Phase I Bog Turtle Habitat Survey

for the Green Brook Flood Risk Management Project Segments C1, C2, and H

Middlesex Borough, Middlesex County, New Jersey

December 19, 2018

Prepared for:

U.S. Army Corps of Engineers – New York District



US Army Corps of Engineers ®

Prepared by:

First Environment, Inc.

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1.0 Introduction

First Environment, Inc. (First Environment) was retained by the U.S. Army Corps of Engineers (USACE) to evaluate freshwater wetlands in Segments C1 through C3, and H of the Green Brook Flood Risk Management Project in Middlesex Borough, Middlesex County, New Jersey (Figure 1) for the presence of suitable habitat for the bog turtle (*Glyptemys muhlenbergii*), a federally-threatened and state-endangered species. Under the Green Brook Flood Risk Management Project, the USACE intends to construct a series of levees, floodwalls, and pump stations in Segments C1 through C3, and H along the Bound Brook to attenuate flooding. Bog turtles have been historically documented in the region and in its review of the project, the U.S. Fish and Wildlife Service (USFWS) requested a Phase I Habitat Survey to determine the potential presence of bog turtle habitat within the project area. The results of the Phase I Habitat Survey are presented in this report.

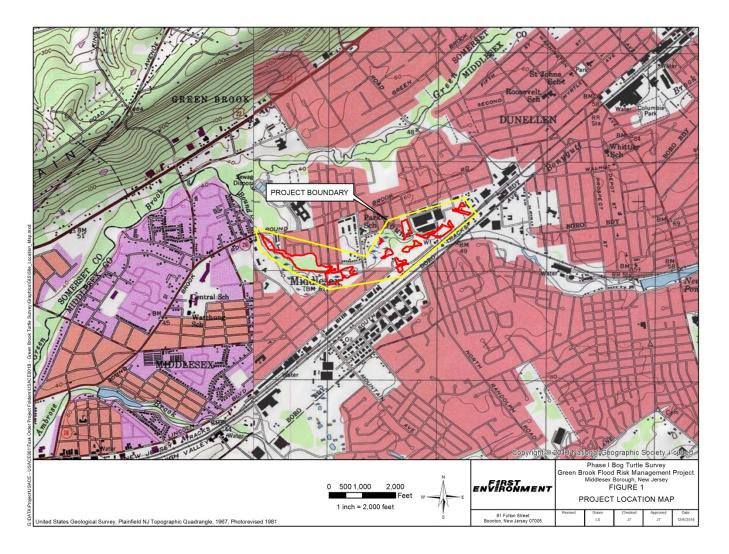


Figure 1 – Project Location Map

1.1 Species Background

The bog turtle is a semi-aquatic, freshwater turtle that prefers shallow, emergent wetlands with highly penetrable substrates saturated by perennial groundwater discharge. Bog turtle habitats fall under several wetland community classifications including freshwater marsh, medium and rich fen, wet meadow, and shrub swamp. Most bog turtle sites support a mosaic of herbaceous and woody-dominated communities. Key habitat

features include soft 'mucky' soils (composed of organic or mineral material), springs and seeps, rivulets, shallow pools, and hummocks, often in the form of tussock-forming vegetation. Common flora of bog turtle habitats in the Mid-Atlantic region include rice cutgrass (Leersia oryzoides), cattail (Typha), tussock sedge (Carex stricta), sedges (Carex sp.) wool grass (Scirpus cyperinus), common rush (Juncus effusus), skunk cabbage (Symplocarpus foetidus), jewelweed (Impatiens capensis), tearthumb (Polygonum), arrowhead (Sagittaria) sensitive fern (Onoclea sensibilis), tearthumb (Polygonum sp.), marsh fern (Thelypteris palustris), peat moss (Sphagnum sp.), speckled alder (Alnus serrulata), willow (Salix sp.), silky dogwood (Cornus amomum), poison sumac (Rhus vernix), spicebush (Lindera benzoin), northern arrowwood (Viburnum) dentatum), red maple (Acer rubrum), pin oak (Quercus palustris), and gray birch (Betula populifolia). Nonnative and/or invasive species including purple loosestrife (Lythrum salicaria), common reed (Phragmites australis), Japanese stilt-grass (Microstegium vimineum), and multiflora rose (Rosa multiflora) can also be abundant. Habitats tend to be small and localized, with many sites falling under an acre in size. Bog turtles are generally active April through October. Breeding occurs in the spring, and in June, females lay eggs atop moss-covered sedge tussocks or other raised surfaces in the wetland. Hatchlings emerge in September. Brumation typically occurs in tunnels saturated by groundwater, which provides a thermal buffer. Bog turtles are omnivorous and can live in excess of 50 years and perhaps much longer. The species was listed as threatened by the U.S. Fish and Wildlife Service in 1997 (Ernst and Lovich, 2009; USFWS, 2001).

2.0 Methods

The Phase I Bog Turtle Habitat Survey was conducted over the course of two days in October 2018 and encompassed 16 discrete wetlands (Figure 2). Survey personnel included USFWS Recognized Qualified Bog Turtle Surveyor, Jason Tesauro, and biologists from Louis Berger, Dana Flynn and Craig Hanlon. Each wetland was evaluated on foot for the presence of the following habitat components listed in the USFWS Bog Turtle Phase I Habitat Survey guidelines:

- substrates of saturated organic and/or mineral 'mucky' soils with high penetrability;
- hydrologic regime maintained by a consistent supply of groundwater;
- dominance of herbaceous and scrub-shrub hydrophytic vegetation including sedges and other hummock-forming graminoids.

Representative habitat photographs and GPS coordinates were taken at each survey location. Phase I data sheets were also completed. The weather conditions during the survey were non-inclement with air temperatures between 40° - 50°F.

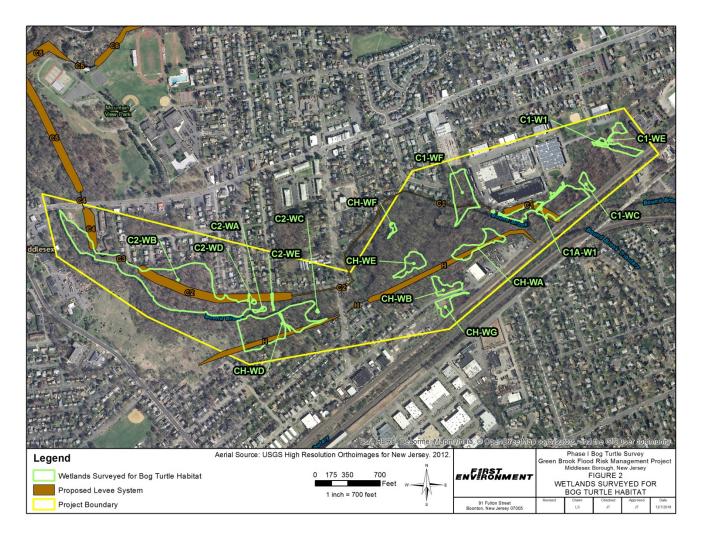


Figure 2 - Wetlands Surveyed for Bog Turtle Habitat

3.0 Results

Of the 16 wetlands evaluated for bog turtle habitat in the Phase I investigation, suitable habitat conditions for bog turtles were documented at one location encompassed by two closely connected wetlands, C1-WE and C1-W1. The majority of the wetlands surveyed were mature floodplain forest heavily influenced by stream overflow and lacked appropriate flora, soils, and hydrology required by bog turtles. Descriptions and photographs of the habitat conditions at each wetland are presented in the following section.

3.1 Bog Turtle Phase I Habitat Survey – Wetland Descriptions and Photographs

3.1.1 Wetland C1-WE/C1-W1

Wetlands C1-WE and C1-W1 were separated by a few meters of uplands and were treated as a single 'site unit' for the Phase I Habitat Survey.

C1-WE/C1-W1 contained forested and emergent wetland habitat. The forested portions consisted of two patches of hardwood swamp, one situated between the NJ Transit railroad and the JCP&L transmission line

right-of-way (ROW), with the other located between an apartment complex and the ROW. Emergent wetland habitat occurred under the ROW; its herbaceous condition was maintained by ROW vegetation management. Hydrology within C1-WE/C1-W1 consisted mostly of flashy surface run-off with a small area of semi-permanent flow supplied partially by groundwater that drained through a narrow swale extending from the railroad into the ROW. The shallow flow within the swale was slow-moving enough to create a 'mucky' substrate that could be penetrated several inches. Substrates in wetland areas outside of the swale contained intermittently saturated mineral soils. Vegetation throughout C1-WE/C1-W1 included red maple and tussock sedge in the forested portions and tussock sedge, common reed, sensitive fern, wool grass, Japanese stilt-grass, jewelweed, tearthumb, common rush, smallspike false nettle (*Boehmeria cylindrica*), yellow flag (*Iris pseudacorus*), arrow arum (*Peltandra virginicum*), marsh purslane (*Ludwigia palustris*) and various mosses in the emergent areas under the ROW. Although isolated and approximately 0.12 acres in size, the mucky, herbaceous swale under the ROW contained enough habitat components to support suitable conditions for bog turtles.



Photos 1 and 2: Representative forested wetland habitat; Photos 3 and 4: emergent wetland under powerline ROW containing suitable bog turtle habitat

3.1.2 Wetland C1-WC

C1-WC consisted of a forested wetland flooded by intermittent surface run-off. Substrates consisted of saturated mineral soils. Vegetation included red maple and Japanese stilt-grass. Suitable bog turtle was not present.



Flooded, canopied conditions of Wetland C1-WC

3.1.3 Wetland C1A-W1

C1A-W1 consisted of a sparsely forested wetland containing a small, flooded depression that supported scrubshrub and herbaceous vegetation. The hydrology was driven by surface run-off, and much of the shrubby depression held standing water approximately six inches in depth. Substrates consisted of saturated mineral soils. Vegetation included tussock sedge, rice cutgrass, marsh mallow (*Althaea officinalis*), Japanese stiltgrass, smallspike false nettle, arrowhead, water plantain (*Alisma subcordatum*), New York ironweed (*Vernonia noveboracensis*), woodreed (*Cinna*), white snakeroot (*Ageratina altissima*), buttonbush (*Cephalanthus occidentalis*), red maple, black walnut (*Juglans nigra*), black locust (*Robinia pseudoacacia*) and silver maple (*Acer saccharinum*). Flooded portions of Wetland C1A-W1 supported potential habitat for many species of common herpetofauna (e.g., green frog, northern spring peeper, snapping turtle, eastern garter snake), but suitable bog turtle habitat was not present.



Photos 1 and 2: Flooded depression containing a mosaic of emergent, scrub-shrub, and forested habitat; Photo 3: forested wetland with dense undergrowth of Japanese stilt-grass; Photo 4: floodplain forest

3.1.4 Wetland C1-WF

C1-WF consisted of a forested floodplain wetland dominated by silver maple, pin oak, American elm (*Ulmus americana*), box elder (*Acer negundo*), Japanese stilt-grass, white snakeroot, reed canary grass, and Japanese knotweed (*Polygonum cuspidatum*). Soils were dry and firm, and surface water was not present. Hydrology appeared to be driven by stream overflow. A deeply incised channel was present along the western border of the wetland. Suitable bog turtle habitat was not present.



3.1.5 Wetland CH-WB

CH-WB consisted of a mostly forested wetland with scattered pockets of emergent marsh occupying gaps in the forest. Dominant woody vegetation included red maple, pin oak, silver maple, box elder, white ash (*Fraxinus americana*), and black gum (*Nyssa sylvatica*). Japanese stilt-grass, reed canary grass, white snakeroot, and woodreed were the dominant herbaceous species. Substrates were generally dry and firm with small areas of saturation and shallow ponding restricted to old drainage ditches. Hydrology was driven by surface run-off. Suitable bog turtle habitat was not present.



Representative photo of forested habitat conditions with CH-WB



One of several small patches of emergent wetland habitat with CH-WB

3.1.6 Wetland CH-WE

CH-WE contained a hardwood swamp ecologically similar to Wetland CH-WB. (The two wetlands were connected by a drainage ditch that holds water intermittently.) Silver maple and pin oak were dominant and included several very large specimens. Other documented trees included red maple, white mulberry (*Morus alba*), box elder, and white ash. Japanese stilt-grass and white snakeroot were the most abundant herbs growing in the understory and in the sunny gaps left by fallen trees. Soils were dry and firm; very little saturation was detected. Hydrology was driven by surface run-off and stream overflow. Suitable bog turtle habitat was not present.



Forested habitat within CH-WE; drainage ditch in center of photo connects CH-WE with wetland CH-WB



Sunny patches of herbaceous growth within CH-WE

3.1.7 Wetland CH-WF

CH-WF consisted of a drained oxbow along the floodplain of the Bound Brook. Substrates within the oxbow basin were soft and muddy and showed signs of recent inundation from stream overflow. Vegetation cover was sparse and included a scattered marsh purslane, tearthumb, and aster (*Aster*). A small box elder with signs of past beaver herbivory occurred along the edge of the oxbow. Suitable bog turtle habitat was not present.



CH-WF: A muddy oxbow covered with a sparse carpet of marsh purslane

3.1.8 Wetland CH-WA

CH-WA consisted of a red maple swamp containing a network of old drainage ditches that terminated in a small circular basin. Saturated soils were limited to the ditches, several of which had standing and/or flowing water with areas of soft mud. Hydrology was driven by surface run-off, much of which drained from the adjacent commercial development. Vegetation included Japanese stilt-grass, marsh purslane, woodreed, and cinnamon fern (*Osmunda cinnamomea*). A green frog (*Lithobates clamitans*) was observed retreating into a shallow pool with the upper portion of a drainage ditch. (This was the only amphibian documented during the survey.) The shaded forest canopy and lack of a persistent source of hydrology rendered this wetland unsuitable for bog turtles.



Boggy, shallow ditch within CH-WA



A thick mat of Japanese stilt-grass covering an intermittently flooded basin within CH-WA

3.1.9 Wetland CH-WG

CH-WG consisted of a disturbed, drained wetland situated between the NJ Transit railroad and a paved deadend road. The wetland habitat included a small remnant of a red maple swamp and an emergent marsh that had been overtaken by the invasive common reed. The soils contained rich, black organic material but lacked the hydrology to create 'mucky' conditions conducive to bog turtles. The hydrology appeared to have been impaired by the dredging of the ditch along the northern border of the wetland. There was also an extensive area of fill dumped along the western border of the site. Other flora documented in CH-WG included cinnamon fern, white ash, Japanese stilt-grass, glossy buckthorn (*Frangula alnus*), and sweetgum (*Liquidambar styraciflua*). The hydrological and physical impairment of the wetland rendered it unsuitable for bog turtles, although the soils suggest that it likely supported suitable habitat historically. An eastern garter snake (*Thamnophis sirtalis*) was observed on the adjacent paved road.



Red maple swamp with cinnamon fern understory in CH-WG



Portion of CH-WG containing a dense stand of common reed

3.1.10 Wetland C2-WC

C2-WC consisted of a small, intermittently flooded oxbow thickly colonized by reed canary grass. Substrates were firm and mostly dry. Other vegetation included box elder and white snakeroot. Suitable bog turtle habitat was not present.



Habitat conditions within C2-WC

3.1.11 Wetland CH-WD

CH-WD consisted of floodplain forest with scattered herbaceous and scrub-shrub vegetation. Dominant flora included pin oak, box elder, red maple, white ash, silver maple, Japanese stilt-grass, and white snakeroot. Downed wood was common. Substrates were clayey and mostly dry. Hydrology was driven by surface run-off. Suitable bog turtle habitat was not present.



Hardwood swamp habitat within CH-WD

3.1.12 Wetland C2-WE

C2-WE consisted of a drainage ditch that carried stormwater from an adjacent residential development into Bound Brook. Vegetation within the ditch was managed by the municipality. Suitable bog turtle habitat was not present.



