JONES & BEACH ENGINEERS INC.
85 Portsmouth Avenue, PO Box 219, Stratham, NH 03885
603.772.4746 - JonesandBeach.com

October 16, 2024

Concord Planning Board
Attn. Richard Woodfin, Chair
Concord City Hall
41 Green Street
Concord, NH 03301

RE: Minor Site Plan Application
Shaker Road, Concord, NH
Tax Map 411Z, Lot 49
JBE Project No. 24022

Dear Mr. Woodfin,

Jones & Beach Engineers, Inc. respectfully submits a Minor Site Plan Application for the above-referenced parcel on behalf of our client & owner, Aaron LeClerc and Cara Scala. The intent of this project is to construct a single-family home and detached workshop building for a home business. Both structures will be served by an on-site well and septic and underground power.

In May 2024, the applicant received a variance for a manufacturing use and two principal uses on the property. This variance was required as the home business did not fit within the City's limitations on Minor or Major Homes Businesses.

The subject lot exists as vacant land with a wetland system that extends across the front (west) end of the lot. Any development of the property requires a wetland impact for access to the buildable portion of the lot. The proposed driveway will impact an estimated 4,550 sq.ft. of wetland and require a Conditional Use Permit. Included with this submission is a Wetland Report & Functional Assessment and Vernal Pool Report prepared by Pond View Wetland Consultants. Our office is in the process of preparing the NHDES Dredge & Fill Permit for approval of the impact and review of the crossing design.

We are requesting several waivers which are described in the waiver request narrative, included with our submission.

The following are provided in support of this application with the following items:

1. Minor Site Plan Checklist.
2. Waiver Request Narrative.
3. Letter of Authorization
4. Current Deed.
5. Abutters List.
6. Project Plan Set.
7. Wetland Report & Functional Assessment
8. Vernal Pool Report

If you have any questions or need any additional information, please feel free to contact our office. Thank you very much for your time.

Very truly yours,
JONES & BEACH ENGINEERS, INC.

Ian MacKinnon, P.E.
Associate Principal | Project Manager

cc: Aaron LeClerc and Cara Scala (via email)

JONES & BEACH ENGINEERS INC.
85 Portsmouth Avenue, PO Box 219, Stratham, NH 03885
603.772.4746 - JonesandBeach.com

October 16, 2024

RE: Concord, NH – Shaker Rd, Lot 411Z / Lot 49
Minor Site Plan Application – Waiver Requests
JBE Project No. 24022

Dear Members of the Board,

The proposed Minor Site Plan application is for a single-family home with detached workshop for home business use. Many aspects of the project mimic the scale and style that a standard single-family home would develop (size of structures, amount of disturbed area, etc.). For that reason, we are requesting waivers for items that we believe are not applicable for the proposed project. We have included a brief justification with each waiver request. The following are waivers requested to the Minor Site Plan checklist:

- *15.04(14) Drainage & Erosion Control: Provide grading & drainage information showing the information required in Section 16.02(12) and for areas proposed to be disturbed, show erosion control information per Section 16.012(13).*
    - The project plans depict proposed site grading related to the driveway, house, and workshop, along with erosion control measures. We request a waiver from the requirement that a drainage study be provided [Section 16.02(12)(b)]. The proposed single-family home and workshop will disturb a similar amount of area as would be expected if the lot were developed as a single-family home and detached barn/garage (non-business use). If not for home business use, the proposed project would not require Minor Site Plan approval and could be built with no requirement for a drainage study. Although we are requesting a waiver to the drainage study requirement, we show on our plans that we intend to preserve the wetland buffer areas in their natural state, to the maximum extent practical.

- *15.04(15) Landscape Plans: A landscape plan depicting location, type and size of existing and proposed landscaping elements.*
    - Our request is a waiver from the requirement that the project provide a dedicated landscape plan within the project plan set. The site & utility plans depict some proposed trees and shrubs but the remainder of the landscaping around the home and workshop will be installed by the homeowner but with no specific design in place. The proposed development area is set well away from the roadway which provides adequate buffering. With this request, there will be no plan provided by a NH licensed landscape architect, just those elements shown on the site plans.

- *15.04(26) Lighting Plans: Show the type & location of existing and proposed outdoor lighting, as required in Section 29, Lighting.*
    - The proposed single-family home will utilize several entry-door lights and likely an overhead light above the garage. These lights would not qualify as full cut-off fixtures, as required under Section 29. Although the home may not utilize full cut off fixtures, the workshop structure will. A note about this effect is included within the utility notes on Sheet C2 of the project plan set. We request a waiver from the requirements for a photometric layout of proposed lighting and to allow the single-family home to use standard residential exterior lighting.

We look forward to reviewing these requests with the Board. Thank you for your time.

Very truly yours,
JONES & BEACH ENGINEERS, INC.

Ian MacKinnon, P.E.
Associate Principal | Project Manager

cc: Aaron Leclerc, Applicant (via email)

JONES & BEACH ENGINEERS INC.
85 Portsmouth Avenue, PO Box 219, Stratham, NH 03885
603.772.4746 - JonesandBeach.com

October 16, 2024

Concord Planning Board
Attn. Richard Woodfin, Chair
Concord City Hall
41 Green Street
Concord, NH 03301

RE: Conditional Use Permit Application
Shaker Road, Concord, NH
Tax Map 411Z, Lot 49
JBE Project No. 24022

Dear Mr. Woodfin,

Jones & Beach Engineers, Inc. respectfully submits a Conditional Use Permit Application concurrently with the Minor Site Plan Application already filed with the City for the above-referenced parcel on behalf of our client & owner, Aaron LeClerc and Cara Scala. The intent of this project is to construct a single-family home and detached workshop building for a home business. Both structures will be served by an on-site well and septic and underground power.

The subject lot exists as vacant land with a wetland system that extends across the front (west) end of the lot. Any development of the property requires a wetland impact for access to the buildable portion of the lot. The proposed driveway will impact an estimated 4,550 sq.ft. of wetland and require a Conditional Use Permit. Included with this submission is a Wetland Report & Functional Assessment and Vernal Pool Report prepared by Pond View Wetland Consultants. Our office is in the process of preparing the NHDES Dredge & Fill Permit for approval of the impact and review of the crossing design.

Pursuant to the Zoning Ordinance Chapter 28-4-3(d), below are the conditions that must be met as part of the Conditional Use Permit request:

1. *The disturbance of the buffer is necessary to the establishment of an allowable principal or accessory use on the buildable land area of the lot;*

   The west end of the property contains a wetland that flows northwest across the property. The wetland contains a defined flow channel which is depicted on the project plans. Crossing of the wetland, impacting both buffer areas and the wetland itself, is required in order to access the buildable portion of the lot and construct the proposed single-family home and detached workshop.

