ovata)

Landscape Info

Describe surrounding landscape (*e.g.*, wetlands, forest, subdivision, agricultural field, fallow field, etc.):
Agricultural lands, a forested area that transitions into a forested floodplain of the Morgan Creek, well north of the project limits (approximately 100 feet), a few rural residences and an existing metering station.

How much of this wetland is located **off-site** (*i.e.*, outside the property boundaries or right-of-way)?

__ None of it – the entire wetland is within the property boundaries

X Some of it – _____ Acres or 40 % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the **off-site portion** was surveyed (on foot)?

__ None of it __ All of it X Part of it (____ acres or 10 % of the off-site portion)

Is there potential bog turtle habitat **off-site**? __ Yes X No __ Unknown If yes, how did you conclude this?

Species

Were any bog turtles observed? __ Yes X No If yes, how many?_____

Other herps observed? __ Yes X No If yes, which ones?

*Note that you must be permitted by the state you are conducting the survey in to handle bog turtles.

*Report bog turtle observations to your local FWS Field Office and state wildlife office within 48 hrs.

Lead Surveyor Opinion

__ Yes X No __ Unsure The **hydrology** criterion for bog turtle habitat is met.

__ Yes X No __ Unsure The **soils** criterion for bog turtle habitat is met.

X Yes __ No __ Unsure The **vegetation** criterion for bog turtle habitat is met.

__ Yes X No __ Unsure This wetland has potential bog turtle habitat (fair to good quality).

__ Yes X No __ Unsure This wetland has potential bog turtle habitat (low to very low quality).

X Yes __ No __ Unsure This wetland does **NOT** have potential bog turtle habitat. **Correct this is not potential habitat**

Notes (How did you reach this opinion?):

Absence of suitable hydrology, soils and poor herbaceous vegetation composition in the emergent vegetation layer.

Lead Surveyor – please sign below certifying to the best of your knowledge that all of the information provided herein is accurate and complete.

Signature _____ **Date** 10/18/19

Transcribed from 7/16/19 & 10/7/19 field sheets

most prominent in the wetland and have the highest percent of coverage compared to other species.

[4] Pertinent to bog turtle sites found in Connecticut, Massachusetts, New Jersey, New York, and Pennsylvania. See Supplemental Information – Suitable Vegetation section.

Phase 1 Bog Turtle Habitat Survey Data Form
For the Northern Population Range

Sketch wetland (or attach printed map with each wetland type carefully outlined; include all wetland types (PEM, PSS, PFO, POW), streams/ditches, north arrow and property/project borders, and areas of core bog turtle habitat. Include **color photos** for each wetland assessed when submitting to agencies.

See Figures

Additional space for notes, sketches, photos, etc.