Habitat conditions within C2-WE

3.1.13 Wetland C2-WA

Wetland C2-WA consisted of an intermittently-wet slough maintained by stream overflow and surface run-off. The area was canopied by the surrounding floodplain forest. Vegetation within the slough included several graminoids, white snakeroot, and climbing hempweed (*Mikania scandens*). Substrates were mostly dry; a small amount of surface water occurred in the outlet drainage. Suitable bog turtle habitat was not present.



Habitat conditions within C2-WA

3.1.14 Wetland C2-WD

C2-WD consisted of a small depressional wetland surrounded by mature hardwoods. Vegetation was chiefly herbaceous and included bladder sedge, woodseed, and white snakeroot. Soils were dry and firm; hydrology was driven by surface run-off. Suitable bog turtle habitat was not present.



Habitat conditions within C2-WD

3.1.15 Wetland C2-WB

C2-WB comprised a large contiguous block of lightly-canopied, hardwood swamp on the floodplain of Bound Brook. Hardwoods included red maple, white ash, silver maple, pin oak, and box elder. Understory vegetation included reed canary grass, Japanese stilt-grass, asters, white snakeroot, several graminoids including greater bladder sedge (*Carex intumescens*) and panicgrass (*Panicum*), and yellow flag. The topography was diverse, consisting of saturated basins and hillocks. Several trees had been cut, permitting herbaceous vegetation to flourish. One noteworthy feature within C2-WB was a large, westerly flowing drainage swale bordering the residential properties to the north. This swale, which was fed mostly by surface run-off, was characterized by shallow water and soft muddy substrates and supported a well-developed stand of lizard's tail (*Saururus cernuus*) near its confluence with Bound Brook. Other documented herbaceous species that were associated with the swale included climbing hempweed, swamp beggar's tick (*Bidens*), tearthumb, greater bladder sedge, and common rush. The muddiness of the substrate and some of the herbaceous vegetation 'hinted' at potentially suitable bog turtle habitat occurring in the swale; however, the heavy tree canopy and lack of persistent groundwater-derived hydrology rendered the area unsuitable for the species.



Photo 1: Herbaceous area dominated by reed canary grass; Photo 2: Scrub-shrub/herbaceous habitat with thick cover of Japanese stilt-grass; Photos 3 and 4: drainage swale that occurs along northern border of C2-WB; note presence of lizard's tail in Photo 4

4.0 Conclusions & Recommendations

One small area of suitable bog turtle habitat was found during an evaluation of 16 wetlands identified within the Green Brook Flood Risk Management Project area. The suitable area is depicted in Figures 3 and 4 and is associated with site unit C1-WE and C1-W1. The potential bog turtle habitat consisted of a marshy swale under an active powerline right-of-way maintained by JCP&L near the northeastern boundary of the project. The total size of the habitat was estimated at 0.12 acres. While the habitat is small, isolated from other bog turtle habitats and/or known populations, and sub-optimal in quality, the flood risk management project could have significant impacts to the hydrology and other components of the habitat, and it is therefore recommended that a Phase II Bog Turtle Survey be completed to determine if bog turtles are indeed present. A Phase II survey requires four visual and tactile turtle searches under warm, non-inclement conditions between April 15th and June 15th by a USFWS Recognized Qualified Bog Turtle Surveyor.

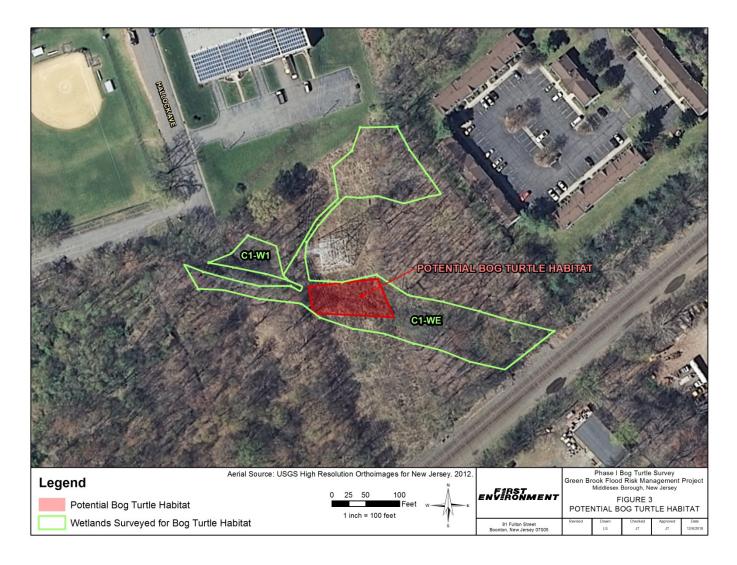


Figure 3: Potential Bog Turtle Habitat

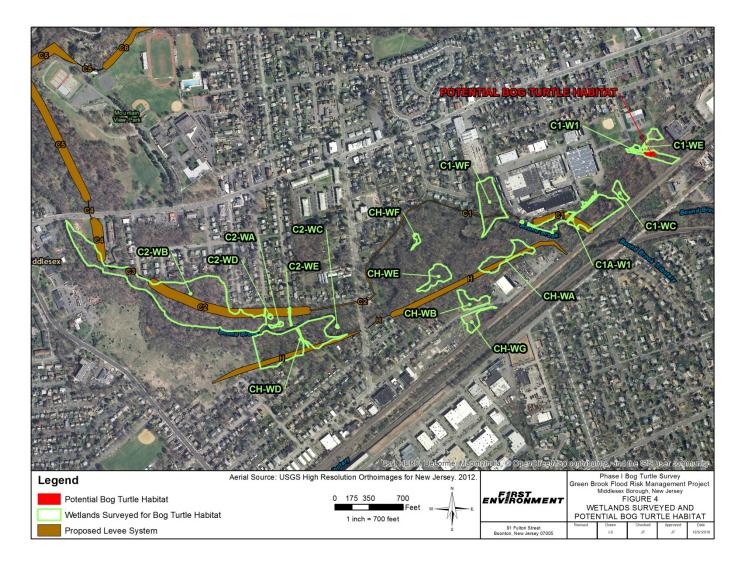


Figure 4: Potential Bog Turtle Habitat

5.0 References

Ernst, C.H. and J.E. Lovich. 2009. Turtles of the United States and Canada. 2nd Edition, Johns Hopkins University Press, Baltimore.)

U.S. Fish and Wildlife Service. 2001. Bog Turtle (*Clemmys muhlenbergii*), Northern Population, Recovery Plan. Hadley, Mass. 103 pp.

Appendix A: Phase I Survey Photograph Locations

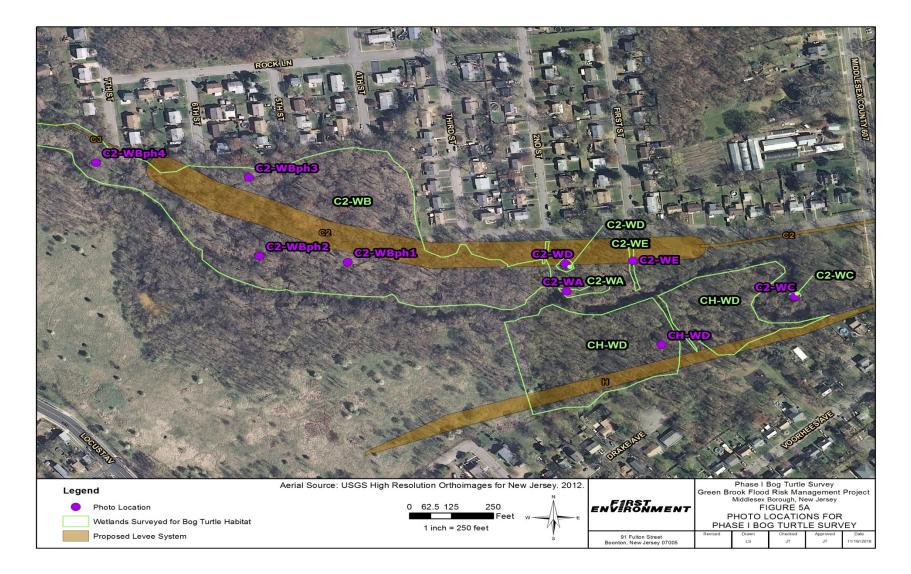


Figure 5A: Photo Locations for Phase I Bog Turtle Survey

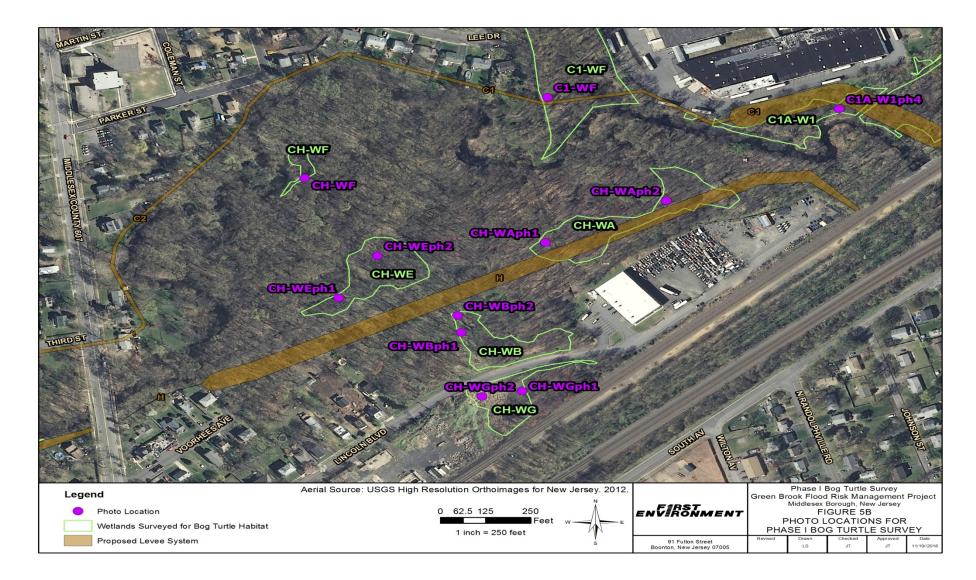


Figure 5B: Photo Locations for Phase I Bog Turtle Survey

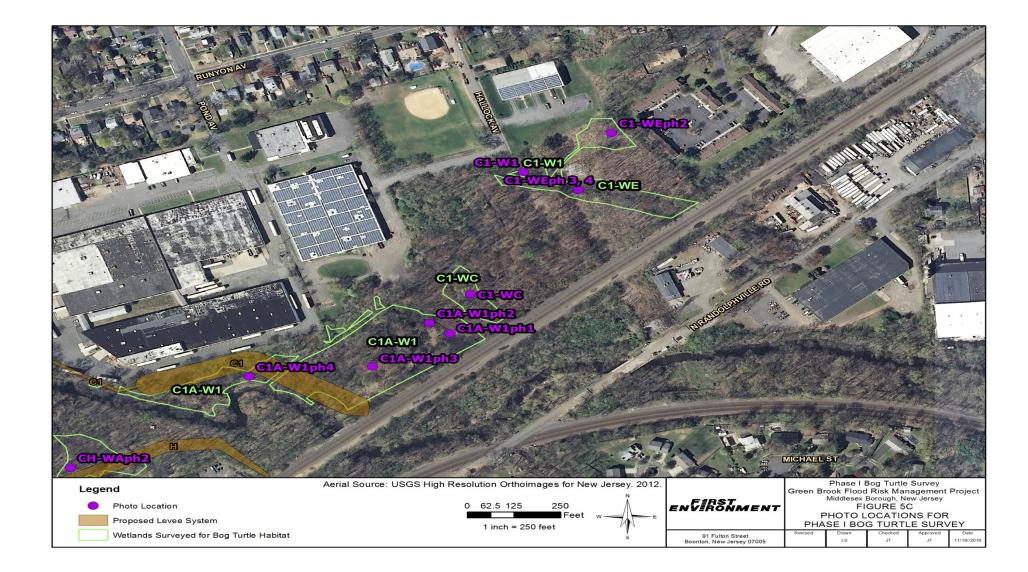


Figure 5C: Photo Locations for Phase I Bog Turtle Survey

Appendix B: Qualifications of Personnel

Jason Tesauro

EDUCATION:

1998 - 2002: Rutgers the State University of New Jersey Graduate School
M.S. Ecology and Evolution Advisor: Dr. David Ehrenfeld Thesis: The Effects of Livestock Grazing on the Bog turtle (*Clemmys muhlenbergii*)

1992 – 1997: Rutgers the State University of New Jersey Rutgers College B.A. Anthropology Minor – Biological Sciences

EMPLOYMENT HISTORY:

Biologist - First Environment, Boonton, New Jersey (2018 - present)

Wildlife Ecologist - Jason Tesauro Consulting, LLC, Millbrook, New York (2003 - present)

Associate Biologist - Hudsonia, Ltd., Annandale, New York (1998 - present)

Wildlife Ecologist - Environmental Defense Fund, Washington, D.C. (2003 - 2010)

Senior Zoologist - New Jersey Division of Fish and Wildlife Endangered & Nongame Species Program, Hampton, New Jersey (1994 - 2003)

PUBLICATIONS/ARTICLES:

Tesauro, J. 2001. Restoring wetland habitats with cows and other livestock. *Conservation Biology in Practice* 2:26-30.

Tesauro, J. and David Ehrenfeld. 2007. The effects of livestock grazing on the bog turtle [Glyptemys (=Clemmys) mulenberghii]. Herpetologica 63:293-300.

Lathrop, R., P. Montesano, J. Tesauro, and B. Zarate. 2005. Statewide mapping and assessment of vernal pools: A New Jersey case Study. *Journal of Environmental Management* 76:230-238.

Bell-Travis, K., I. Haeckel, G. Stevens, J. Tesauro, and E. Kiviat. Bog Turtle (Glyptemys muhlenbergii) Dispersal Corridors and Conservation in New York, USA. Herpetological Conservation and Biology 13(1):257–272.