2. *The proposed disturbance to the buffer cannot practicably be located otherwise on the lot to eliminate or reduce the impact to the buffer and represents the minimum extent of disturbance necessary to achieve the reasonable use of those portions of the lot consisting of buildable land;*

   The crossing location and alignment has been selected to minimize the proposed impact area, selecting the narrowest portion of the wetland. As the wetland exists across the entire frontage of the property except for a few select upland pockets, the proposed crossing location provides for the smallest possible impact.

3. *The proposed disturbance to the buffer minimizes the environmental impact to the abutting wetland, and to downstream property and hydrologically connected water and wetland resources;*

   The proposed direct & buffer impacts are proposed utilizing the narrowest possible cross-section of impact while still providing a safe and reliable driveway to access the property. The proposed box culvert is proposed such that the existing channel shape can be maintained and have little to no impact to flow characteristics. These elements minimize impacts to downstream properties and maintain the hydraulic conditions of the wetland.

4. *Where applicable, wetland permit(s) have been received or are obtained from the NHDES and USACOE; and*

   As of the writing of this memorandum, our office is preparing the NHDES Dredge & Fill Permit and intend to file this permit by the time we go before the Planning Board for our first public hearing.

5. *Where applicable, permits or proof of compliance with all other state and/or federal regulations have been received or are obtained.*

   There are no other state or federal permits that will be required for the project. A Minor Site Plan Application has been filed for this project and our intent is to have both applications reviewed concurrently.

If you have any questions or need any additional information, please feel free to contact our office. Thank you very much for your time.

Very truly yours,
JONES & BEACH ENGINEERS, INC.

E. Ian MacKinnon

Ian MacKinnon, P.E.
Associate Principal | Project Manager

cc: Aaron LeClerc and Cara Scala (via email)

Wetland Report
And
Functional Assessment

Tax Map 411Z, Lot 49
Shaker Road
Concord, NH

Prepared for:
Jones and Beach
85 Portsmouth Avenue
Stratham, NH 03885

Prepared by:
Pond View Wetland Consultants, L.L.C.
237 Beauty Hill Road
Center Barnstead, NH 03225

July 8, 2024

INTRODUCTION

Pond View Wetlands Consultants, LLC (PVW) has prepared this document to describe the wetland communities and the functions and values associated with wetlands at the Shaker Road site in Concord, NH, described as Tax Map 411Z and Lot 49. The wetlands on this site were delineated on June 10, 2024, by Jim Fougere (CWS #161) of Pond View Wetland Consultants LLC (PVW). A vernal pool assessment was conducted on April 15th, 2024. Additional field data from an earlier project in 2021 and 2022 also contributed to the field information and findings.

Wetlands within the study area were delineated using methodology outlined in the *U.S. Army Corps of Engineers Wetland Delineation Manual* (ACOE, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* (ACOE, 2012).

Federal wetland classifications were assigned according to the criteria published by the U.S. Fish and Wildlife Service (USFWS) in Cowardin et al. (1979). Wetland functions and values were assessed in accordance with the ACOE "*Highway Methodology Workbook Supplement: Wetland Functions and Values; A Descriptive Approach*" (1995). The thirteen functions and values assessed for this study include the following:

Groundwater recharge/discharge: This function considers the potential for a wetland to serve as a groundwater recharge and/or discharge area. Recharge should relate to the potential for the wetland to contribute water to an aquifer. Discharge should relate to the potential for the wetland to serve as an area where ground water can be discharged to the surface.

Floodflow Alteration: This function considers the effectiveness of the wetland in reducing flood damage by attenuation of floodwaters for prolonged periods following precipitation events.

Fisheries Habitat
Fish and Shellfish Habitat: This function considers the effectiveness of seasonal or permanent water bodies associated with the wetland in question for fish and shellfish habitat.

Sediment/Toxicant Retention: This function reduces or prevents degradation of water quality. It relates to the effectiveness of the wetland as a trap for sediments, toxicants, or pathogens.

Nutrient Retention/Transformation: This function relates to the effectiveness of the wetland to prevent adverse effects of excess nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers, or estuaries.

Production Export: This function relates to the effectiveness of the wetland to produce food or usable products for humans, or other living organisms.

Sediment/Shoreline Stabilization: This function relates to the effectiveness of a wetland to stabilize stream banks and shorelines against erosion.

Wildlife Habitat: This function considers the effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland edge. Both resident and or migrating species would be considered.

Recreation: This value considers the effectiveness of the wetland and associated watercourses to provide recreational opportunities such as canoeing, boating, fishing, hunting and other active or passive recreational activities. Consumptive opportunities consume or diminish the plants, animals or other resources that were intrinsic to the wetland, whereas non-consumptive opportunities do not.

Educational/Scientific Value: This value considers the effectiveness of the wetland as a site for an "outdoor classroom" or as a location for scientific study or research.

Uniqueness/Heritage: This value relates to the effectiveness of the wetland or its ability to include such things as archeological sites, unusual aesthetic quality, historical events, or unique plants, animals, or geological features.

Visual Quality/Aesthetics: This value relates to the visual and aesthetic qualities of the wetland.

Threatened or Endangered Species Habitat: This value relates to the effectiveness of the wetland or associated water bodies to support threatened or endangered species.

The form describing how this wetland addresses these functions is provided in Appendix C.

Site Description

The Shaker Road property proposes a single residential lot with a house and a separate garage structure. This 17+ acre property is part of an undeveloped area of mixed hardwood forest described as an Appalachian oak-pine forest with a portion of Pine Barren in the NH Wildlife Action Plan maps. The overall forest varied significantly from the various wetlands to a dry ridge in the center of the site. The property was logged in the distant past, resulting in areas of saplings and low growth of varying density. The upland plant community is largely forested with a hardwood component that includes red oak (*Quercus rubra*), red maple (*Acer rubrum*), and beech (*Fagus grandifolia*) plus Eastern hemlock (*Tsuga canadensis*). The understory is generally open with a few smaller hemlock and beech plus high bush blueberry (*Vaccinium corymborum*) and scattered pockets of sphagnum moss (*Sphagnum* spp.) and cinnamon fern (*Osmundastrum cinnamomeum*) in the wetter segments.

An unnamed intermittent stream at the front of the property is dominated by fine-grained soils and continues under Shaker Road, flowing a westerly direction. The second wetland identified on the property is an isolated community occurring near the center of the site. This community occurs in an area of sandy soil which limits the duration of standing water in the basin. The third wetland community occurs in the back of the site and does appear to connect to Wetland 1 offsite. Wetland 3 includes a number of pools and pockets of generally seasonal basins with saturated borders and ridges throughout the area providing a varied habitat. Vernal pool habitats were noted to occur in several sites within this wetland community.