PROFESSIONAL CERTIFICATIONS:

U.S. Fish and Wildlife Service Recognized Qualified Bog Turtle Surveyor/Trapper for Pennsylvania, New Jersey, and New York

PROFESSIONAL AFFILATIONS:

Board of Directors, The Wetlands Trust, Burdett, New York (January 2016 - present)

Board of Directors, The Wetlands Conservancy, Brooktondale, New York (March 2015 - present)

Craig Hanlon

EDUCATION:

- 1990 1992: Slippery Rock University B.S. Environmental Studies Minor – Cartography
- 1988 1990: Pennsylvania State University A.S. Wildlife Technology

EMPLOYMENT HISTORY:

Principal Environmental Scientist - Louis Berger, U.S., Morristown, New Jersey (2000 - present)

Environmental Scientist - Gwin, Dobson & Foreman, Altoona, Pennsylvania (1997 - 2000)

L. Robert Kimball & Associates, Ebensburg, Pennsylvania (1994 - 1997)

PUBLICATIONS/ARTICLES:

N/A

PROFESSIONAL CERTIFICATIONS:

Certified Ecologist, Ecological Society of America

Professional Wetland Scientist - Society of Wetland Scientist

Envision Sustainability Professional - Institute for Sustainable Infrastructure

PROFESSIONAL AFFILATIONS:

Ecological Society of America (2007 - present)

Society of Wetland Scientist (2004 - present)

Pennsylvania Association of Environmental Professionals (2010 - present)

Dana Flynn

EDUCATION:

2002 – 2006: University of Delaware B.S. Wildlife Conservation

EMPLOYMENT HISTORY:

Senior Environmental Scientist - Louis Berger, U.S., Morristown, New Jersey (2007 - present)

Field Biologist - New Jersey Audubon, Cape May Court House, New Jersey (2007)

Wildlife Technician – New Jersey Division of Fish and Wildlife, Clinton, New Jersey (2006-2007)

Wildlife Technician – University of Delaware, Department of Entomology & Wildlife Ecology (2006)

PUBLICATIONS/ARTICLES:

N/A

PROFESSIONAL CERTIFICATIONS:

Certified Ecologist, Ecological Society of America

Certified Wildlife Biologist - The Wildlife Society

PROFESSIONAL AFFILATIONS:

Ecological Society of America (2017 - present)

New Jersey Chapter of The Wildlife Society (2013-present)

The Wildlife Society (National) (2008-present)

Appendix C: Phase I Datasheets

Wetland ID: CI-WE /CI-WI Phase 1 Bog Turtle Habitat Survey Data Form For the Northern Population Range (Revised October 23, 2018) Greenbrook Flood Risk Mgmit C12.4 county Middleser Property/Project Name____ Entity Requesting Phase 1 Survey (landowner, developer, agency): ACOE Middleser Borough Township/Municipality: First Environment Tesauro Affiliation: Lead Surveyor: D. Flynn, LBG Other Assistants Present: Date of Survey: 10/18/18 Time In: 10004 Time Out: 10304 Air Temp. 40 F C Date/Condition Last Precipitation: _ < 24 hours 1-7 days _ >1 week _ unknown Drought conditions? _ YES NO _ Unknown Drought Index⁺¹ (Circle): D0 D1 D2 D3 D4 Notes (e.g., details about drought, flood, abnormally dry, seasonal conditions): wet fall + Summer Wetland ID: C/-WE/C/-W/ Wetland Size: acres, if known # Wetlands w/in Project Area²: If estimating wetland size: _ < 0.1 acre _ 0.1-0.5 acre 1-2 acres _ 2-4 acres _ 5+ acres _ 10+ acres % Canopy Cover*³ _ 0% _ ≤5 _ 6-20 _21-40 ∠41-60 _>60 Hydrology and Soils (check all that apply): X Springs/Seeps __Springhouse __Trib/Stream __Pond Stormwater __Iron Bacteria ___Rivulets (how many_____) (_____inches deep) ___Subsurface Tunnel/Rivulets ___Tire Ruts (____inches deep) Saturated soils present? If yes, year-round? Kikely __ Unlikely __ Unknown Yes ____ No water visible on surface? Small Puddles/Depressions (5 inches deep) 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 **Vetland Info** disturbance is*): Storm water floooling For ditches that may be present, is there bog turtle habitat? If yes, describe: X Yes __ No Are there any signs of disturbance to <u>vegetation</u> (e.g., mowing, pasturing, burning)? If yes, describe (if possible, include level of disturbance*): R.O.W. Ves msmt. Soil types present :: Saturatel mineral soils, Small and of 'muchines' 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

	EM Portion of Wetlar	d: Approx. Acre(s)	<u>0.2.ac</u>	Mucky soils depth (i	nches) <u>/-3</u> "				
PS	SS Portion of Wetland: Approx. Acre(s)								
PF	PFO Portion of Wetland: Approx. Acre(s) 1.5 . Mucky soils depth (inches) 1.3 "								
PC	PO Portion of Wetland: Approx. Acre(s)								
CI	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.								
atio	Sphagnum Moss	Grass-of-Parnassus	Rice Cutgrass	Tussock Sedge	Shrubby Cinquefoil	Red Maple			
Wetland Type/Vegetation	Arrowhead <	Japanese Stiltgrase	Rough-leaved Goldenrod	White Turtlehead	Spicebush	Viburnum Spp.			
pe/	Carpetgrass	Jewelweed	Sensitive Fern	Woolly-fruited Sedge	Swamp Rose				
d Ty	Cattail	Mile-A-Minute	Skunk Cabbage	Yellow Sedge	Alder Spp.				
fetlar	Cinnamon Fern	Porcupine Sedge	Smooth Sawgrass	Alder-leaved Buckthorn	American Elm				
3	Common Boneset	Purple Loosestrife	Sweetflag	Dogwood Spp.	Eastern Red Cedar				
	Common Reed	Reed Canary Grass	Tearthumb Spp.	Multiflora Rose	Poison Sumac				
N	Notes on additional plant species (Are there other sedges/rushes/other species dominant that are not on the list above?):								
	Cart	x, Sott in	54, 1000	suess, m	arsh prosta	m c			
Landscape Info	If part of this wetland continues off-site, how much of the off-site portion was surveyed (on foot)?								
8 - ·	Were any bog turtles	observed? Yes	∕ No If yes	, how many?	*Note that yo are conducting				
e	Other herps observed	d? _Yes 🔀 No	If yes, which ones	?	*Report bog t Field Office an				
Lead Surveyor Opinion Species	XYes No XYes No Yes No Sin all Sin all	Unsure The hydro Unsure The soils of Unsure The soils of Unsure This wetla Unsure This wetla Unsure This wetla Unsure This wetla reach this opinion Prea Meters ease sign below cert	If yes, which ones logy criterion for bog tur ation criterion for bog tur ation criterion for b nd has potential bog nd has potential bog nd does NOT have }: minimum ifying to the best of	og turtle habitat is m tle habitat is met. bog turtle habitat is r og turtle habitat (fair g turtle habitat (low potential bog turtle m c riferia fo	"Report but h Field Office an net. to good quality). to very low quality). habitat.	g the survey in to handle bog turtles. urtle observations to your local FWS nd state wildlife office within 48 hrs.			

	Phase 1 Bog Turtle Habitat Survey Data Form Wetland ID: <u>Cl-WC</u> For the Northern Population Range (Revised October 23, 2018)
General Info	Property/Project Name Entity Requesting Phase 1 Survey (landowner, developer, agency): Township/Municipality: Lead Surveyor: Other Assistants Present: D. Flynn, LBG
Date/Condition	Date of Survey: <u>10/18/18</u> Time In: <u>10352</u> Time Out: <u>10454</u> Air Temp. <u>40</u> (F) C° Last Precipitation: _<24 hours <u>A</u> T-7 days _>1 week _ unknown Drought conditions? _YES <u>NO</u> _ Unknown Drought Index ^{*1} (Circle): D0 D1 D2 D3 D4 Notes (e.g., details about drought, flood, abnormally dry, seasonal conditions): Wed fall + Summer
	Wetland ID: Cl - WC Wetland Size: acres, if known # Wetlands w/in Project Area ² : If estimating wetland size: < 0.1 acre ≥ 0.1-0.5 acre 1-2 acres 2-4 acres 5+ acres 10+ acres
Wetland Info	Yes No water visible on surface? Small Puddles/Depressions (L inches deep) Xfes No Are there any signs of disturbance to <u>hydrology</u> (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*): Stars Stars Stars Stars For ditches that may be present, is there bog turtle habitat? If yes, describe:
	Yes XNo Are there any signs of disturbance to <u>vegetation</u> (e.g., mowing, pasturing, burning)? If yes, describe (if possible, include level of disturbance*):
	Soil types present*: Satura feel mineral soils
	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 1

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PI	EM Portion of Wetla	nd: Approx. Acre(s)		Mucky soils depth (in	nches)	
	SS Portion of Wetlar	10 10 10 10 10 10 10 10 10 10 10 10 10 1		Mucky soils depth (in	nches)	,
P	FO Portion of Wetla	nd: Approx. Acre(s)	.540	Mucky soils depth (in	nches)/·	
P	O Portion of Wetlan	d: Approx. Acre(s)	<u></u> N			
		* from list below that ven if not a dominan		% for each wetland	type listed above.	Also, CIRCLE
ation	Sphagnum Moss	Grass-of-Parnassus	Rice Cutgrass	Tussock Sedge	Shrubby Cinquefoil	Red Maple
Wetland Type/Vegetation	Arrowhead	Japanese Stiltgrass	Rough-leaved Goldenrod	White Turtlehead	Spicebush	Viburnum Spp.
/be/	Carpetgrass	Jewelweed	Sensitive Fern	Woolly-fruited Sedge	Swamp Rose	
J I	Cattail	Mile-A-Minute	Skunk Cabbage	Yellow Sedge	Alder Spp.	•
/etlar	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	
Landscape Info	∑None Som If part of this wetlan None	etland is located off-s e of it – the entire we e of it – Acres o d continues off-site, l e of it All of it g turtle habitat off-si	tland is within the or% of the w now much of the o _ Part of it (a	property boundaries vetland appears to be ff-site portion was su cres or% of the	e located off-site urveyed (on foot)? off-site portion)	
-	Were any bog turtle	s observed?Yes	XNo If yes	, how many?		ou must be permitted by the state you
9		ed? _Yes 🖄			*Report bog	ing the survey in to handle bog turtles. turtle observations to your local FWS and state wildlife office within 48 hrs.
4	Yes NoYes No Yes NoYes No Yes No Yes No Yes No Notes (How did yo Lead Surveyor - pl accurate and comp Signature Nots prominent in the Pertinent to bog turt	영상 영상 이 이 관계 이 가지 않는 것이 같아. 이 것이 같은 것이 같은 것이 없다.	riterion for bog tur ition criterion for bo had has potential bo had has potential bo had does NOT have is 57 fying to the best of he highest percent necticut, Massachu	tle habitat is met. bog turtle habitat is n g turtle habitat (fair g turtle habitat (low potential bog turtle l f your knowledge tha of coverage compare	net. to good quality). to very low quality) nabitat. at all of the informa Date d to other species.	tion provided herein is

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	Phase 1 Bog Turtle Habitat Survey Data Form Wetland ID: <u>C/Aーい/</u> For the Northern Population Range (Revised October 23, 2018)
General Info	Property/Project Name Gift n Bybok Flood Nak Mymt C1, 2, H County Middlest r Entity Requesting Phase 1 Survey (landowner, developer, agency): ACOE Township/Municipality: Middleser Boroogh Lead Surveyor: TESQUVO Affiliation: First Environnet Other Assistants Present: D. Flynn, CBG
Date/Condition	Date of Survey: 10/18/18 Time In: 1050 h Time Out: 1120 h Air Temp. 43 F) C° Last Precipitation: < 24 hours 1-7 days > 1 week unknown Drought conditions? YES NO Unknown Drought Index*1 (Circle): D0 D1 D2 D3 D4 Notes (e.g., details about drought, flood, abnormally dry, seasonal conditions): Wed Gallassing Wed Gallassing Yes Yes Yes
Wetland Info	Wetland ID: C/A - W/I Wetland Size: acres, if known # Wetlands w/in Project Area ² : If estimating wetland size: < 0.1 acre 0.1-0.5 acre 2-2 acres 2-4 acres 5 + acres 10+ acres % Canopy Cover* ³ _0% _≤ 5 _6-20 _21-40 _41-60 _> 60 Hydrology and Soils (check all that apply):
	For ditches that may be present, is there bog turtle habitat? If yes, describe: Yes No Are there any signs of disturbance to <u>vegetation</u> (e.g., mowing, pasturing, burning)? If yes, describe (if possible, include level of disturbance*): Soil types present*: Scafure for mover of Sor //s
	 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

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PS PF PC	EM Portion of Wetla SS Portion of Wetlan	nd: Approx. Acre(s)				
PF PC	5S Portion of Wetlan		-	Mucky soils depth (in		
PC			C.	Mucky soils depth (in	, "	
	O Portion of Wetla	nd: Approx. Acre(s)	1.5	Mucky soils depth (in	nches)	
	D Portion of Wetlan	d: Approx. Acre(s)				
ca	RCLE all vegetation ³ lciphiles ⁴ present e			% for each wetland	type listed above.	Also, CIRCLE
	Sphagnum Moss	Grass-of-Parnassus	Rice Cutgrass	Tussock Sedge	Shrubby Cinquefoil	(Red Maple)
wetiand Iype/vegetation	Arrowhead	Japanese Stiltgrass	Rough-leaved Goldenrod	White Turtlehead	Spicebush	Viburnum Spp.
/an	Carpetgrass	Jewelweed	Sensitive Fern	Woolly-fruited Sedge	Swamp Rose	
	Cattail	Mile-A-Minute	Skunk Cabbage	Yellow Sedge	Alder Spp.	
etlar	Cinnamon Fern	Porcupine Sedge	Smooth Sawgrass	Alder-leaved Buckthorn	American Elm	
ŝ	Common Boneset	Purple Loosestrife	Sweetflag	Dogwood Spp.	Eastern Red Cedar	
	Common Reed	Reed Canary Grass	Tearthumb Spp.	Multiflora Rose	Poison Sumac	
8.0-				division, agricultural f		50Hm 603 4 1
		(railroad , c				
Lands	Some If part of this wetlan None	e of it – Acres d continues off-site, e of it All of it	or% of the w how much of the o Part of it (a	property boundaries vetland appears to be iff-site portion was su icres or% of the pUnknown If y	e located off-site urveyed (on foot)? off-site portion)	nclude this?
e,	Were any bog turtle Other herps observe	and the second se	100.000 A. P	;, how many? ?	*Report bog	ou must be permitted by the state you ng the survey in to handle bog turtles. turtle observations to your local FWS nd state wildlife office within 48 hrs.
Lead Surveyor Opinion	Yes No Yes No Yes No Yes No Yes No Notes (How did you Lead Surveyor - pl accurate and comp Signature	Unsure The soils of Unsure This wetla Unsure This wetla Unsure This wetla Unsure This wetla u reach this opinion Fiedded , ease sign below cert lete.	triterion for bog tur ation criterion for b ind has potential bo ind does NOT have ind does NOT have ifying to the best o	oog turtle habitat is n og turtle habitat (fair og turtle habitat (low potential bog turtle l	net. to good quality). to very low quality) habitat. at all of the informat	tion provided herein is
			necticut, Massachu	setts, New Jersey, N		

	- AND
	Phase 1 Bog Turtle Habitat Survey Data Form For the Northern Population Range (Revised October 23, 2018) Wetland ID:
	Property/Project Name Covenbrock flow Risk Mant C1, 2, 18 county Middleser
1 ^e	Entity Requesting Phase 1 Survey (landowner, developer, agency):
la	Township/Municipality: Modelesex Bringh
General Info	Lead Surveyor: [ESauro Affiliation: First Environment
ľ	Other Assistants Present: D. Fynn, LBG
	Date of Survey: 10/15/18 Time In: 11304 Time Out: 12004 Air Temp. 45 (F) C°
tion	Last Precipitation: _ < 24 hours _ 1-7 days > 1 week unknown Drought conditions? YES XNO Unknown
Date/Condition	Drought Index* ¹ (Circle): D0 D1 D2 D3 D4 Notes (e.g., details about drought, flood, abnormally dry, seasonal conditions):
-C	Wet fall + summer
Dat	Wer wait to
1	
	Wetland ID: CI-WF Wetland Size: acres, if known # Wetlands w/in Project Area ² :
	If estimating wetland size: < 0.1 acre 0.1-0.5 acre 🛌 1-2 acres 2-4 acres 5+ acres 10+ acres
	% Canopy Cover ^{*3} _ 0% _ ≤ 5 _ 6-20 _ 21-40 _ 41-60 \geq 60
1	Hydrology and Soils (check all that apply):
	Springs/SeepsSpringhouseTrib/StreamPondStormwaterIron Bacteria
1	
	Rivulets (how many) (inches deep) Subsurface Tunnel/Rivulets Tire Ruts (inches deep)
	No_Saturated soils present? If yes, year-round?LikelyUnlikelyUnknown
	Yes KNo water visible on surface?Small Puddles/Depressions (inches deep)
Wetland Info	Yes XNo Are there any signs of disturbance to <u>hydrology</u> (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*):
Wetla	For ditches that may be present, is there bog turtle habitat? If yes, describe:
	Yes XNo Are there any signs of disturbance to <u>vegetation</u> (e.g., mowing, pasturing, burning)? If yes, describe (if possible, include level of disturbance*):
	Soil types present*: Brg mineralsoils
	 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

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<form><form><form></form></form></form>	_				100 million (1997)		
POP Oration of Wetland: Approx. Acre(s)	1	PEM Portion of Wetla	nd: Approx. Acre(s)	<u></u>	Mucky soils depth (in	nches)	
PO Portion of Wetland: Approx. Acre(s) Common form first below that is dominants 2 20% for each wetland type listed above. Also, CIRCLE claiming the advance of the ad					Mucky soils depth (in	nches)	
Image: control of the control of th	1	PFO Portion of Wetla	nd: Approx. Acre(s)	Zac	Mucky soils depth (in	nches) <u>O</u>	
Sphaguum Moss Grass of Paragya Rec curgrass Tussock Sedge Shubby Cnquetoli Red Male Arrowhead Sphaguum Moss Grass of Paragya Rec curgrass Tussock Sedge Swamp Rose Arrowhead Sphaguum Moss Grass of Paragya Rec curgrass Rec curgrass Rec curgrass Rec curg rass Rec curgers Recurgers Recurgers Recurgers Rec curgers Rec curgers Rec curgers Re	1	PO Portion of Wetlan	d: Approx. Acre(s)				
Opposed Sphagnum Moss Grass-of-Parnesson Rece Cutgrass Tussock Sedge Shrubby Cinquefoil Red Magin Arrowhead Impaneue Silligrass Rece Cutgrass Tussock Sedge Shrubby Cinquefoil Red Magin Arrowhead Impaneue Silligrass Rece Cutgrass Nonely-Fault Viburium Spp. Carpetgrass Jovebweed Sensitive Fern Woolly-fruited Sedge Swamp Rose Impaneue Silligrass Cartail Mile A Minute Stank Cabbage Velow Sedge Adder Spp. Impaneue Silligrass Cartail Mile A Minute Stank Cabbage Velow Sedge Adder Spp. Impaneue Silligrass Common Reed Percupice Cossettife Sweetlag Opgewood Spp. Eastern Red Cedar Impaneue Silligrass Notes on additional plant species (Are there other sedges/rushkes/other species dominant that are not on the list above?): More Magin Molitibur Rove Molitibur R					% for each wetland	type listed above.	Also, CIRCLE
Common Bonest Purple Loosestifie Sweeting Dogwood spin Eastern feed Cedar Common Reed Reed Canary Grass Tearthumb Spin Multiflora Rose Poison Sumac Notes on additional plant species (Are there other sedges/rushes/other species dominant that are not on the list above?): Activities of Sumary Poison Sumac 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)? Some of it Arces or % of the wetland appears to be located off-site if and off the off-site portion was surveyed (on foot)?		<u> </u>	Long door and the				
Common Bonest Purple Loosestifie Sweeting Dogwood spin Eastern feed Cedar Common Reed Reed Canary Grass Tearthumb Spin Multiflora Rose Poison Sumac Notes on additional plant species (Are there other sedges/rushes/other species dominant that are not on the list above?): Activities of Sumary Poison Sumac 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)? Some of it Arces or % of the wetland appears to be located off-site if and off the off-site portion was surveyed (on foot)?	tatio						
Common Bonest Purple Loosestifie Sweeting Dogwood spin Eastern feed Cedar Common Reed Reed Canary Grass Tearthumb Spin Multiflora Rose Poison Sumac Notes on additional plant species (Are there other sedges/rushes/other species dominant that are not on the list above?): Activities of Sumary Poison Sumac 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)? Some of it Arces or % of the wetland appears to be located off-site if and off the off-site portion was surveyed (on foot)?	Vege	Arrowhead	apanese Stiltgrass		White Turtlehead	Spicebush	
Common Bonest Purple Loosestifie Sweeting Dogwood spin Eastern feed Cedar Common Reed Reed Canary Grass Tearthumb Spin Multiflora Rose Poison Sumac Notes on additional plant species (Are there other sedges/rushes/other species dominant that are not on the list above?): Activities of Sumary Common Reed 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)? Some of it	/be/	Carpetgrass	Jewelweed	Sensitive Fern	Woolly-fruited Sedge	Swamp Rose	
Common Bonest Purple Loosestifie Sweeting Dogwood spin Eastern feed Cedar Common Reed Reed Canary Grass Tearthumb Spin Multiflora Rose Poison Sumac Notes on additional plant species (Are there other sedges/rushes/other species dominant that are not on the list above?): Activities of Sumary Common Reed 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)? Some of it	Id Ty	Cattail	Mile-A-Minute	Skunk Cabbage	Yellow Sedge	Alder Spp.	
Common Bonest Purple Loosestifie Sweeting Dogwood spin Eastern feed Cedar Common Reed Reed Canary Grass Tearthumb Spin Multiflora Rose Poison Sumac Notes on additional plant species (Are there other sedges/rushes/other species dominant that are not on the list above?): Activities of Sumary Common Reed 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)? Some of it	/etlar	Cinnamon Fern	Porcupine Sedge	Smooth Sawgrass		American Elm	
Notes on additional plant species (Are there other sedges/rushes/other species dominant that are not on the list above?): Motes on additional plant species (Are there other sedges/rushes/other species dominant that are not on the list above?): Motes on additional plant species (Are there other sedges/rushes/other species dominant that are not on the list above?): 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)? Species of it	5	Common Boneset	Purple Loosestrife	Sweetflag	Dogwood Spp.	Eastern Red Cedar	
Update of Summer 1/3 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)?		Common Reed	Reed Canary Grass	Tearthumb Spp.	Multiflora Rose	Poison Sumac	
Describe surrounding landscape (e.g., wetlands, forest, subdivision, agricultural field, fallow field, etc.): Describe surrounding landscape (e.g., wetlands, forest, subdivision, agricultural field, fallow field, etc.): More of it - the entire wetland is within the property boundaries or right-of-way)?						lominant that are no	ot on the list above?):
Describe surrounding landscape (e.g., wetlands, forest, subdivision, agricultural field, fallow field, etc.): Describe surrounding landscape (e.g., wetlands, forest, subdivision, agricultural field, fallow field, etc.): More of it - the entire wetland is within the property boundaries or right-of-way)?		/	farlwood 2	scomp c	minun 1 ty		
Image: None of the set o		· · · · · ·		<u>x</u>			
Other herps observed? _ Yes XNo If yes, which ones? **Report bog turtle observations to your local FWS Field Office and stars wildlife office within 48 hrs. Yes XNoUnsure The hydrology criterion for bog turtle habitat is met. Yes XNoUnsure The vegetation criterion for bog turtle habitat is met. Yes XNoUnsure This wetland has potential bog turtle habitat (fair to good quality). Yes XNoUnsure This wetland has potential bog turtle habitat (low to very low quality). Yes NoUnsure This wetland does NOT have potential bog turtle habitat. Notes (How did you reach this opinion?): Yes		Is there potential bo	g turtle habitat off-si	te? _Yes XNo	D Unknown If y	ves, how did you cor	
Yes No Unsure The soils criterion for bog turtle habitat is met. Yes No Unsure The vegetation criterion for bog turtle habitat is met. Yes No Unsure This wetland has potential bog turtle habitat (fair to good quality). Yes No Unsure This wetland has potential bog turtle habitat (low to very low quality). Yes No Unsure This wetland does NOT have potential bog turtle habitat. Notes (How did you reach this opinion?): Drg for esteed habitat 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	Species					*Report bog t	urtle observations to your local FW5
£	Lead Sur	Yes No Yes No Yes No Yes No Yes No Yes No Notes (How did yo Notes (How did yo Notes and comp Signature most prominent in the Pertinent to bog turt	Unsure The soils of Unsure The vegeta Unsure This wetlar Unsure This wetlar Unsure This wetlar u reach this opinion? A Soveela lease sign below certi- blete.	riterion for bog tur ntion criterion for bo hd has potential bo hd has potential bo hd does NOT have provide the bost of the highest percent necticut, Massachu	tle habitat is met. bog turtle habitat is n bog turtle habitat (fair bog turtle habitat (low potential bog turtle h f your knowledge that of coverage compare	net. to good quality). to very low quality). habitat. at all of the informat Date ed to other species.	ion provided herein is
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	Phase 1 Bog Turtle Habitat Survey Data Form Wetland ID:C Hー いろ For the Northern Population Range (Revised October 23, 2018)
General Info	Property/Project Name <u>GreenBrock Flow</u> Risk Mand C1, 2, H county <u>Middleser</u> Entity Requesting Phase 1 Survey (landowner, developer, agency): <u>ACOE</u> Township/Municipality: <u>Middleser</u> Borowsh Lead Surveyor: <u>TESKUVO</u> Affiliation: First Environment Other Assistants Present: DIFLINN, CBG
Date/Condition	Date of Survey: 10/18/18 Time In: /300 h Time Out: 1320 h Air Temp. 46 F C° Last Precipitation: <24 hours 21-7 days >1 week _ unknown Drought conditions? _YES 2NO _ Unknown Drought Index ⁺¹ (Circle): D0 D1 D2 D3 D4 Notes (e.g., details about drought, flood, abnormally dry, seasonal conditions): WLT SUMMERT + full
ł Info	Wetland ID:
Wetland Info	For ditches that may be present, is there bog turtle habitat? If yes, describe:
	YesNo Are there any signs of disturbance to <u>vegetation</u> (e.g., mowing, pasturing, burning)? If yes, describe (if possible, include level of disturbance*):
	Soil types present*: (layey, mineral
	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 1

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PE	EM Portion of Wetla	nd: Approx. Acre(s)	<u>./</u>	Mucky soils depth (ir	nches) <u><</u>	
	SS Portion of Wetlan		-	Mucky soils depth (in	~	
P	FO Portion of Wetlar	id: Approx. Acre(s)	2	Mucky soils depth (in	nches)	
P	O Portion of Wetland	1: Approx. Acre(s)			/	
	IRCLE all vegetation* alciphiles ⁴ present ev			% for each wetland	type listed above.	Also, CIRCLE
Ition	Sphagnum Moss	Grass-of-Parnassus	Rice Cutgrass	Tussock Sedge	Shrubby Cinquefoil	Red Maple
Wetland Type/Vegetation	Arrowhead	Japanese Stiltgras	Rough-leaved Goldenrod	White Turtlehead	Spicebush	Viburnum Spp.
√ad	Carpetgrass	Jewelweed	Sensitive Fern	Woolly-fruited Sedge	Swamp Rose	
AT b	Cattail	Mile-A-Minute	Skunk Cabbage	Yellow Sedge	Alder Spp.	
retian	Cinnamon Fern	Porcupine Sedge	Smooth Sawgrass	Alder-leaved Buckthorn	American Elm	
S	Common Boneset	Purple Loosestrife	Sweetflag	Dogwood Spp.	Eastern Red Cedar	
	Common Reed	Reed Canary Grass	Tearthumb Spp.	Multiflora Rose	Poison Sumac	
N	lotes on additional p	lant species (Are the	re other sedges/ru	shes/other species d	lominant that are n	ot on the list above?):
	12000	freed, white	esnakeroot,	hardwoods		
es Landso	Some If part of this wetland	e of it All of it g turtle habitat off-si s observed? Yes	or% of the v how much of the o _ Part of it (a te?Yes XNo	retland appears to be ff-site portion was su cres or% of the Unknown If y , how many?	e located off-site urveyed (on foot)? off-site portion) res, how did you con "Note that y are conduction "Report bog	nclude this? ou must be permitted by the state you ig the survey in to handle bog turtles. turtle observations to your local PWS in state widdle office with 14 hrs.
I Surveyor Opinion	Yes XNo Yes No Yes No Yes No Notes (How did you		riterion for bog tur ation criterion for t ad has potential bo ad has potential bo ad does NOT have): bo cla la ca M	tle habitat is met. hog turtle habitat is m ig turtle habitat (fair ig turtle habitat (low potential bog turtle h in the can the second	net. to good quality). to very low quality) nabitat.	tion provided herein is
Lead Su	accurate and comp Signature	de	u		Date	lislis

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	Phase 1 Bog Turtle Habitat Survey Data Form Wetland ID: CH-WE For the Northern Population Range (Revised October 23, 2018)
General Info	Property/Project Name <u>Greationsk Flood Misk Meant</u> C1, 2, 14 County <u>Middlesen</u> Entity Requesting Phase 1 Survey (landowner, developer, agency): <u>A COF</u> Township/Municipality: <u>Middles & Brown</u> Lead Surveyor: <u>Tesauro</u> Affiliation: <u>First Environment</u> Other Assistants Present: <u>D. Flynn</u> , LB6
Date/Condition	Date of Survey: $10/18/18$ Time In: 13252 Time Out: 13354 Air Temp. 4860 ° ° C° Last Precipitation: <24 hours $>1-7$ days >1 week _ unknown Drought conditions? _ YES NO _ Unknown Drought Index ⁺¹ (Circle): D0 D1 D2 D3 D4 Notes (e.g., details about drought, flood, abnormally dry, seasonal conditions): Wet summer + fall
Wetland Info	Wetland ID: Cld-WE Wetland Size: acres, if known # Wetlands w/in Project Area ² : If estimating wetland size: <0.1 acre 0.1-0.5 acre 2-2 acres 2-4 acres 5+ acres 10+ acres % Canopy Cover* ³ _0% _≤ 5 _6-20 _21-40 _41-60 >> 60 Hydrology and Soils (check all that apply):
Wetla	For ditches that may be present, is there bog turtle habitat? If yes, describe:
	_Yes XNO Are there any signs of disturbance to <u>vegetation</u> (e.g., mowing, pasturing, burning)? If yes, describe (if possible, include level of disturbance*): Soil types present*: Saturated - Jry mineral soits, pockets of moistern
	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 1

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			nd: Approx. Acre(s) nd: Approx. Acre(s)	Second	Mucky soils depth (in Mucky soils depth (in	and the second	
			d: Approx. Acre(s)		and an example a constant of the		323
			* from list below that ven if not a dominat		% for each wetland	type listed above.	Also, CIRCLE
wetiand Type/vegetation	[Sphagnum Moss	Grass-of-Parnassus	Rice Cutgrass	Tussock Sedge	Shrubby Cinquefoil	Red Maple
Berg		Arrowhead	Japanese Stiltgrass	Rough-leaved Goldenrod	White Turtlehead	Spicebush	Viburnum Spp.
/ac	1	Carpetgrass	Jewelweed	Sensitive Fern	Woolly-fruited Sedge	Swamp Rose	
i n	1	Cattail	Mile-A-Minute	Skunk Cabbage	Yellow Sedge	Alder Spp.	
upna		Cinnamon Fern	Porcupine Sedge	Smooth Sawgrass	Alder-leaved Buckthorn	American Elm	
š		Common Boneset	Purple Loosestrife	Sweetflag	Dogwood Spp.	Eastern Red Cedar	
		Common Reed	Reed Canary Grass	Tearthumb Spp.	Multiflora Rose	Poison Sumac	
	No	그는 사람이 안 이번에 안 다 안가 한 것 같아. 가 같아. 가 같아.	아님은 동안은 가장 같은 것은 것은 것은 것을 것 같아요. 것을 많다.			lominant that are no	ot on the list above?):
		1411	1 milant	mind	hardwoods		
Landscape In	lf	Som Som part of this wetlan None	e of it – Acres d continues off-site, e of it All of it	or% of the w how much of the o Part of it (a	property boundaries vetland appears to be ff-site portion was su cres or% of the	e located off-site urveyed (on foot)? off-site portion)	acluda this?
	ls	Som part of this wetlan None there potential bo	e of it — Acres d continues off-site, e of it All of it g turtle habitat off- s	or% of the w how much of the o Part of it (a site?Yes	vetland appears to be ff-site portion was su cres or% of the Unknown If y	e located off-site urveyed (on foot)? off-site portion) res, how did you cor	ou must be permitted by the state you
Species Landscape Info	Is W	Som part of this wetlan None there potential bo vere any bog turtle ther herps observe	e of it — Acres d continues off-site, e of it All of it g turtle habitat off-s s observed? Yes ed? YesNo	or% of the w how much of the o Part of it (a site?Yes XNo No If yes If yes, which ones	vetland appears to be ff-site portion was su cres or% of the b Unknown If y , how many??	e located off-site urveyed (on foot)? off-site portion) res, how did you cor "Note that you are confuction "Report bog Field Office at	
	Is W O	Some part of this wetlan None there potential bo vere any bog turtle ther herps observe Yes XNo Yes XNO Notes (How did yo	e of it Acres d continues off-site, e of it All of it g turtle habitat off-s s observed? Yes ed? Yes No Unsure The hydro Unsure The soils o Unsure The soils o Unsure This wetla Unsure This wet	or% of the w how much of the o Part of it (a site?Yes XNo No If yes If yes, which onesi loggy criterion for bo criterion for bog tur sation criterion criterion for bog	vetland appears to be ff-site portion was success or% of the byUnknown If y byUnknown If y constructed to the second construction of the second const	e located off-site urveyed (on foot)? off-site portion) res, how did you cor "Note that yo are conductin "Report bog Field Office at et. to good quality). to very low quality) habitat. tt all of the informat	bu must be permitted by the state you ig the survey in to handle bog turtles. turtle observations to your local FWS and state wildlife office within 48 hrs.