The proposed project occurs in an area that abuts existing housing on residential lots to the north and south. Access to the development site will occur at Shaker Road which will require a wetland crossing before entering the upland habitat to the east. Site plans illustrating wetlands and lot layout are provided in Appendix A.

WETLAND DESCRIPTIONS

The following provides a description of the wetland resource areas associated with the Shaker Road property. NH Wetland Functional Assessment Worksheets are included in Appendix B. ACOOE Highway Methodology Data Sheets are provided in Appendix C. A photo log is also provided in Appendix D.

Wetland 1 is a large, forested wetland with a narrow intermittent stream located on the west side of the property. The western edge of this wetland occurs along Shaker Road with a culvert carrying the streamflow under the road, in a westerly direction. Wetland 1 appears to originate or is at least hydrologically connected to Wetland 3 on the east side of the site, although any direct connection occurs offsite to the south. Wetland 1 is best described as a Palustrine Forested wetland (PFO/SS1E) dominated by red maple with a dense understory of highbush blueberry and cinnamon fern. A narrow intermittent stream rambles across the western third of the site and would be classified as R4SB4/5, Riverine, Intermittent, Streambed, sand, and mud.

Principal functions and values provided by this wetland community include floodflow alteration, sediment/toxicant retention, and sediment/shoreline stabilization. These functions are primarily associated with the dense vegetative community within the wetland and the broad, low topography of the site, as well as the presence of the intermittent stream and constricted outlet. Other functions and values, such as groundwater recharge/discharge, nutrient removal, and wildlife habitat occur but are more limited in nature and are not considered to provide principal values.

Wetland Classification: PFO1E, R4SB4/5

Principal functions and values: Flood storage and desynchronization, sediment/toxicant retention, sediment/shoreline stabilization

Wetland 2 is an isolated shrub wetland with a forested edge that has an inconsistent hydrologic condition. While the site can be flooded at times, a week later it may be dry or only saturated. Wetland 2 did not appear to be connected to other wetlands, limiting its ability to contribute to some water quality functions. The limited hydrology of the site also reduced its ability to contribute to wildlife habitat functions due to its inability to provide vernal pool habitat. This area is located more or less in the center of the site to the northern boundary of the parcel.

This wetland would be classified as a Palustrine, Scrub/shrub, Broad-leaved deciduous, seasonally flooded (PSS1C). Typical vegetation included highbush blueberry, cinnamon fern, and sphagnum moss. The border of the pool area is dominated by red maple and blueberry. Due to its reduced hydrological condition, this wetland has limited principal functions and values including groundwater recharge. As described, wildlife habitat is available but in a more limited nature.

Wetland Classifications: **PSS1C**

Principal Functions and Values: Groundwater recharge/discharge

Wetland 3 refers to a large, varied wetland community in the eastern third of the site. This area contains a number of pools and wetland pockets of varying depth with upland ridges and dense woodland edges that contribute to the availability of overall wildlife habitat functions. The wetland delineation in this area only defined the western-most boundary of the wetlands and did not break out individual basins.

Portions of this wetland community may have been influenced by older tree clearing activity including skidder trails, but these areas are stable and not currently impacting site conditions. In addition, this site appears to connect to Wetland 1 in an offsite area, but Wetland 3 does not appear to have a well-defined stream channel like Wetland 1 but rather sheet flow to the south.

This varied wetland area includes several areas identified as vernal pool habitat. These pools varied in depth and size, with most around one foot in depth and surrounded by red maple and highbush blueberry. Spotted salamander egg masses were noted in the field at the time of the vernal pool survey which occurred on April 15, 2024. A previous vernal pool survey was conducted on May 2, 2022, as part of an earlier project and also identified wood frog egg masses. These wetlands would be described as Palustrine, Forested, broad-leaved deciduous, seasonally flooded/saturated (PFO1E). They were noted to have limited standing water in July 2024 with largely saturated conditions.

Principal functions and values provided by this wetland community include groundwater recharge/discharge, floodflow alteration, sediment/toxicant retention, and wildlife habitat. These functions are primarily related to this wetland's vernal pool status, and the diverse hydrology and vegetative characteristics of the area. The isolated nature of the site also contributes to the site's values. Other functions and values are available, such as nutrient removal, sediment/shoreline stabilization, and uniqueness/heritage but these functions and values are more limited in nature and are not considered to provide principal functions and values.

Wetland Classification: PFO1C

Principal Functions and Values: Groundwater recharge, Floodflow alteration, Sediment/toxicant retention, Wildlife habitat.

Wetland 4 refers to a small skidder trail influenced wetland that extends onto the project site 10-20 feet at the northern border, adjacent to Wetland 3. Due to the narrow size of this scrub/shrub wetland and its location at the project boundary it is not considered to provide function and values on site.

Vernal Pool Habitat

The wetlands associated with this site and the surrounding habitats were reviewed to address its potential to provide vernal pool habitat as described in the NH Wetlands Administrative Rules. Wt. 100-900), and the definitions of "vernal pool" (Env.Wt. 101.106) and referencing "Identification and Documentation of Vernal Pools in New Hampshire", second edition (2004), published by NH Fish and Game Department.

NH Wetland Rules (Env. WT. 101.108) defines vernal pool, to mean, a surface water or wetland, including an area intentionally created for purposes of compensatory mitigation, which provides breeding habitat for amphibians and invertebrates that have adapted to the unique environments provided by such pools and which:

(a) Is not the result of on-going anthropogenic activities that are intended to provide compensatory mitigation, including but not limited to:
  (1) Gravel pit operations in a pit that has been mined at least every other year, and
  (2) Logging and agricultural operations conducted in accordance with all applicable New Hampshire statutes and rules; and

(b) Typically has the following characteristics:
  (1) Cycles annually from flooded to dry conditions, although the hydroperiod, size and shape of the pool might vary from year to year.
  (2) Forms in a shallow depression or basin.
  (3) Has not permanently flowing outlet.
  (4) Holds water for at least 2 continuous months following spring ice-out.
  (5) Lacks a viable fish population; and
  (6) Supports one or more primary vernal pool indicators, or three or more secondary indicators.

Vernal Pool Findings

The timing of the site visits was conducted independent of the wetland delineation to provide a more appropriate seasonal reference. The most recent site visit was conducted on April 15th, 2024, specifically to assess the utilization of the site wetland for the presence of breeding amphibians, or vernal pool habitat. A site visit for vernal pool assessment was conducted on May 2, 2022, as part of an earlier project.