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	Phase 1 Bog Turtle Habitat Survey Data Form For the Northern Population Range (Revised October 23, 2018) (Revised Northern Population Range
	Property/Project Name Creen Brook Floo J Nisk Msmd. C1,2, 12 county Middlesty
	10-0
Pfo	
General Info	Township/Municipality: Middleses Birngh
ene	Lead Surveyor: [25000 Affiliation: First Environment
0	Other Assistants Present: D.FLynn, LBG
	Date of Survey: 10/18 Time In: 1340 h Time Out: 1350 h Air Temp. 49 FBC°
<u>io</u>	Last Precipitation: _ < 24 hours _ 1-7 days _ > 1 week _ unknown Drought conditions? _ YES _NO _ Unknown
dit	Drought Index ⁺¹ (Circle): D0 D1 D2 D3 D4 Notes (e.g., details about drought, flood, abnormally dry, seasonal conditions):
3	All Direction and the second
Date/Condition	Wet fall-summer
	Wetland ID:C H-WF Wetland Size: acres, if known # Wetlands w/in Project Area ² :
1	
	If estimating wetland size: < 0.1 acre (0.1-0.5 acre 1-2 acres 2-4 acres 5+ acres 10+ acres
	% Canopy Cover ^{*3} _ 0% _ ≤ 5 _ 6-20 _ 21-40 _ 41-60 ≽> 60
1	Hydrology and Soils (check all that apply):
	Springs/SeepsSpringhouse ZTrib/StreamPondStormwaterIron Bacteria
	Rivulets (how many) (inches deep) Subsurface Tunnel/Rivulets Tire Ruts (inches deep)
	Saturated soils present? If yes, year-round? Likely Yunlikely Unknown
1	Yes 🚬 No water visible on surface?Small Puddles/Depressions (inches deep)
Wetland Info	YesNo Are there any signs of disturbance to <u>hydrology</u> (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*):
Wetla	For ditches that may be present, is there bog turtle habitat? If yes, describe:
	Yes XNo Are there any signs of disturbance to <u>vegetation</u> (e.g., mowing, pasturing, burning)? If yes, describe (if possible, include level of disturbance*):
	Soil types present *: Saturatel mineral suits (aur)
	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 1

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Р	EM Portion of Wetla	nd: Approx. Acre(s)	.2	Mucky soils depth (ir	nches)/~	
Р	SS Portion of Wetlan	d: Approx. Acre(s)		Mucky soils depth (ii	nches)	
P	FO Portion of Wetlar	nd: Approx. Acre(s)		Mucky soils depth (in	nches)	
P	O Portion of Wetland	1: Approx. Acre(s)	<u></u>			
	IRCLE all vegetation*			% for each wetland	type listed above. A	llso, CIRCLE
	alciphiles ⁴ present ev	Grass-of-Parnassus	a fair de statement en	Tussock Sedge	Shrubby Cinquefoil	Red Maple
Wetland Type/Vegetation	Arrowhead	Japanese Stiltgrass	Rice Cutgrass Rough-leaved	White Turtlehead	Spicebush	Viburnum Spp.
/Veg			Goldenrod			
ype,	Carpetgrass	Jewelweed	Sensitive Fern	Woolly-fruited Sedge	Swamp Rose	
Lpue	Cattail	Mile-A-Minute	Skunk Cabbage	Yellow Sedge Alder-leaved	Alder Spp.	
Vetla	Cinnamon Fern	Porcupine Sedge	Smooth Sawgrass	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 p					t on the list above?):
	M	arshpursla	me , boxel	lder - very	y little was	
	Describe surrounding):
	•	,				
	How much of this we	tland is located off-	site (i.e., outside th	e property boundari	es or right-of-way)?	
lufo	Stone	of it – the entire we	tland is within the	property boundaries		
be				vetland appears to be		
Landscape Info	If part of this wetland					
Lanc	None	ofit All of it _	_ Part of it (a	cres or% of the	off-site portion)	
	Is there potential bo	g turtle habitat off-s	ite? _ Yes XNo	Unknown If y	ves, how did you con	clude this?
			· · ·			
-	Were any bog turtles	s observed? Yes		, how many?	*Note that you	must be permitted by the state you
Species	Other herps observe					the survey in to handle bog turtles.
Sp	other herps observe		in yes, which ones			d state wildlife office within 48 hrs.
	V	Ileanes The Lord	lami aritarian fa l	an trutle bablers to a	ot	
H .	Yes XNo	Unsure The hydro Unsure The soils of		og turtle habitat is m tle habitat is met.	iet.	
	Yes X No			oog turtle habitat is n	net.	
-ioi				g turtle habitat (fair		
veyor Opinion				og turtle habitat (low potential bog turtle l	승규는 것 같아요. 여행 가지 않는 것이 많이	
ě		reach this opinion?				
Lve	mu	day oxbow	basin			
Lead Sur				f vour knowledge that	at all of the informati	on provided herein is
Lea	accurate and comp		,			
	-	912	22		10	lixlin
	Signature —	F			Date	
-				<u> </u>		
	nost prominent in the Pertinent to bog turt					Ivania. See
	upplemental Informa				en renn, end rennsy	
						1922
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	Phase 1 Bog Turtle Habitat Survey Data Form For the Northern Population Range (Revised October 23, 2018)
General Info	Property/Project Name Greenbrook Flad Misk Mgmd Cl, Z, 14 County Middleses Entity Requesting Phase 1 Survey (landowner, developer, agency): Township/Municipality: Middle Str Brough Lead Surveyor: (ES auro Affiliation: First Environment Other Assistants Present: D. Flynn, LBL
Date/Condition	Date of Survey: $\frac{10}{15}\frac{11}{15}$ Time In: $\frac{1400 \text{ h}}{1000 \text{ Time Out}}$ Time Out: $\frac{1420 \text{ h}}{1420 \text{ h}}$ Air Temp. $\frac{49}{1000}$ C° Last Precipitation: $\frac{24 \text{ hours}}{1000 \text{ hours}}$ > 1 week $$ unknown Drought conditions? $$ YES $$ NO $$ Unknown Drought Index ⁺¹ (Circle): D0 D1 D2 D3 D4 Notes (e.g., details about drought, flood, abnormally dry, seasonal conditions): W_{1000} W_{1000} W_{100
	Wetland ID: CH-WA Wetland Size: acres, if known # Wetlands w/in Project Area ² : If estimating wetland size: <0.1 acre
Wetland Info	Yes No water visible on surface?XSmall Puddles/Depressions (<pre> inches deep)Yes No Are there any signs of disturbance to https://www.nown.culverts.fill material, ponds, roads, beaver impoundment, evidence of flooding)? If yes, describe (if possible, include how recent disturbance is*): Show water recent, https://www.nown.culverts.fill Content of flooding)? If yes, describe (if possible, include how recent disturbance is*):</pre>
5	For ditches that may be present, is there bog turtle habitat? If yes, describe:
	Yes XNo Are there any signs of disturbance to <u>veqetation</u> (e.g., mowing, pasturing, burning)? If yes, describe (if possible, include level of disturbance*):
	Soil types present": Mi'heral Soil's - saturatel + dry - small areas of shallow muchinoss' assoc. w/ run off dith
	 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 1

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	PE	M Portion of Wetla	nd: Approx. Acre(s)		Mucky soils depth (i	nches)	
	PS	S Portion of Wetlan	d: Approx. Acre(s)		Mucky soils depth (i	nches)	
	PF	O Portion of Wetlar	nd: Approx. Acre(s)	1-2-ac	Mucky soils depth (i	nches)	
	PC	O Portion of Wetland	d: Approx. Acre(s)				
			from list below tha ven if not a dominan		% for each wetland	type listed above.	Also, CIRCLE
5	ca	Sphagnum Moss	Grass-of-Parnassus	Rice Cutgrass	Tussock Sedge	Shrubby Cinquefoil	Red Manle
Wetland Type/Vegetation				Rough-leaved	White Turtlehead		Viburnum Spp.
Veg		Arrowhead	Japanese Stiltgrass	Goldenrod		Spicebush	
ype/		Carpetgrass	Jewelweed	Sensitive Fern	Woolly-fruited Sedge	Swamp Rose	
T pu		Cattail	Mile-A-Minute	Skunk Cabbage	Yellow Sedge	Alder Spp.	
Vetla	\langle	Cinnamon Fern	Porcupine Sedge	Smooth Sawgrass	Alder-leaved Buckthorn	American Elm	
S		Common Boneset	Purple Loosestrife	Sweetflag	Dogwood Spp.	Eastern Red Cedar	
		Common Reed	Reed Canary Grass	Tearthumb Spp.	Multiflora Rose	Poison Sumac	
	No						ot on the list above?):
		Also: woo	dreed, cim	non from	mursh pors	lame porses	, /
	4		g landscape (e.g., we				
		seven be surrounding	B initiation for the forge, we		and a gricultural	neia, failow field, etc	
	H	How much of this we	etiand is located off-s	ite (i.e., outside th	e property boundari	es or right-of-way)?	
Info		∑None	of it – the entire we	tland is within the	property boundaries	5	
Landscape Info			e of it – Acres d d continues off-site,				
lospe			e of it All of it _				
							cludo this?
		is there potential bo	g turtle habitat off-s i			yes, now dia you con	
es	1		s observed?Yes			ere consocut	u must be permitted by the state you g the survey in to handle bog turtles.
Species	(Other herps observe	d? 🗡 Yes 🔤 No	If yes, which ones?	Green +	Report bog t	urtle observations to your local FWS nd state wildlife office within 48 hrs.
s	8		2 4 0 L			- Piero Grace an	A STATE AND A STATE AND IN THE PLAN AND A STATE
			Unsure The hydro	10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		iet.	
1			Unsure The soils of			not	
	5		Unsure The vegeta Unsure This wetland				
id		_Yes XNo _	Unsure This wetla	nd has potential bo	g turtle habitat (low	to very low quality).	
	5	Notes (How did you	Unsure This wetland reach this opinion?	1.			
Contraction	Ach.	notes (now ala you	Hardwoods		no hydrolasu	suitable to	NBT
i aad Su		Lead Surveyor – ple accurate and comp		rying to the best of	your knowledge the	at all of the informat	ion provided herein is
∦ ⁻			110	n			olesler
		Signature		-1		Date	
	-					· · · · · · · · · · · · · · · · · · ·	
l	4 p	ost prominent in the Pertinent to bog turt	wetland and have the sites found in Con	ne highest percent of necticut. Massachur	of coverage compare	ed to other species.	dvania See
			tion – Suitable Veget		Jetts, Hew Jersey, N	en rork, and rennsy	intenia, Jee
							2
				1000			

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CH-WG Phase 1 Bog Turtle Habitat Survey Data Form Wetland ID: For the Northern Population Range (Revised October 23, 2018) Property/Project Name Green Brook Flood Nisk Mymit C1, 2, 1 County Entity Requesting Phase 1 Survey (landowner, developer, agency): ______ACOF Middlesex Boroush Township/Municipality: General Affiliation: Filst EAU, VOMM Tesauro Lead Surveyor: D. Flynn Other Assistants Present: Date of Survey: 10/15/17 Time In: 1440 h Time Out: 1505 h Air Temp. 50 0° C° Date/Condition Last Precipitation: _ < 24 hours 1-7 days _ > 1 week _ unknown Drought conditions? _ YES NO _ Unknown Drought Index⁺¹ (Circle): D0 D1 D2 D3 D4 Notes (e.g., details about drought, flood, abnormally dry, seasonal conditions): Wet fall - summer CH-WG Wetland Size: _____ acres, if known # Wetlands w/in Project Area²: _____ Wetland ID: If estimating wetland size: ____< 0.1 acre _____0.1-0.5 acre 🔀 1-2 acres ____ 2-4 acres ____ 5+ acres ____ 10+ acres % Canopy Cover*³ _ 0% _ ≤ 5 _ 6-20 _21-40 ×41-60 _>60 Hydrology and Soils (check all that apply): ____Springs/Seeps ___Springhouse ____Trib/Stream ___ Pond Content and Content Saturated soils present? If yes, year-round? Aikely __ Unlikely __ Unknown ___ Small Puddles/Depressions (____ inches deep) ___Yes Yes No water visible on surface? _ 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 Deeply incised dirtch along road from tase; he any filling in pust **Netland Info** disturbance is*): For ditches that may be present, is there bog turtle habitat? If yes, describe: possible, include level of disturbance*): Orsanict mineral, drained by ditch Soil types present*: 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 1

1	PE	M Portion of Wetlan	nd: Approx. Acre(s)	.5	Mucky soils depth (ir	(hes) $c/$	
	PSS	S Portion of Wetland	d: Approx. Acre(s)	~	Mucky soils depth (ir	nches)	
1	PFC	O Portion of Wetlan	d: Approx. Acre(s)	.5	Mucky soils depth (ir	nches) <u>21</u>	
1	PO	Portion of Wetland	i: Approx. Acre(s)				
	CIR	CLE all vegetation*	from list below that	t is dominant ≥ 20	% for each wetland	type listed above.	Also, CIRCLE
5	cal I	ciphiles ⁴ present ev	the second s	a Sherman a sana			
etatio		Sphagnum Moss	Grass-of-Parnassus	Rice Cutgrass Rough-leaved	Tussock Sedge	Shrubby Cinquefoil	Red Maple Viburnum Spp.
Vege		Arrowhead	Japanese Stiltgrass	Goldenrod	White Turtlehead	Spicebush	
Wetland Type/Vegetation		Carpetgrass	Jewelweed	Sensitive Fern	Woolly-fruited Sedge	Swamp Rose	
I pu		Cattail	Mile-A-Minute	Skunk Cabbage	Yellow Sedge	Alder Spp.	
'etla	0	Cinnamon Fern	Porcupine Sedge	Smooth Sawgrass	Alder-leaved Buckthorn	American Elm	
3		Common Boneset	Purple Loosestrife	Sweetflag	Dogwood Spp.	Eastern Red Cedar	
	<	Common Reed	Reed Canary Grass	Tearthumb Spp.	Multiflora Rose	Poison Sumac	
	No	tes on additional pl	ant species (Are the	re other sedges/ru	shes/other species d	ominant that are no	ot on the list above?):
			•				
	_		1 1 1		livision, agricultural f		
Species	v	s there potential bog Vere any bog turtles Other herps observed	observed? Yes	∑No If yes)Unknown If y	"Note that yo are conductin	ou must be permitted by the state you og the survey in to handle bog turtles.
Spe	0	other herps observed	a: Vies _ NO	If yes, which ones	E. Ga	Field Office an	turtle observations to your local FWS nd state wildlife office within 48 hrs.
Surveyor Opinion		Yes No No No No No No No No No	Unsure The soils of Unsure The vegeta Unsure This wetlar Unsure This wetlar Unsure This wetlar reach this opinion? Acsrelul, ease sign below certi	riterion for bog tur ation criterion for b and has potential bo and has potential bo and does NOT have a like and a	bog turtle habitat is m ng turtle habitat (fair ng turtle habitat (low potential bog turtle h ng flan J	net. to good quality). to very low quality) nabitat.	tion provided herein is
Lead Surv		Signature	ete.	m		Date/•	

	Phase 1 Bog Turtle Habitat Survey Data Form For the Northern Population Range (Revised October 23, 2018)
General Info	Property/Project Name <u>Green Brook Flood Nisk My met C1, 2, 14</u> County <u>Middlesex</u> Entity Requesting Phase 1 Survey (landowner, developer, agency): <u>ACOE</u> Township/Municipality: <u>Middlesex Borough</u> Lead Surveyor: <u>lesauro</u> Affiliation: First Environment Other Assistants Present:
Date/Condition	Date of Survey: 10/11/18 Time In: 09604 Time Out: 69/0 Air Temp. 33 (F)C° Last Precipitation: < 24 hours × 1-7 days > 1 week unknown Drought conditions? YES × NO Unknown Drought Index*1 (Circle): D0 D1 D2 D3 D4 Notes (e.g., details about drought, flood, abnormally dry, seasonal conditions): WL4 Summer - fall Fall Fall Fall
	Wetland ID: C2-WC Wetland Size: acres, if known # Wetlands w/in Project Area ² : If estimating wetland size: < 0.1 acre 0.1-0.5 acre 1-2 acres 2-4 acres 5+ acres 10+ acres % Canopy Cover* ³ 0% < 5 < 6-20 21-40 41-60 > 60 Hydrology and Soils (check all that apply):
Wetland Info	Yes Ko water visible on surface?Small Puddles/Depressions (inches deep) YesNo Are there any signs of disturbance to <u>hvdrology</u> (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*):
Wetla	For ditches that may be present, is there bog turtle habitat? If yes, describe:
	Yes XNo Are there any signs of disturbance to <u>vegetation</u> (e.g., mowing, pasturing, burning)? If yes, describe (if possible, include level of disturbance*):
	Soil types present*: Mineral, alluvia l
	 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 1

Proceeding Mucky solis depth (Inches)				0.1		Ô	
PFO Portion of Wetland: Approx. Acre(s)			na: Approx. Acre(s)			있는 영상은 그가 아파란	
PD Portion of Wetland: Approx. Acre(s) CIRCLE all vegetation* from list below that is dominant 2 20% for each wetland type listed above. Also, CIRCLE claiphies* present even if not a dominant species. Sphagum Most Grass of Parnassus Rec Curgass Tusseck Sedge Shrubby Cinquefoil Red Mapi Arrowhead Japanese Stillgrass Rough-leaved White Turlehead Synchuby Cinquefoil Red Mapi Cattali Mile-A-Minute Skunk Cabbage Yellow Sedge Alder Forward American Elm Unumun Si Cattali Mile-A-Minute Skunk Cabbage Yellow Sedge Alder Forward American Elm Common Reset Purple Looperation Sweetflag Dogwood Spp. Eastern Red Cedar Common Reset Purple Looperation Notes on additional plant species (Are there other sedges/rushes/other species dominant that are not on the list is Describe surrounding landscape (e.g., wetlands, forest, subdivision, agricultural field, fallow field, etc.): Some of it - the entire wetland is within the property boundaries or right-of-way)? Mone of it - the entire wetland is within the property boundaries or right-of-way? Mone of it - the entire wetland is within the property boundaries or right-of-way? Some of it - All of it _ Part of it (acres or% of the off-site portion) Is there potential bog turtle habitat off-site? Yes			27 12 125 693		ana a a an an	- 15 - 15.	
CIRCLE all vegetation* from list below that is dominant 2 20% for each wetland type listed above. Also, CIRCLE calciphiles* present even if not a dominant species. Sphagnum Moss Grass of Parnasus Rice Cutyrass Tuisock Sedge Shrubby Cinquefoil Red Mapil Arrowhead Japanes Stilgrass Guidehaws White Turtlehead Spicebush Viburnun S Carpetgrass Jewekwed Sensitive Fern Woolly-fruited Sedge Swamp Rose Carpetgrass Jewekwed Sensitive Fern Woolly-fruited Sedge Alder Spp. Carpetgrass Jewekwed Sensitive Fern Woolly-fruited Sedge Alder Spp. Carpetgrass Alder Spp. Notes on additional plant species (Are	PF	FO Portion of Wetlan	nd: Approx. Acre(s)		Mucky soils depth (in	nches)	
celciphiles* present even if not a dominant species. Sphagnum Moss Gras-of Parnasuss Rice Cutgrass Tusseck Sedge Shrubby Cinquefoil Red Maping Spicebush Viburum 5; Gras-of Parnasuss Rice Cutgrass Colspan="2">Compose Spicebush Viburum 5; Gras-of Parnasuss Rice Cutgrass Colspan="2">Compose Spicebush Viburum 5; Gras-of Parnasuss Rice Cutgrass Colspan="2">Compose Spicebush Viburum 5; Carpetgrass Jewelweed Sensitive Fern Woolly fruited Sedge Swamp Rose Carpetgrass Jewelweed Sensitive Fern Woolly fruited Sedge Alder Spp. Cattail Mile-A-Minute Skurk Cabbage Yellow Sedge Alder Spp. Cannon Fern Porcupine Sedge Smooth Sawgrass Mider-leaved Buckthorn American Elm Common Reed Reed Constructions Simoth Sawgrass Multiflow Rose Policion Sumac Notes on additional plant species (Are there other sedges/rushes/other species dominant that are not on the list in Common Reed Reed Constructions of fristle (i.e., outside the property boundaries Or right-of-way)? Mow much of this wetland is located off-site (i.e., outside the property boundaries Or right-of-way)? Some of it — Acres or % of the wetland appears to be located off-site (If part of this wetland continues off-site, now much of the off-site portion) Is there potential bog turtle habitat off-site? _Yes No Unknown If yes, how did you conclude this? Were any bog turtles observed? _Yes							
Oppose Sphagnum Moss Grass-of Parnassus Rice Cutgrass Tussock Sedge Shrubby Cinquefoil Red Mapil Arrowhead Japanese Stillgrass Recultures Golderrood White Turtlehead Spicebush Viburnum S Carpetgrass Jewelweed Sensitive Fern Woolly-fruited Sedge Swamp Rose Image: Still grass Carpetgrass Jewelweed Sensitive Fern Woolly-fruited Sedge Alder-Spp. Image: Spicebush Viburnum S Carpetgrass Jewelweed Sensitive Fern Woolly-fruited Sedge Alder-Spp. Image: Spicebush Viburnum S Carpetgrass Jewelweed Sensitive Fern Woolly-fruited Sedge Alder-Spp. Image: Spicebush Viburnum S Carpetgrass Jewelweed Sensitive Fern Woolly-fruited Sedge Alder-Spicebush American Elm Image: Spicebush Most Spicebush American Elm Image: Spicebush American Elm Image: Spicebush Most Spicebush Most Spicebush Most Spicebush American Elm Image: Spicebush Most Spicebush Most Spicebush Most Spicebush Most Spicebush					% for each wetland	type listed above.	Also, CIRCLE
Common Boneset Purple Loggestrie Sweetring Dogwood spp. Eastern Red Celar Common Reed Reed Canary Gwest 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 in the sedges/rushes/other species dominant that are not on the list in the sedges/rushes/other species dominant that are not on the list in the sedges/rushes/other species dominant that are not on the list in the wetland is located off-site (i.e., outside the property boundaries or right-of-way)? Mow much of this wetland is located off-site (i.e., outside the property boundaries or right-of-way)? Some of it - the entire wetland is within the property boundaries or right-of-way)? Mow much 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 (5		<u> </u>	and the second sec	Tussock Sedge	Shrubby Cinquefoil	Red Maple
Common Boneset Purple Loggedite Sweeting Dogwood spp. Eastern Red Celar Common Reed Reed Canary Gwss 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 in the species of the common Boneset Poison Sumac Describe surrounding landscape (e.g., wetlands, forest, subdivision, agricultural field, fallow field, etc.): Image: Common Boneset Poison Sumac More of it - the entire wetland is within the property boundaries Some of it - the entire wetland is within the property boundaries Some of it - the entire wetland is within the property boundaries Some of it _ All of it _ Part of it (acres or% 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? _ YesNO Unknown Mode diverse to the survey in the hast one met bearmined. Were any bog turtles observed? _ YesNO If yes, how many?	in a second			Rough-leaved			Viburnum Spp.
Common Boneset Purple Loggestrie Sweetring Dogwood spp. Eastern Red Celar Common Reed Reed Canzy Gass 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 in the sedges/rushes/other species dominant that are not on the list in the sedges/rushes/other species dominant that are not on the list in the sedges/rushes/other species dominant that are not on the list in the sedges/rushes/other species dominant that are not on the list in the sedges/rushes/other species dominant that are not on the list in the sedges/rushes/other species dominant that are not on the list in the sed celar Describe surrounding landscape (e.g., wetlands, forest, subdivision, agricultural field, fallow field, etc.): Image: Sedecite off-site portion Describe surrounding landscape (e.g., wetlands, forest, subdivision, agricultural field, fallow field, etc.): Image: Sedecite off-site portion Move of it - the entire wetland is within the property boundaries Some of it - the entire wetland is within the property boundaries 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 abitat off-site? Yes _ No _ Unsure This wetland appears to be located off-site portion) Is there potential bog turtles observed? Yes _ No _ Unsure The hydrology criterion for bog tu		Carpetgrass	Jewelweed	Sensitive Fern	Woolly-fruited Sedge	Swamp Rose	
Common Boneset Purple Loggestrie Sweetring Dogwood spp. Eastern Red Celar Common Reed Reed Canzy Gass 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 in the sedges/rushes/other species dominant that are not on the list in the sedges/rushes/other species dominant that are not on the list in the sedges/rushes/other species dominant that are not on the list in the sedges/rushes/other species dominant that are not on the list in the sedges/rushes/other species dominant that are not on the list in the sedges/rushes/other species dominant that are not on the list in the sed celar Describe surrounding landscape (e.g., wetlands, forest, subdivision, agricultural field, fallow field, etc.): Image: Sedecite off-site portion Describe surrounding landscape (e.g., wetlands, forest, subdivision, agricultural field, fallow field, etc.): Image: Sedecite off-site portion Move of it - the entire wetland is within the property boundaries Some of it - the entire wetland is within the property boundaries 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 abitat off-site? Yes _ No _ Unsure This wetland appears to be located off-site portion) Is there potential bog turtles observed? Yes _ No _ Unsure The hydrology criterion for bog tu		Cattail	Mile-A-Minute	Skunk Cabbage	Yellow Sedge	Alder Spp.	
Common Boneset Purple Loggestrie Sweething Dogwood spp. Eastern Red Celar Common Reed Reed Canzy Guess 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 in the sedges/rushes/other species dominant that are not on the list in the sedges/rushes/other species dominant that are not on the list in the sedges/rushes/other species dominant that are not on the list in the sedges/rushes/other species dominant that are not on the list in the sedges/rushes/other species dominant that are not on the list in the sedges/rushes/other species dominant that are not on the list in the sedges/rushes/other species dominant that are not on the list in the sedges/rushes/other species dominant that are not on the list in the sedges/rushes/other species dominant that are not on the list in the sedges/rushes/other species dominant that are not on the list in the sedges/rushes/other species dominant that are not on the list in the sedges/rushes/other species dominant that are not on the list in the sedges/rushes/other species dominant that are not on the list in the sedges/rushes/other species dominant that are not on the list in the sedges/rushes/other species dominant that are not on the list in the sedges/rushes/other species dominant that are not on the list in the sedges/rushes/other species dominant that are not on the list in the rush and species in the sedges/rushes/other species dominant the sedges/rushes/rushese/rushes/rushes/rushes/rushes/rushes/rushes/rushes/rushe		Cinnamon Fern	Porcupine Sedge	Smooth Sawgrass		American Elm	
Notes on additional plant species (Are there other sedges/rushes/other species dominant that are not on the list is decomposed on the plant species (Are there other sedges/rushes/other species dominant that are not on the list is decomposed on the plant of this wetland is located off-site (i.e., outside the property boundaries or right-of-way)? How much of this wetland is located off-site (i.e., outside the property boundaries or right-of-way)? Some of it - the entire wetland is within the property boundaries	5	Common Boneset	Purple Loosestrife	Sweetflag	Dogwood Spp.	Eastern Red Cedar	
Upper construction of the surrounding landscape (e.g., wetlands, forest, subdivision, agricultural field, fallow field, etc.): For ESE, ISS, Edent How much of this wetland is located off-site (i.e., outside the property boundaries or right-of-way)?		Common Reed	Reed Canary Gross	Tearthumb Spp.	Multiflora Rose	Poison Sumac	
Other herps observed?Yes XNo If yes, which ones? "Report bog turtle observations to Field Office and state wildlife office Yes XNoUnsure The hydrology criterion for bog turtle habitat is met. Yes XNoUnsure The soils criterion for bog turtle habitat is met. Yes XNoUnsure The vegetation criterion for bog turtle habitat is met. Yes XNoUnsure This wetland has potential bog turtle habitat is met. Yes XNoUnsure This wetland has potential bog turtle habitat (fair to good quality). Yes XNoUnsure This wetland has potential bog turtle habitat. YesNoUnsure This wetland has potential bog turtle habitat. Yes XNoUnsure This wetland does NOT have potential bog turtle habitat. YesNoUnsure This wetland does NOT have potential bog turtle habitat. Yes XNoUnsure This wetland does NOT have potential bog turtle habitat. YesNoUnsure This wetland does NOT have potential bog turtle habitat.	-	None Is there potential bog	e of it All of it g turtle habitat off-si	_ Part of it (a te?YesNo	ncres or% of the → ∠ Unknown If y	off-site portion) yes, how did you cor	u must be permitted by the state yo
Yes No Unsure The soils criterion for bog turtle habitat is met. Yes No Unsure The vegetation criterion for bog turtle habitat is met. Yes No Unsure This wetland has potential bog turtle habitat (fair to good quality). Yes No Unsure This wetland has potential bog turtle habitat (low to very low quality). Yes No Unsure This wetland does NOT have potential bog turtle habitat. Notes (How did you reach this opinion?): Dry 0 × bow weth flood of plaim Lead Surveyor - please sign below certifying to the best of your knowledge that all of the information provided accurate and complete. Signature Date Pertinent 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	Species					Report bog t	urtle observations to your local FWS
Subjemental monification - Suitable Vegetation Section.	Lead Sur	Yes No Yes No Yes No Yes No Yes No Notes (How did you by Lead Surveyor - ple accurate and compl Signature Nost prominent in the Pertinent to bog turt	Unsure The soils of Unsure The vegeta Unsure This wetlar Unsure This wetlar Unsure This wetlar unsure This wetlar a reach this opinion?	riterion for bog tur tion criterion for bo had has potential bo had has potential bo had does NOT have to fying to the best o he highest percent hecticut, Massachu	tle habitat is met. bog turtle habitat is n bg turtle habitat (fair bg turtle habitat (low potential bog turtle l f your knowledge that of coverage compare	net. to good quality). to very low quality) habitat. at all of the informat Date ed to other species.	ion provided herein is
	Su	upplemental Informat	tion – Suitable Veget	ation section.			2

_	Phase 1 Bog Turtle Habitat Survey Data Form Wetland ID: CH-WD
	For the Northern Population Range
	(Revised October 23, 2018)
	Property/Project Name Green Brook Flood Nisk Mant C1,2, H County Middleser
ofo	Entity Requesting Phase 1 Survey (landowner, developer, agency):
ral Ir	Township/Municipality: Mild Asta Borowsh
General Info	Lead Surveyor: [esaure Affiliation: First Environment
	Other Assistants Present: C. Hanlon, LBG
	Date of Survey: 10/24/18 Time In: 0930 & Time Out: 10004 Air Temp. 35 (F) C°
5	· · · · · · · · · · · · · · · · · · ·
nditi	Last Precipitation: _ < 24 hours X ¹⁻⁷ days _ > 1 week _ unknown Drought conditions? _ YES XNO _ Unknown Drought Index ^{*1} (Circle): D0 D1 D2 D3 D4 Notes (<i>e.g.</i> , details about drought, flood, abnormally dry, seasonal conditions):
Date/Condition	
Date	wet fall+sommer
	Wetland ID: CH-WD Wetland Size: acres, if known # Wetlands w/in Project Area ² :
	If estimating wetland size: _ < 0.1 acre _ 0.1-0.5 acre 21-2 acres _ 2-4 acres _ 5+ acres _ 10+ acres
	% Canopy Cover* ³ _ 0% _ \leq 5 _ 6-20 _ 21-40 _ 41-60 \swarrow 60
	Hydrology and Soils (check all that apply):
	Springs/SeepsSpringhouse Arrib/StreamPond StormwaterIron Bacteria
	Rivulets (how many) (inches deep) Subsurface Tunnel/Rivulets Tire Ruts (inches deep)
	Yes
	YesNo Are there any signs of disturbance to <u>hydrology</u> (e.g., drainage ditches, tile drainages, berms, culverts, fill
Wetland Info	material, ponds, roads, beaver impoundment, evidence of flooding)? If yes, describe (if possible, include how recent disturbance is*):
Wetla	
	For ditches that may be present, is there bog turtle habitat? If yes, describe:
	Yes XNo Are there any signs of disturbance to <u>vegetation</u> (e.g., mowing, pasturing, burning)? If yes, describe (if possible, include level of disturbance*):
	Soil types present :: Mostly Dry floo value Soils, a lluvia 1-minunel, some clay
	 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