Findings of these assessments of the site's wetlands, concluded Wetland 3 on the east side of the site provided several basins with appropriate hydrology and vegetative support to provide vernal pool habitat. Spotted salamander and wood frog eggs were noted to occur during the two site visits. A vernal pool report is provided separately.

TECHNICAL REFERENCES

Cowardin, L.M., Carter, V., Golet, F.C., and LaRoe, E.T. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Fish and Wildlife Service. Washington, D.C. 1979.

New England Hydric Soils Technical Committee. *Field Indicators for Identifying Hydric Soils in New England*. 3rd Edition. New England Interstate Water Pollution Control Commission, Lowell, MA. 2004.

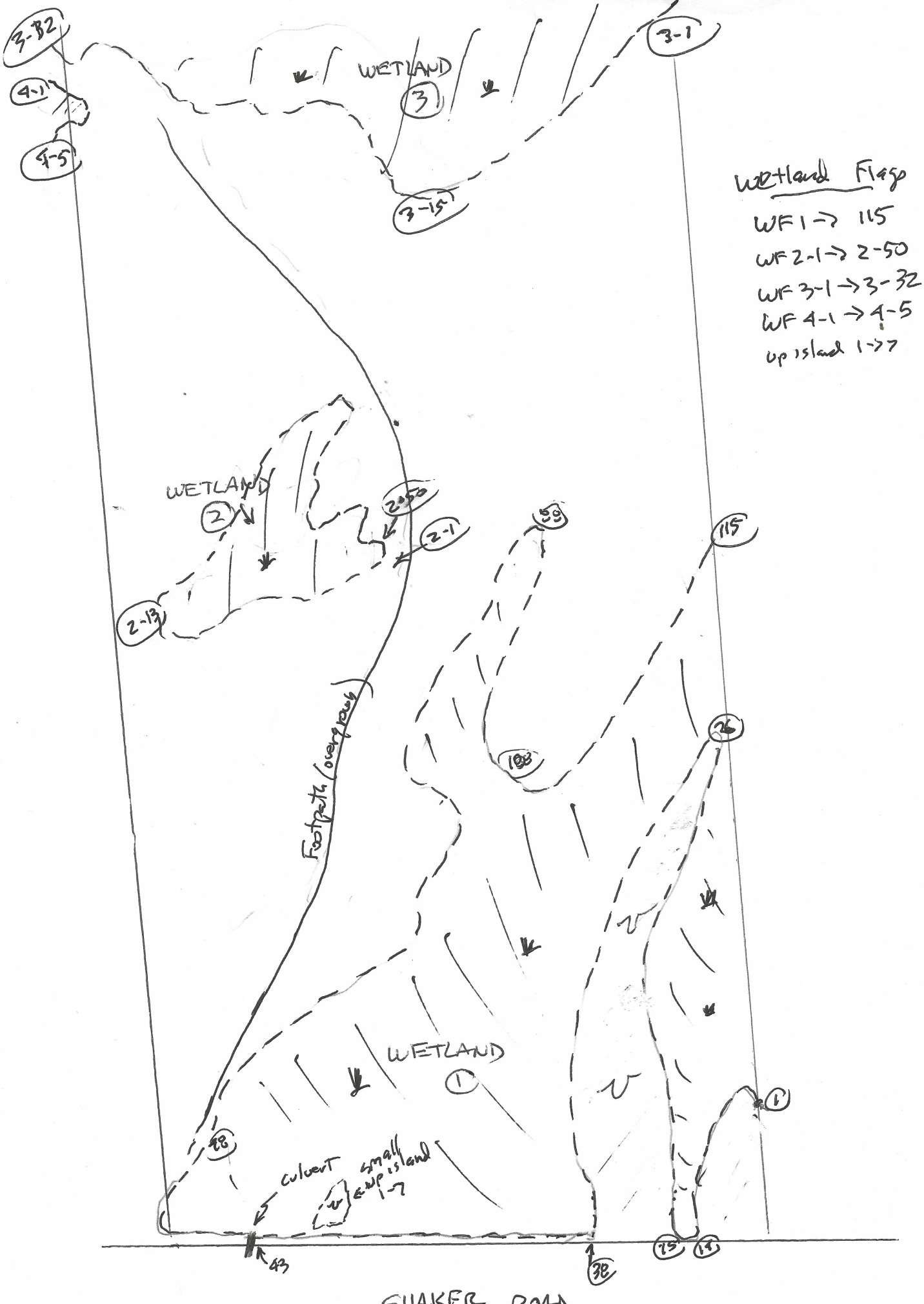
U.S. Army Corps of Engineers. *Corps of Engineers Wetlands Delineation Manual*. Technical Report Y-87-1. U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS. 1987.

U.S. Army Corps of Engineers. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region. U.S. Army Corps of Engineer Research and Development Center, Vicksburg, MS. January 2012.

U.S. Army Corps of Engineers. *The Highway Methodology Workbook Supplement: Wetland Functions and Values*. U.S. Army Corps of Engineers, New England Division.

APPENDIX A

Site Maps


3-32
4-1
4-5
WETLAND
3
3-1
3-15
Wetland Flags
WF 1 -> 115
WF 2-1 -> 2-50
WF 3-1 -> 3-32
WF 4-1 -> 4-5
up island 1->7
WETLAND
2
2-50
2-1
2-13
59
115
Footpath (overgrown)
103
26
WETLAND
1
1
48
culvert
small island 1-7
43
38
15
14
SHAKER ROAD

APPENDIX B

NH Functional Assessment

WETLANDS FUNCTIONAL ASSESSMENT WORKSHEET

Water Division/Land Resource Management
Wetlands Bureau

Check the Status of your Application

RSA/Rule: RSA 482-A / Env-Wt 311.03(b)(10); Env-Wt 311.10

APPLICANT LAST NAME, FIRST NAME, M.I.: Shaker Road, Concord

As required by Env-Wt 311.03(b)(10), an application for a standard permit for minor and major projects must include a functional assessment of all wetlands on the project site as specified in Env-Wt 311.10. This worksheet will help you compile data for the functional assessment needed to meet federal (US Army Corps of Engineers (USACE); if applicable) and NHDES requirements. Additional requirements are needed for projects in tidal area; please refer to the Coastal Area Worksheet (NHDES-W-06-079) for more information.

Both a desktop review and a field examination are needed to accurately determine surrounding land use, hydrology, hydroperiod, hydric soils, vegetation, structural complexity of wetland classes, hydrologic connections between wetlands or stream systems or wetland complex, position in the landscape, and physical characteristics of wetlands and associated surface waters. The results of the evaluation are to be used to select the location of the proposed project having the least impact to wetland functions and values (Env-Wt 311.10). This worksheet can be used in conjunction with the Avoidance and Minimization Written Narrative (NHDES-W-06-089) and the Avoidance and Minimization Checklist (NHDES-W-06-050) to address Env-Wt 313.03 (Avoidance and Minimization). If more than one wetland/ stream resource is identified, multiple worksheets can be attached to the application. All wetland, vernal pools, and stream identification (ID) numbers are to be displayed and located on the wetlands delineation of the subject property.

SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)	
ADJACENT LAND USE: Residential and forestland	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? ☐ Yes ☒ No	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): abuts Shaker Rd	
SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: Jim Fougere CWS #161	
DATE(S) OF SITE VISIT(S): 6/10/2024	DELINEATION PER ENV-WT 406 COMPLETED? ☒ Yes ☐ No
CONFIRM THAT THE EVALUATION IS BASED ON: ☒ Office and ☒ Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in blank if “other”): ☒ USACE Highway Methodology. ☐ Other scientifically supported method (enter name/ title):	

SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
WETLAND ID: 1	LOCATION: (LAT/ LONG) /
WETLAND AREA: 2+ acres including offsite areas	DOMINANT WETLAND SYSTEMS PRESENT: forest
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? 1	COWARDIN CLASS: PFO1E, R4SB5
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? ☐ Yes ☒ No if not, where does the wetland lie in the drainage basin? mid-	IS THE WETLAND PART OF: ☒ A wildlife corridor or ☐ A habitat island? IS THE WETLAND HUMAN-MADE? ☐ Yes ☒ No
IS THE WETLAND IN A 100-YEAR FLOODPLAIN? ☐ Yes ☒ No	ARE VERNAL POOLS PRESENT? ☐ Yes ☒ No (If yes, complete the Vernal Pool Table)
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? ☒ Yes ☐ No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/ DOWNGRADIENT? ☐ Yes ☒ No
PROPOSED WETLAND IMPACT TYPE: Unknown	PROPOSED WETLAND IMPACT AREA: Crossing

SECTION 4 - WETLANDS FUNCTIONS AND VALUES (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)

The following table can be used to compile data on wetlands functions and values. The reference numbers indicated in the "Functions/ Values" column refer to the following functions and values:

1. Ecological Integrity (from RSA 482-A:2, XI)
2. Educational Potential (from USACE Highway Methodology: Educational/Scientific Value)
3. Fish & Aquatic Life Habitat (from USACE Highway Methodology: Fish & Shellfish Habitat)
4. Flood Storage (from USACE Highway Methodology: Floodflow Alteration)
5. Groundwater Recharge (from USACE Highway Methodology: Groundwater Recharge/Discharge)
6. Noteworthiness (from USACE Highway Methodology: Threatened or Endangered Species Habitat)
7. Nutrient Trapping/Retention & Transformation (from USACE Highway Methodology: Nutrient Removal)
8. Production Export (Nutrient) (from USACE Highway Methodology)
9. Scenic Quality (from USACE Highway Methodology: Visual Quality/Aesthetics)
10. Sediment Trapping (from USACE Highway Methodology: Sediment /Toxicant Retention)
11. Shoreline Anchoring (from USACE Highway Methodology: Sediment/Shoreline Stabilization)
12. Uniqueness/Heritage (from USACE Highway Methodology)
13. Wetland-based Recreation (from USACE Highway Methodology: Recreation)
14. Wetland-dependent Wildlife Habitat (from USACE Highway Methodology: Wildlife Habitat)

First, determine if a wetland is suitable for a particular function and value ("Suitability" column) and indicate the rationale behind your determination ("Rationale" column). Please use the rationale reference numbers listed in Appendix A of USACE *The Highway Methodology Workbook Supplement*. Second, indicate which functions and values are principal ("Principal Function/value?" column). As described in *The Highway Methodology Workbook Supplement*, "functions and values can be principal if they are an important physical component of a wetland ecosystem (function only) and/or are considered of special value to society, from a local, regional, and/or national perspective". "Important Notes" are to include characteristics the evaluator used to determine the principal function and value of the wetland.

FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE (Reference #)	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	☒ Yes ☐ No		☐ Yes ☒ No	Thia wetland may be hydrologically connected to Wet 3 but stream is narrow
2	☐ Yes ☒ No		☐ Yes ☒ No	Limited accessibility and opportunity
3	☐ Yes ☒ No	1,2,8,17	☐ Yes ☒ No	Includes intermittent stream with low flow
4	☒ Yes ☐ No	1,5,6,7,8,9,10,13,14,15,17	☒ Yes ☐ No	Low, flat wetland with storage potential
5	☒ Yes ☐ No	2,5,7,8,9,15	☐ Yes ☒ No	Intermitttent streamwith varied wet communities connected to the east
6	☐ Yes ☒ No		☐ Yes ☒ No	Wetland has some corridor value but oiutside species area
7	☒ Yes ☐ No	3,5,7,8,9,10	☐ Yes ☒ No	Fine soils in wet.help but unknown opportunity
8	☒ Yes ☐ No	3,7,8,10,13	☐ Yes ☒ No	There is anl intermittent stream but little evidence of export
9	☐ Yes ☒ No	3,4, 6	☐ Yes ☒ No	Visually appealing at road edge but limited accessibility to site
10	☒ Yes ☐ No	3,4,6,7,8,10,12,14,15,16	☒ Yes ☐ No	Narrow intermittent stream with forested wetland edge but unknown opportunity
11	☒ Yes ☐ No	4,5,14	☐ Yes ☒ No	Intermittent flow out but good vegetative structure and adjacent wet.
12	☒ Yes ☐ No	2,5,6,7,16,30	☐ Yes ☒ No	Limited accessibility and opportunity with inter. stream
13	☐ Yes ☒ No	6	☐ Yes ☒ No	Limited potential/ Limited accessibility
14	☒ Yes ☐ No	6,7,11,14,15	☒ Yes ☐ No	Stream habitat with upstream and down stream habitat. May provide corridor values

SECTION 5 - VERNAL POOL SUMMARY (Env-Wt 311.10)

Delineations of vernal pools shall be based on the characteristics listed in the definition of "vernal pool" in Env-Wt 104.44. To assist in the delineation, individuals may use either of the following references:

- *Identifying and Documenting Vernal Pools in New Hampshire 3rd Ed.*, 2016, published by the New Hampshire Fish and Game Department; or
- The USACE *Vernal Pool Assessment* draft guidance dated 9-10-2013 and form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

All vernal pool ID numbers are to be displayed and located on the wetland delineation of the subject property.