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	PEM Portion of Wetlan	nd: Approx. Acre(s)	<u> </u>	Mucky soils depth (i	nches)	
	PSS Portion of Wetlan	d: Approx. Acre(s)		Mucky soils depth (i	nches)	
	PFO Portion of Wetlan	d: Approx. Acre(s)	2	Mucky soils depth (i	nches) _O	(puddlas)
	PO Portion of Wetland	: Approx. Acre(s)				
	CIRCLE all vegetation* calciphiles ⁴ present ev	from list below that	at is dominant ≥ 20 nt species.	% for each wetland	type listed above.	Also, CIRCLE
ation	Sphagnum Moss	Grass-of-Parnassus	Rice Cutgrass	Tussock Sedge	Shrubby Cinquefoil	Red Maple
Wetland Type/Vegetation	Arrowhead (Japanese Stiltgrass	Rough-leaved Goldenrod	White Turtlehead	Spicebush	Viburnum Spp.
√əd	Carpetgrass	Jewelweed	Sensitive Fern	Woolly-fruited Sedge	Swamp Rose	
1 P	Cattail	Mile-A-Minute	Skunk Cabbage	Yellow Sedge	Alder Spp.	
etlan	Cinnamon Fern	Porcupine Sedge	Smooth Sawgrass	Alder-leaved Buckthorn	American Elm	
3	Common Boneset	Purple Loosestrife	Sweetflag	Dogwood Spp.	Eastern Red Cedar	
	Common Reed	Reed Canary Grass	Tearthumb Spp.	Multiflora Rose	Poison Sumac	
1	Notes on additional p	ant species (Are th	ere other sedges/ru	shes/other species of	ominant that are n	not on the list above?):
		بالمسال	1 summe	white snot	met	
4	the Composite state	Acra was				
Landscape Info	How much of this we Some If part of this wetland None Is there potential bog	of it – the entire we of it – Acres d continues off-site, of itAll of it	etland is within the or% of the w how much of the Part of it (a	property boundaries retland appears to be ff-site portion was s cres or% of the	e located off-site urveyed (on foot)? off-site portion)	
s	Were any bog turtles	observed? Yes	XNo If yes	, how many?	*Note that y are conducti	you must be permitted by the state you ing the survey in to handle bog turtles.
Species	Other herps observe	d? _Yes X No	If yes, which ones?	1	*Report bog	turtle observations to your local FWS and state wildlife office within 48 hrs.
1		•				
		1948 - 1948 - 1 948	C. C. C. 198 G 201 1	og turtle habitat is m	et.	
			riterion for bog tur			
e				og turtle habitat is r		
iq	Yes ∠No Yes No			g turtle habitat (fair g turtle habitat (low).
evor Oninion	Yes No			potential bog turtle		Ľ
	Notes (How did you	reach this opinion	?): 0 00	11 1	L	
	De	ish, dish	15ed \$100	Splain for	5	
	Lead Surveyor – ple	ase sign below cert	ifying to the best of	vour knowledge that	at all of the informa	tion provided herein is
	accurate and comp		$\overline{}$			
		111.	la			0/20/18
	Signature	\rightarrow			Date(
		<u> </u>				
	most prominent in the					
	⁴ Pertinent to bog turtl Supplemental Information			setts, New Jersey, N	ew fork, and Penns	sylvania. See
						2
_				2201000 220		

	Phase 1 Bog Turtle Habitat Survey Data Form Wetland ID: For the Northern Population Range (Revised October 23, 2018)
General Info	Property/Project Name Gyee Brook Flood Nisk Memt Cl,2,14 County Middlesez Entity Requesting Phase 1 Survey (landowner, developer, agency): ACOE Township/Municipality: Middlests Borogh Lead Surveyor: TESQUID Affiliation: First Environment Other Assistants Present: C. Honlon, CB6
Date/Condition	Date of Survey: 10/24/18 Time In: 11254 Time Out: 11304 Air Temp. 36 F C° Last Precipitation: < 24 hours
	Wetland ID: C & - WE Wetland Size: acres, if known # Wetlands w/in Project Area ² : If estimating wetland size: < 0.1 acre
	Hydrology and Soils (check all that apply): Springs/SeepsSpringhouseTrib/StreamPond StormwaterIron Bacteria Rivulets (how many) (inches deep)Subsurface Tunnel/RivuletsTire Ruts (inches deep) Yeaturated soils present? If yes, year-round?Likely You Unknown
Wetland Info	YesNo water visible on surface?Small Puddles/Depressions (inches deep) YesNo Are there any signs of disturbance to <u>hydrology</u> (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*):
Ň	For ditches that may be present, is there bog turtle habitat? If yes, describe:
	VesNo_Are there any signs of disturbance to <u>vegetation</u> (e.g., mowing, pasturing, burning)? If yes, describe (if possible, include level of disturbance*):
	Soil types present*: Mineral
	 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 1

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PI	EM Portion of Wetlar	nd: Approx. Acre(s)	<u>.</u>	Mucky soils depth (ir	nches) 🔼	
P	SS Portion of Wetland	d: Approx. Acre(s)		Mucky soils depth (ir	nches)	
PI	FO Portion of Wetlan	d: Approx. Acre(s)		Mucky soils depth (ir	nches)	
P	O Portion of Wetland	: Approx. Acre(s)	<u></u>			
	IRCLE all vegetation* alciphiles ⁴ present ev			% for each wetland	type listed above. A	Also, CIRCLE
	Sphagnum Moss	Grass-of-Parnassus	Rice Cutgrass	Tussock Sedge	Shrubby Cinquefoil	Red Maple
Wetland Type/Vegetation	Arrowhead (Japanese Stiltgrass	Rough-leaved Goldenrod	White Turtlehead	Spicebush	Viburnum Spp.
/be/V	Carpetgrass	Jewelweed	Sensitive Fern	Woolly-fruited Sedge	Swamp Rose	
ld Ty	Cattail	Mile-A-Minute	Skunk Cabbage	Yellow Sedge	Alder Spp.	
/etlar	Cinnamon Fern	Porcupine Sedge	Smooth Sawgrass	Alder-leaved Buckthorn	American Elm	
3	Common Boneset	Purple Loosestrife	Sweetflag	Dogwood Spp.	Eastern Red Cedar	
	Common Reed	Reed Canary Grass	Tearthumb Spp.	Multiflora Rose	Poison Sumac	
N	lotes on additional pl				ominant that are no	ot on the list above?):
		mowed he	hereaux Je			
		Juliona		,		
Landso I	Some If part of this wetland None Is there potential bog	of it — Acres of d continues off-site, I of it All of it g turtle habitat off-si	or% of the w now much of the o _ Part of it (a te?YesNo	cres or% of the	Plocated off-site arveyed (on foot)? off-site portion) res, how did you con	
sa	Were any bog turtles					u must be permitted by the state you g the survey in to handle bog turtles.
Species	Other herps observed	d?Yes ' 🚬 No	If yes, which ones	?		urtle observations to your local FWS of state wildlife office within 48 hrs.
Lead Surveyor Opinion	Yes XNo Yes XNo Yes XNo Yes XNo XYesNo Notes (How did you A/4	Unsure The soils of Unsure The vegeta Unsure This wetlar Unsure This wetlar Unsure This wetlar reach this opinion? Arcal wet fit ease sign below certi- lete.	riterion for bog tur tion criterion for bo had has potential bo had has potential bo had does NOT have <i>fund</i> fying to the best o	bog turtle habitat is m ng turtle habitat (fair ng turtle habitat (low potential bog turtle h f your knowledge tha	net. to good quality). to very low quality). nabitat. it all of the informat Date	ion provided herein is
4	Pertinent to bog turtl upplemental Informat	e sites found in Conr	ecticut, Massachu			lvania. See 2

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	Phase 1 Bog Turtle Habitat Survey Data Form Wetland ID: <u>CみーWA</u> For the Northern Population Range (Revised October 23, 2018)
General Info	Property/Project Name <u>Green Brook Flood Misk Manil</u> Cl, 2, 14 county Miskelles ex Entity Requesting Phase 1 Survey (landowner, developer, agency): <u>DCOE</u> Township/Municipality: <u>Michelle Sex Borough</u> Lead Surveyor: <u>(ESUVO</u> Affiliation: <u>First Environmet</u> Other Assistants Present: <u>C. Hanlon</u> , LBC
Date/Condition	Date of Survey: $lo/25/18$ Time In: $///5h$ Time Out: $//20h$ Air Temp. 3760° Last Precipitation: <24 hours $1-7$ days > 1 week _ unknown Drought conditions? _ YES NO _ Unknown Drought Index ^{*1} (Circle): D0 D1 D2 D3 D4 Notes (e.g., details about drought, flood, abnormally dry, seasonal conditions): Wet surmer + full
Wetland Info	Wetland ID: C2-W& Wetland Size: acres, if known # Wetlands w/in Project Area ² : If estimating wetland size: <0.1 acre 0.1-0.5 acre 1-2 acres 2-4 acres 5 + acres 10 + acres % Canopy Cover* ³ _0% _S5 _6-20 21-40 _41-60 > 60 Hydrology and Soils (check all that apply):
	_Yes KNo Are there any signs of disturbance to <u>vegetation</u> (e.g., mowing, pasturing, burning)? If yes, describe (if possible, include level of disturbance*): Soil types present*: Soil types present*:
	 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 1

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	EM Portion of Wetla	and Approx Acro/cl		Mucha coile donth (in	school Q-1"	
		1927 Illion Provinsi State State State		Mucky soils depth (ii Musicu soils dopth (ii		
	SS Portion of Wetlan			Mucky soils depth (ii Mucky soils depth (ii		
	FO Portion of Wetla		A6	Mucky soils depth (i	nches)	
	O Portion of Wetlan		<u></u>			
		* from list below that ven if not a dominant		% for each wetland	type listed above. A	AISO, CIRCLE
	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	
	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	
	V	Vhik snaker	root, adj.	hardwood c	anos	
	NoneSomeSomeIf part of this wetlan	etland is located off-s e of it – the entire we e of it – Acres o d continues off-site, H	Site (<i>i.e.</i> , outside the titland is within the or% of the w how much of the o	e property boundaries property boundaries vetland appears to be ff-site portion was s	es or right-of-way)? ; e located off-site urveyed (on foot)?	
Landscape Into	Some Some If part of this wetlan None	etland is located off-s e of it – the entire we e of it – Acres o	Left (i.e., outside the titand is within the or% of the w how much of the o Part of it (a	e property boundaries property boundaries retland appears to b ff-site portion was s cres or% of the	es or right-of-way)? e located off-site urveyed (on foot)? e off-site portion)	
Landscape Info	Some Some If part of this wetlan None Is there potential bo	etland is located off-s e of it – the entire we e of it – Acres o d continues off-site, h e of it All of it	Site (i.e., outside the site (i.e., outside the tand is within the or% of the w how much of the o Part of it (a te?Yes No	e property boundaries property boundaries vetland appears to bi ff-site portion was si cres or% of the Unknown If y	elocated off-site urveyed (on foot)? e off-site portion) yes, how did you con	clude this?
es Landscape Info I	Some Some If part of this wetlan None Is there potential bo Were any bog turtle	etland is located off-s e of it – the entire we e of it – Acres o d continues off-site, h e of it All of it og turtle habitat off-si	site (i.e., outside th tand is within the or% of the w how much of the o Part of it (a te?YesNo	e property boundaries vetland appears to bo ff-site portion was signed cres or% of the Unknown If y , how many?	el located off-site urveyed (on foot)? off-site portion) yes, how did you con "Note that you are conduction "Report bog th	clude this?
Lead Surveyor Opinion Species Landscape Into	Vone Some If part of this wetlan None Is there potential bo Were any bog turtle Other herps observe Yes XNO Yes XNO Notes (How did yo	etland is located off-s e of it – the entire we e of it – Le entire we e of it – Acres of d continues off-site, h e of itAll of it og turtle habitat off-si es observed?Yes ed?Yes X_No Unsure The hydrol Unsure The soils or Unsure This wetlar Unsure This wetlar		e property boundaries vetland appears to bu ff-site portion was signed cres or% of the oUnknown If y , how many?? og turtle habitat is met. bog turtle habitat is met. bog turtle habitat is met. bog turtle habitat (fair ig turtle habitat (fair ig turtle habitat (low potential bog turtle labitat (low potential bog turtle labitat (fair g turtle habitat (fair)) (fair)) (fair)) (fair)) (fair)) (fair)) (fair)) (fair)) (fair)	es or right-of-way)? e located off-site urveyed (on foot)? e off-site portion) yes, how did you con "Note that you are conducting "Report bog to Field Office an net. to good quality). to very low quality). habitat. at all of the informat Date	clude this? I must be permitted by the state you the survey in to handle bog turites urtle observations to your local FWS d state wildlife office within 48 hrs. ion provided herein is

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	Phase 1 Bog Turtle Habitat Survey Data Form For the Northern Population Range (Revised October 23, 2018)
	Property/Project Name Green Brook Flood Risk Ment C1, 2, H County Middle sex
	Entity Requesting Phase 1 Survey (landowner, developer, agency): ACOE
al Ini	Township/Municipality: Middles Borog
General Info	Lead Surveyor: Tesauro Affiliation: First Environment
0	Other Assistants Present: C. Henlon, LBG
E	Date of Survey: $\frac{10}{26}$ Time In: $\frac{1054}{1054}$ Time Out: $\frac{1104}{104}$ Air Temp. 35 F 3 C
Date/Condition	Last Precipitation: _ < 24 hours T-7 days _ > 1 week _ unknown Drought conditions? _ YES _ NO _ Unknown
<u>Co</u>	Drought Index ⁺¹ (Circle): D0 D1 D2 D3 D4 Notes (e.g., details about drought, flood, abnormally dry, seasonal conditions):
Date,	Wed fall + summer
1	
	Wetland ID: Wetland Size: acres, if known # Wetlands w/in Project Area ² :
	If estimating wetland size: < 0.1 acre 🔀 0.1-0.5 acre 1-2 acres 2-4 acres 5+ acres 10+ acres
	% Canopy Cover ^{*3} _ 0% _ ≤5 _ 6-20 _21-40 ≥41-60 _>60
	Hydrology and Soils (check all that apply):
1	Springs/SeepsSpringhouseTrib/StreamPondStormwaterIron Bacteria
1	Rivulets (how many) (inches deep) Subsurface Tunnel/Rivulets Tire Ruts (inches deep)
	Saturated soils present? If yes, year-round?LikelyUnlikelyUnknown
1	Yes XNo water visible on surface?Small Puddles/Depressions (inches deep)
Wetland Info	Yes X No Are there any signs of disturbance to <u>hydrology</u> (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*):
Wetla	For ditches that may be present, is there bog turtle habitat? If yes, describe:
	Yes XNo_Are there any signs of disturbance to <u>vegetation</u> (e.g., mowing, pasturing, burning)? If yes, describe (if possible, include level of disturbance*):
	Soil types present *: Mineral soils, no water but hydric
	 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 1