"Important Notes" are to include documented reproductive and wildlife values, landscape context, and relationship to other vernal pools/wetlands.

Note: For projects seeking federal approval from the USACE, please attach a completed copy of The USACE "Vernal Pool Assessment" form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

VERNAL POOL ID NUMBER	DATE(S) OBSERVED	PRIMARY INDICATORS PRESENT (LIST)	SECONDARY INDICATORS PRESENT (LIST)	LENGTH OF HYDROPERIOD	IMPORTANT NOTES
1					
2					
3					
4					
5					

SECTION 6 - STREAM RESOURCES SUMMARY

DESCRIPTION OF STREAM: Intermittent outlet at Shaker	STREAM TYPE (ROSGEN):
HAVE FISHERIES BEEN DOCUMENTED? ☐ Yes ☒ No	DOES THE STREAM SYSTEM APPEAR STABLE? ☒ Yes ☐ No
OTHER KEY ON-SITE FUNCTIONS OF NOTE:	

The following table can be used to compile data on stream resources. "Important Notes" are to include characteristics the evaluator used to determine principal function and value of each stream. The functions and values reference number are defined in Section 4.

FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	☐ Yes ☐ No		☐ Yes ☐ No	
2	☐ Yes ☐ No		☐ Yes ☐ No	
3	☐ Yes ☐ No		☐ Yes ☐ No	
4	☐ Yes ☐ No		☐ Yes ☐ No	
5	☐ Yes ☐ No		☐ Yes ☐ No	
6	☐ Yes ☐ No		☐ Yes ☐ No	
7	☐ Yes ☐ No		☐ Yes ☐ No	
8	☐ Yes ☐ No		☐ Yes ☐ No	
9	☐ Yes ☐ No		☐ Yes ☐ No	
10	☐ Yes ☐ No		☐ Yes ☐ No	
11	☐ Yes ☐ No		☐ Yes ☐ No	
12	☐ Yes ☐ No		☐ Yes ☐ No	
13	☐ Yes ☐ No		☐ Yes ☐ No	
14	☐ Yes ☐ No		☐ Yes ☐ No	

SECTION 7 - ATTACHMENTS (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)

☐ Wildlife and vegetation diversity/abundance list.

☒ Photograph of wetland.

☐ Wetland delineation plans showing wetlands, vernal pools, and streams in relation to the impact area and surrounding landscape. Wetland IDs, vernal pool IDs, and stream IDs must be indicated on the plans.

☐ For projects in tidal areas only: additional information required by Env-Wt 603.03/603.04. Please refer to the Coastal Area Worksheet (NHDES-W-06-079) for more information.

WETLANDS FUNCTIONAL ASSESSMENT WORKSHEET

Water Division/Land Resource Management
Wetlands Bureau

Check the Status of your Application

RSA/Rule: RSA 482-A / Env-Wt 311.03(b)(10); Env-Wt 311.10

APPLICANT LAST NAME, FIRST NAME, M.I.: Shaker Road, Concord

As required by Env-Wt 311.03(b)(10), an application for a standard permit for minor and major projects must include a functional assessment of all wetlands on the project site as specified in Env-Wt 311.10. This worksheet will help you compile data for the functional assessment needed to meet federal (US Army Corps of Engineers (USACE); if applicable) and NHDES requirements. Additional requirements are needed for projects in tidal area; please refer to the Coastal Area Worksheet (NHDES-W-06-079) for more information.

Both a desktop review and a field examination are needed to accurately determine surrounding land use, hydrology, hydroperiod, hydric soils, vegetation, structural complexity of wetland classes, hydrologic connections between wetlands or stream systems or wetland complex, position in the landscape, and physical characteristics of wetlands and associated surface waters. The results of the evaluation are to be used to select the location of the proposed project having the least impact to wetland functions and values (Env-Wt 311.10). This worksheet can be used in conjunction with the Avoidance and Minimization Written Narrative (NHDES-W-06-089) and the Avoidance and Minimization Checklist (NHDES-W-06-050) to address Env-Wt 313.03 (Avoidance and Minimization). If more than one wetland/ stream resource is identified, multiple worksheets can be attached to the application. All wetland, vernal pools, and stream identification (ID) numbers are to be displayed and located on the wetlands delineation of the subject property.

SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)	
ADJACENT LAND USE: Residential and forestland	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? ☐ Yes ☒ No	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): abuts Shaker Rd	
SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: Jim Fougere CWS #161	
DATE(S) OF SITE VISIT(S): 6/10/2024	DELINEATION PER ENV-WT 406 COMPLETED? ☒ Yes ☐ No
CONFIRM THAT THE EVALUATION IS BASED ON: ☒ Office and ☒ Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in blank if “other”): ☒ USACE Highway Methodology. ☐ Other scientifically supported method (enter name/ title):	

SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
WETLAND ID: 2	LOCATION: (LAT/ LONG) /
WETLAND AREA: 1/4 acre isolated wet	DOMINANT WETLAND SYSTEMS PRESENT: forested, shrub
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND?	COWARDIN CLASS: PSS1C,
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? ☒ Yes ☐ No if not, where does the wetland lie in the drainage basin?	IS THE WETLAND PART OF: ☐ A wildlife corridor or ☐ A habitat island? IS THE WETLAND HUMAN-MADE? ☐ Yes ☒ No
IS THE WETLAND IN A 100-YEAR FLOODPLAIN? ☐ Yes ☒ No	ARE VERNAL POOLS PRESENT? ☐ Yes ☒ No (If yes, complete the Vernal Pool Table)
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? ☐ Yes ☒ No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/ DOWNGRADIENT? ☐ Yes ☒ No
PROPOSED WETLAND IMPACT TYPE: None	PROPOSED WETLAND IMPACT AREA: None

SECTION 4 - WETLANDS FUNCTIONS AND VALUES (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)

The following table can be used to compile data on wetlands functions and values. The reference numbers indicated in the "Functions/ Values" column refer to the following functions and values:

1. Ecological Integrity (from RSA 482-A:2, XI)
2. Educational Potential (from USACE Highway Methodology: Educational/Scientific Value)
3. Fish & Aquatic Life Habitat (from USACE Highway Methodology: Fish & Shellfish Habitat)
4. Flood Storage (from USACE Highway Methodology: Floodflow Alteration)
5. Groundwater Recharge (from USACE Highway Methodology: Groundwater Recharge/Discharge)
6. Noteworthiness (from USACE Highway Methodology: Threatened or Endangered Species Habitat)
7. Nutrient Trapping/Retention & Transformation (from USACE Highway Methodology: Nutrient Removal)
8. Production Export (Nutrient) (from USACE Highway Methodology)
9. Scenic Quality (from USACE Highway Methodology: Visual Quality/Aesthetics)
10. Sediment Trapping (from USACE Highway Methodology: Sediment /Toxicant Retention)
11. Shoreline Anchoring (from USACE Highway Methodology: Sediment/Shoreline Stabilization)
12. Uniqueness/Heritage (from USACE Highway Methodology)
13. Wetland-based Recreation (from USACE Highway Methodology: Recreation)
14. Wetland-dependent Wildlife Habitat (from USACE Highway Methodology: Wildlife Habitat)

First, determine if a wetland is suitable for a particular function and value ("Suitability" column) and indicate the rationale behind your determination ("Rationale" column). Please use the rationale reference numbers listed in Appendix A of USACE *The Highway Methodology Workbook Supplement*. Second, indicate which functions and values are principal ("Principal Function/value?" column). As described in *The Highway Methodology Workbook Supplement*, "functions and values can be principal if they are an important physical component of a wetland ecosystem (function only) and/or are considered of special value to society, from a local, regional, and/or national perspective". "Important Notes" are to include characteristics the evaluator used to determine the principal function and value of the wetland.

FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE (Reference #)	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	☐ Yes ☒ No		☐ Yes ☒ No	This wetland is isolated with limited hydrology
2	☐ Yes ☒ No	2,5,9,10,14	☐ Yes ☒ No	Limited accessibility and opportunity
3	☐ Yes ☒ No	1	☐ Yes ☒ No	isolated wetland with rapidly changing hydrology
4	☐ Yes ☒ No	1,9	☐ Yes ☒ No	Isolated wetland with no inlet or outlet
5	☒ Yes ☐ No	4,5,8,13,15	☒ Yes ☐ No	Isolated wetland with flutuating water levels in the site's sandy soils
6	☐ Yes ☒ No		☐ Yes ☒ No	Wetland has no vernal pool value due to rapid dewatering
7	☐ Yes ☒ No	4,5,7,9	☐ Yes ☒ No	Limited potential for input or output
8	☒ Yes ☐ No		☐ Yes ☒ No	No potential export from this isolated wet area
9	☐ Yes ☒ No	3,4,5,6	☐ Yes ☒ No	Limited visual accessibility
10	☐ Yes ☒ No	4,7,9	☐ Yes ☒ No	Forested wetland edge but limited hydro. & unknown opportunity
11	☐ Yes ☒ No	6	☐ Yes ☒ No	Limited hydrology but good vegetative structure adjacent to wetland
12	☐ Yes ☒ No	2,8,13,16,18	☐ Yes ☒ No	Limited accessibility and opportunity with limited hydrology
13	☐ Yes ☒ No	11,12	☐ Yes ☒ No	Limited potential/ Limited accessibility
14	☒ Yes ☐ No	1,3,4,7,10,15	☐ Yes ☒ No	Some potential but no VP habitat due to limited hydroology

SECTION 5 - VERNAL POOL SUMMARY (Env-Wt 311.10)

Delineations of vernal pools shall be based on the characteristics listed in the definition of "vernal pool" in Env-Wt 104.44. To assist in the delineation, individuals may use either of the following references:

- *Identifying and Documenting Vernal Pools in New Hampshire 3rd Ed.*, 2016, published by the New Hampshire Fish and Game Department; or
- The USACE *Vernal Pool Assessment* draft guidance dated 9-10-2013 and form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

All vernal pool ID numbers are to be displayed and located on the wetland delineation of the subject property.

"Important Notes" are to include documented reproductive and wildlife values, landscape context, and relationship to other vernal pools/wetlands.

Note: For projects seeking federal approval from the USACE, please attach a completed copy of The USACE "Vernal Pool Assessment" form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

VERNAL POOL ID NUMBER	DATE(S) OBSERVED	PRIMARY INDICATORS PRESENT (LIST)	SECONDARY INDICATORS PRESENT (LIST)	LENGTH OF HYDROPERIOD	IMPORTANT NOTES
1					
2					
3					
4					
5					

SECTION 6 - STREAM RESOURCES SUMMARY

DESCRIPTION OF STREAM:	STREAM TYPE (ROSGEN):
HAVE FISHERIES BEEN DOCUMENTED? ☐ Yes ☐ No	DOES THE STREAM SYSTEM APPEAR STABLE? ☐ Yes ☐ No
OTHER KEY ON-SITE FUNCTIONS OF NOTE:	

The following table can be used to compile data on stream resources. "Important Notes" are to include characteristics the evaluator used to determine principal function and value of each stream. The functions and values reference number are defined in Section 4.

FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	☐ Yes ☐ No		☐ Yes ☐ No	
2	☐ Yes ☐ No		☐ Yes ☐ No	
3	☐ Yes ☐ No		☐ Yes ☐ No	
4	☐ Yes ☐ No		☐ Yes ☐ No	
5	☐ Yes ☐ No		☐ Yes ☐ No	
6	☐ Yes ☐ No		☐ Yes ☐ No	
7	☐ Yes ☐ No		☐ Yes ☐ No	
8	☐ Yes ☐ No		☐ Yes ☐ No	
9	☐ Yes ☐ No		☐ Yes ☐ No	
10	☐ Yes ☐ No		☐ Yes ☐ No	
11	☐ Yes ☐ No		☐ Yes ☐ No	
12	☐ Yes ☐ No		☐ Yes ☐ No	
13	☐ Yes ☐ No		☐ Yes ☐ No	
14	☐ Yes ☐ No		☐ Yes ☐ No	

SECTION 7 - ATTACHMENTS (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)

☐ Wildlife and vegetation diversity/abundance list.

☒ Photograph of wetland.

☐ Wetland delineation plans showing wetlands, vernal pools, and streams in relation to the impact area and surrounding landscape. Wetland IDs, vernal pool IDs, and stream IDs must be indicated on the plans.

☐ For projects in tidal areas only: additional information required by Env-Wt 603.03/603.04. Please refer to the Coastal Area Worksheet (NHDES-W-06-079) for more information.

WETLANDS FUNCTIONAL ASSESSMENT WORKSHEET

Water Division/Land Resource Management
Wetlands Bureau

Check the Status of your Application

RSA/Rule: RSA 482-A / Env-Wt 311.03(b)(10); Env-Wt 311.10

APPLICANT LAST NAME, FIRST NAME, M.I.: Shaker Road, Concord

As required by Env-Wt 311.03(b)(10), an application for a standard permit for minor and major projects must include a functional assessment of all wetlands on the project site as specified in Env-Wt 311.10. This worksheet will help you compile data for the functional assessment needed to meet federal (US Army Corps of Engineers (USACE); if applicable) and NHDES requirements. Additional requirements are needed for projects in tidal area; please refer to the Coastal Area Worksheet (NHDES-W-06-079) for more information.