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	C D	1.0. 1.0.0		Mucky soils depth (ii	(
PF		id: Approx. Acre(s)		Mucky soils depth (in		
		nd: Approx. Acre(s)	<u></u>	Mucky soils depth (in	nches)	
	Portion of Wetland					
		from list below that ven if not a dominar		% for each wetland	type listed above. A	Also, CIRCLE
Cal	Sphagnum Moss	Grass-of-Parnassus	Rice Cutgrass	Tussock Sedge	Shrubby Cinquefoil	Red Maple
	Arrowhead		Rough-leaved	White Turtlehead		Viburnum Spp.
		Japanese Stiltgrass	Goldenrod		Spicebush	
	Carpetgrass	Jewelweed	Sensitive Fern	Woolly-fruited Sedge	Swamp Rose	
	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	
D	escribe surrounding	g landscape (e.g., we	tlands, forest, subo		field, fallow field, etc	c.):
	Reg	sidntia.	floodphis	torest		
. н		etland is located off-	site (i.e., outside th	e property boundari		
ti a				property boundaries vetland appears to be		
đej lf				ff-site portion was s		
Landscape Info	None	eofit All of it	Part of it (a	cres or% of the	off-site portion)	
	s there potential bo	g turtle habitat off-s	ite? Yes XNo	linknown if		
					res, how did you con	clude this?
			- /-		res, how did you con	clude this?
	Nere any hog turtle		·			u must be permitted by the state you
cies cies		s observed?Yes	/ If yes	, how many?	"Note that yo are conducting	u must be permitted by the state you g the survey in to handle bog turtles.
e			/ If yes	, how many?	"Note that you are conducting "Report bog to	u must be permitted by the state you
species	Other herps observe	s observed? _ Yes d? _ Yes _No	If yes, which ones	, how many??	"Note that yo are conducting Report bog to Field Office an	u must be permitted by the state you g the survey in to handle bog turtles. urtle observations to your local FWS
species	Other herps observe	s observed?Yes d?YesNo Unsure The hydro	If yes, which ones	, how many?? og turtle habitat is m	"Note that yo are conducting Report bog to Field Office an	u must be permitted by the state you g the survey in to handle bog turtles. urtle observations to your local FWS
o pecie	Other herps observe	s observed?Yes ed?Yes Yoo Unsure The hydro Unsure The soils o Unsure The veget	If yes, which ones logy criterion for b rriterion for bog tur ation criterion for b	, how many? ? og turtle habitat is m tle habitat is met. pog turtle habitat is n	"Note that yo are conducting "Report bog to Field Office an Pielt.	u must be permitted by the state you g the survey in to handle bog turtles. urtle observations to your local FWS
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o becte	Dther herps observe	s observed?Yes d?YesNo Unsure The hydro Unsure The soils o Unsure The veget Unsure This wetla Unsure This wetla	If yes, which ones logy criterion for b criterion for bog tur ation criterion for t nd has potential bo nd has potential bo	, how many? og turtle habitat is m tle habitat is met. bog turtle habitat is n og turtle habitat (fair og turtle habitat (low	*Note that yo are conducting *Report bog to Field Office an let. to good quality). to very low quality).	u must be permitted by the state you g the survey in to handle bog turtles urtle observations to your local FWS di state wildlife office within 48 hrs.
o becte	Yes XNo Yes XNo Yes XNo Yes XNo Yes XNo Yes XNo Yes XNo YesNo	s observed?Yes d?Yes Unsure The hydro Unsure The soils o Unsure The veget Unsure This wetla Unsure This wetla Unsure This wetla	If yes, which ones If yes, which ones logy criterion for b triterion for bog tur ation criterion for to nd has potential bo nd has potential bo nd does NOT have	, how many? ? og turtle habitat is m tle habitat is met. og turtle habitat is m og turtle habitat (fair og turtle habitat (low potential bog turtle l	*Note that yo are conducting *Report bog to Field Office an let. to good quality). to very low quality).	u must be permitted by the state you g the survey in to handle bog turtles urtle observations to your local FWS di state wildlife office within 48 hrs.
eyor Opinion Specie	Yes XNo Yes XNo Yes XNo Yes XNo Yes XNo Yes XNo Yes XNo YesNo	s observed?Yes d?Yes Unsure The hydro Unsure The soils o Unsure The veget Unsure This wetla Unsure This wetla Unsure This wetla	If yes, which ones If yes, which ones logy criterion for b triterion for bog tur ation criterion for to nd has potential bo nd has potential bo nd does NOT have	, how many? ? og turtle habitat is m tle habitat is met. og turtle habitat is m og turtle habitat (fair og turtle habitat (low potential bog turtle l	*Note that yo are conducting *Report bog to Field Office an let. to good quality). to very low quality).	u must be permitted by the state you g the survey in to handle bog turtles urtle observations to your local FWS di state wildlife office within 48 hrs.
eyor Opinion Specie	Yes XNo Yes XNo Yes XNo Yes XNo Yes XNo Yes XNo _Yes No XYesNo Notes (How did you	s observed?Yes d?YesNo Unsure The hydro Unsure The soils of Unsure This wetla Unsure This wetla	If yes, which ones If yes, which ones logy criterion for bog tur ation criterion for bog nd has potential bo nd has potential bo nd does NOT have): LightSsim	, how many? og turtle habitat is m tle habitat is met. bog turtle habitat is n og turtle habitat (fair og turtle habitat (low potential bog turtle l	"Note that you are conducting "Report bog th Field Office an eet. to good quality). to very low quality). habitat.	u must be permitted by the state you g the survey in to handle bog turtles urtle observations to your local FWS di state wildlife office within 48 hrs.
ad Surveyor Opinion Specie	Yes XNo Yes XNo Yes XNo Yes XNo Yes XNo Yes XNo _Yes No XYesNo Notes (How did you	s observed?Yes d?Yes No Unsure The hydro Unsure The soils o Unsure This wetla Unsure This wetla Unsure This wetla Unsure This wetla ureach this opinion? My for the source of the sourc	If yes, which ones If yes, which ones logy criterion for bog tur ation criterion for bog nd has potential bo nd has potential bo nd does NOT have): LightSsim	, how many? og turtle habitat is m tle habitat is met. bog turtle habitat is n og turtle habitat (fair og turtle habitat (low potential bog turtle l	"Note that you are conducting "Report bog th Field Office an eet. to good quality). to very low quality). habitat.	u must be permitted by the state you g the survey in to handle bog turlles. urtle observations to your local FWS di state wildlife office within 48 hrs.
Lead Surveyor Opinion Specie	Yes No Notes (How did you accurate and comp	s observed?Yes d?Yes No Unsure The hydro Unsure The soils o Unsure This wetla Unsure This wetla Unsure This wetla Unsure This wetla ureach this opinion? My for the source of the sourc	If yes, which ones If yes, which ones logy criterion for bog tur ation criterion for bog nd has potential bo nd has potential bo	, how many? og turtle habitat is m tle habitat is met. bog turtle habitat is n og turtle habitat (fair og turtle habitat (low potential bog turtle l	"Note that yo are conducting "Report bog to Field Office an et. to good quality). to very low quality). habitat.	u must be permitted by the state you a the survey in to handle bog turtles. urtle observations to your local FWS of state wildlife office within 48 hrs.
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Lead Surveyor Opinion Specie	Yes No Signature	s observed? _ Yes d? _ Yes No Unsure The hydro Unsure The soils o Unsure This wetla Unsure This wetla Unsure This wetla Unsure This wetla Unsure This wetla u reach this opinion? My, Asyes A ease sign below cert lete.	If yes, which ones If yes, which ones logy criterion for bog tur ation criterion for bog tur ation criterion for to nd has potential bo nd does NOT have if ying to the best o	, how many? og turtle habitat is m tle habitat is met. bog turtle habitat is n og turtle habitat (fair og turtle habitat (low potential bog turtle l	"Note that yo are conducting "Report bog to Field Office an et. to good quality). to very low quality). to very low quality). habitat. at all of the information of the inform	u must be permitted by the state you a the survey in to handle bog turtles. urtle observations to your local FWS of state wildlife office within 48 hrs.
ou Lead Surveyor Opinion Specie		s observed?Yes d?Yes No Unsure The hydro Unsure The soils o Unsure The veget Unsure This wetla Unsure This wetla U	If yes, which ones If yes, which ones Ilogy criterion for bog tur ation criterion for bog nd has potential bog nd has pot	, how many?? og turtle habitat is m tle habitat is met. og turtle habitat is n g turtle habitat (fair og turtle habitat (low potential bog turtle l f your knowledge that of coverage compare	"Note that you are conducting "Resport bog to Field Office an eet. to good quality). to very low quality). habitat. at all of the information Date(conduction) (conduction)	u must be permitted by the state you a the survey in to handle bog turiles. urtle observations to your local FWS d state wildlife office within 48 hrs. ion provided herein is
d ∳ Lead Surveyor Opinion Specie	- Yes No	s observed?Yes d?Yes No Unsure The hydro Unsure The soils o Unsure The veget Unsure This wetla Unsure This wetla U	If yes, which ones If yes, which ones Ilogy criterion for bog tur ation criterion for bog tur ation criterion for to nd has potential bo nd does NOT have if ying to the best of the highest percent necticut, Massachu	, how many? og turtle habitat is m tle habitat is met. bog turtle habitat is n og turtle habitat (fair og turtle habitat (low potential bog turtle l	"Note that you are conducting "Resport bog to Field Office an eet. to good quality). to very low quality). habitat. at all of the information Date(conduction) (conduction)	u must be permitted by the state you a the survey in to handle bog turtles. urtle observations to your local FWS distate wildlife office within 48 hrs. ion provided herein is 2/24/18 divania. See
d ∳ Lead Surveyor Opinion Specie	- Yes No	s observed?Yes d?Yes No Unsure The hydro Unsure The soils o Unsure The veget Unsure This wetla Unsure This wetla U	If yes, which ones If yes, which ones Ilogy criterion for bog tur ation criterion for bog tur ation criterion for to nd has potential bo nd does NOT have if ying to the best of the highest percent necticut, Massachu	, how many?? og turtle habitat is m tle habitat is met. og turtle habitat is n g turtle habitat (fair og turtle habitat (low potential bog turtle l f your knowledge that of coverage compare	"Note that you are conducting "Resport bog to Field Office an eet. to good quality). to very low quality). habitat. at all of the information Date(conduction) (conduction)	u must be permitted by the state you a the survey in to handle bog turiles. urtle observations to your local FWS d state wildlife office within 48 hrs. ion provided herein is
d ∳ Lead Surveyor Opinion Specie	- Yes No	s observed?Yes d?Yes No Unsure The hydro Unsure The soils o Unsure The veget Unsure This wetla Unsure This wetla U	If yes, which ones If yes, which ones Ilogy criterion for bog tur ation criterion for bog tur ation criterion for to nd has potential bo nd does NOT have if ying to the best of the highest percent necticut, Massachu	, how many?? og turtle habitat is m tle habitat is met. og turtle habitat is n g turtle habitat (fair og turtle habitat (low potential bog turtle l f your knowledge that of coverage compare	"Note that you are conducting "Resport bog to Field Office an eet. to good quality). to very low quality). habitat. at all of the information Date(conduction) (conduction)	u must be permitted by the state you a the survey in to handle bog turtles. urtle observations to your local FWS distate wildlife office within 48 hrs. ion provided herein is 2/24/18 divania. See

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	Phase 1 Bog Turtle Habitat Survey Data Form For the Northern Population Range (Revised October 23, 2018) Wetland ID: C2-WB						
	Property/Project Name Green Brook Flood Risk Mont CI, Z, H county Middleser						
	Entity Requesting Phase 1 Survey (landowner, developer, agency):						
Info	Township/Municipality: Middle 51x Brown						
General Info	E.t.C.						
Ger							
	Other Assistants Present: C. Hanlon, CBG						
Date/Condition	Date of Survey: 10/26/18 Time In: /0/54 Time Out: 11004 Air Temp. 35 F ³ C ^o Last Precipitation: < 24 hours > 1 week unknown Drought conditions? YES NO Unknown Drought Index* ¹ (Circle): D0 D1 D2 D3 D4 Notes (e.g., details about drought, flood, abnormally dry, seasonal conditions): Wlf full + Summer						
	Wetland ID: C2-WB Wetland Size: acres, if known # Wetlands w/in Project Area ² :						
	If estimating wetland size:< 0.1 acre0.1-0.5 acre1-2 acres2-4 acres5+ acres10+ acres						
	% Canopy Cover* ³ _ 0% _ \leq 5 _ 6-20 _ 21-40 \neq 1-60 _ > 60						
1	Hydrology and Soils (check all that apply):						
	Springs/SeepsSpringhouse ZTrib/StreamPond Stormwater Iron Bacteria						
	Saturated soils present? If yes, year-round?LikelyUnlikelyUnknown						
	Yes No water visible on surface? Small Puddles/Depressions (/inches deep)						
Wetland Info	XYes No Are there any signs of disturbance to <u>hydrology</u> (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*): Flooding, Stormward						
We	For ditches that may be present, is there bog turtle habitat? If yes, describe:						
	No						
	<u>Yes</u> \sum No Are there any signs of disturbance to <u>vegetation</u> (e.g., mowing, pasturing, burning)? If yes, describe (if possible, include level of disturbance [*]):						
	Soil types present*: mineral Soils, alluvium						
	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 1						
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P	EM Portion of Wetlan	nd: Approx. Acre(s)		Mucky soils depth (i	2 (b) (b)		
P	PSS Portion of Wetland: Approx. Acre(s) Mucky soils depth (inches)						
P	FO Portion of Wetlan	O Portion of Wetland: Approx. Acre(s) // Mucky soils depth (inches) <a>					
P	PO Portion of Wetland: Approx. Acre(s)						
	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	
etat	Arrowhead	Japanese Stiltgrass	Rough-leaved	White Turtlehead	Spicebush	Viburnam Spp.	
'Veg			Goldenrod				
Wetland Type/Vegetation	Carpetgrass	Jewelweed	Sensitive Fern	Woolly-fruited Sedge	Swamp Rose		
T pu	Cattail	Mile-A-Minute	Skunk Cabbage	Yellow Sedge	Alder Spp.		
/etla	Cinnamon Fern	Porcupine Sedge	Smooth Sawgrass	Alder-leaved Buckthorn	American Elm		
5	Common Boneset	Purple Loosestrife	Sweetflag	Dogwood Spp.	Eastern Red Cedar		
	Common Reed	Reed Canary Grass	Tearthumb Spp.	Multiflora Rose	Poison Sumac):	
r	Notes on additional pl					ot on the list above?):	
	Herdwoods, Caver, Lizard's tail, yellow flag, climbing hendwood, polysma						
Species Landscape Info	Some If part of this wetland None Is there potential bog Were any bog turtles Other herps observed	of it – Acres d continues off-site, of it All of it g turtle habitat off-s observed? Yes d? Yes Yes	or% of the w how much of the o Part of it (a ite? Yes ite? Yes fro If yes, If yes, which ones?	cres or% of the Unknown If , how many?	e located off-site urveyed (on foot)? e off-site portion) yes, how did you co *Note that y are conduct *Report bog Field Office i	ou must be permitted by the state you ng the survey in to handle bog turtles. turtle observations to your local FWS and state wildlife office within 48 hrs.	
Lead Surveyor Opinion	Yes XNo Yes No Yes No Yes No YesNo Notes (How did you	Unsure The soils of Unsure The veget Unsure This wetla Unsure This wetla Unsure This wetla Unsure This wetla reach this opinion?	rriterion for bog tur ation criterion for b nd has potential bo nd has potential bo nd does NOT have '):	oog turtle habitat is r Ig turtle habitat (fair Ig turtle habitat (low potential bog turtle	net. to good quality). to very low quality habitat. at all of the informa). tion provided herein is 16/24/18	
4	nost prominent in the Pertinent to bog turtl supplemental Informat	e sites found in Con	necticut, Massachu				

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December 19, 2018

Prepared by: First Environment, Inc.