Both a desktop review and a field examination are needed to accurately determine surrounding land use, hydrology, hydroperiod, hydric soils, vegetation, structural complexity of wetland classes, hydrologic connections between wetlands or stream systems or wetland complex, position in the landscape, and physical characteristics of wetlands and associated surface waters. The results of the evaluation are to be used to select the location of the proposed project having the least impact to wetland functions and values (Env-Wt 311.10). This worksheet can be used in conjunction with the Avoidance and Minimization Written Narrative (NHDES-W-06-089) and the Avoidance and Minimization Checklist (NHDES-W-06-050) to address Env-Wt 313.03 (Avoidance and Minimization). If more than one wetland/ stream resource is identified, multiple worksheets can be attached to the application. All wetland, vernal pools, and stream identification (ID) numbers are to be displayed and located on the wetlands delineation of the subject property.

SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)	
ADJACENT LAND USE: Residential and forestland	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? ☐ Yes ☒ No	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): abuts Shaker Rd	
SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: Jim Fougere CWS #161	
DATE(S) OF SITE VISIT(S): 6/10/2024	DELINEATION PER ENV-WT 406 COMPLETED? ☒ Yes ☐ No
CONFIRM THAT THE EVALUATION IS BASED ON: ☒ Office and ☒ Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in blank if “other”): ☒ USACE Highway Methodology. ☐ Other scientifically supported method (enter name/ title):	

SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
WETLAND ID: 3	LOCATION: (LAT/ LONG) /
WETLAND AREA: 2+ acres including offsite areas	DOMINANT WETLAND SYSTEMS PRESENT: forest w/ shrubs and pockets of standing water
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? 1	COWARDIN CLASS: PFO1E, PSS1E, PuB
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? ☐ Yes ☒ No if not, where does the wetland lie in the drainage basin? mid-	IS THE WETLAND PART OF: ☒ A wildlife corridor or ☐ A habitat island? IS THE WETLAND HUMAN-MADE? ☐ Yes ☒ No
IS THE WETLAND IN A 100-YEAR FLOODPLAIN? ☐ Yes ☒ No	ARE VERNAL POOLS PRESENT? ☒ Yes ☐ No (If yes, complete the Vernal Pool Table)
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? ☒ Yes ☐ No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/ DOWNGRADIENT? ☐ Yes ☒ No
PROPOSED WETLAND IMPACT TYPE: None	PROPOSED WETLAND IMPACT AREA: None

SECTION 4 - WETLANDS FUNCTIONS AND VALUES (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)

The following table can be used to compile data on wetlands functions and values. The reference numbers indicated in the "Functions/ Values" column refer to the following functions and values:

1. Ecological Integrity (from RSA 482-A:2, XI)
2. Educational Potential (from USACE Highway Methodology: Educational/Scientific Value)
3. Fish & Aquatic Life Habitat (from USACE Highway Methodology: Fish & Shellfish Habitat)
4. Flood Storage (from USACE Highway Methodology: Floodflow Alteration)
5. Groundwater Recharge (from USACE Highway Methodology: Groundwater Recharge/Discharge)
6. Noteworthiness (from USACE Highway Methodology: Threatened or Endangered Species Habitat)
7. Nutrient Trapping/Retention & Transformation (from USACE Highway Methodology: Nutrient Removal)
8. Production Export (Nutrient) (from USACE Highway Methodology)
9. Scenic Quality (from USACE Highway Methodology: Visual Quality/Aesthetics)
10. Sediment Trapping (from USACE Highway Methodology: Sediment /Toxicant Retention)
11. Shoreline Anchoring (from USACE Highway Methodology: Sediment/Shoreline Stabilization)
12. Uniqueness/Heritage (from USACE Highway Methodology)
13. Wetland-based Recreation (from USACE Highway Methodology: Recreation)
14. Wetland-dependent Wildlife Habitat (from USACE Highway Methodology: Wildlife Habitat)

First, determine if a wetland is suitable for a particular function and value ("Suitability" column) and indicate the rationale behind your determination ("Rationale" column). Please use the rationale reference numbers listed in Appendix A of USACE *The Highway Methodology Workbook Supplement*. Second, indicate which functions and values are principal ("Principal Function/value?" column). As described in *The Highway Methodology Workbook Supplement*, "functions and values can be principal if they are an important physical component of a wetland ecosystem (function only) and/or are considered of special value to society, from a local, regional, and/or national perspective". "Important Notes" are to include characteristics the evaluator used to determine the principal function and value of the wetland.

FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE (Reference #)	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	☒ Yes ☐ No		☒ Yes ☐ No	Thia wetland is hydrologically connected to Wet 1 with varied wet conditions
2	☐ Yes ☒ No	2,5,9,14	☐ Yes ☒ No	Limited accessibility and opportunity
3	☐ Yes ☒ No	1,2,4,5,8,14	☐ Yes ☒ No	Fisheries unlikely with seasonal hydro. but varied habitat available
4	☒ Yes ☐ No	1,2,3,6,8,9,10,13,17,18	☒ Yes ☐ No	Wetlands w/in area varied with an constricted outlet to Wet 1
5	☒ Yes ☐ No	2,5,7,8,9,12,15	☒ Yes ☐ No	Area contains variety of diverse wetlands plus connection Wet 1. Sandy soils is portions of site
6	☐ Yes ☒ No		☐ Yes ☒ No	Diverse habitat but no known useage
7	☒ Yes ☐ No	1,2,3,5,6,7,8,9,12,13	☐ Yes ☒ No	No known sources but unknown opportunity exists
8	☐ Yes ☒ No	3,7,8,10,13	☐ Yes ☒ No	Area provides diverse wetlands etc but no evidense
9	☐ Yes ☒ No	2,3,4, 5,7,8	☐ Yes ☒ No	Limited accessibility
10	☒ Yes ☐ No	3,4,5,7,9,10,12,13,15,16	☒ Yes ☐ No	Unknown sources upstream but potential exists
11	☒ Yes ☐ No	5,7,14	☐ Yes ☒ No	flow out to Wet 1 with good vegetative structure and adjacent wet.
12	☒ Yes ☐ No	2,5,6,8,9,16,18	☐ Yes ☒ No	Wetland has known VP species and limited disturbance
13	☐ Yes ☒ No	5,6	☐ Yes ☒ No	Limited potential/ Limited accessibility
14	☒ Yes ☐ No	3,4,6,7,9,10,11,14,15,17,18	☒ Yes ☐ No	Varied wetland habitats with confirmed VP habitat

SECTION 5 - VERNAL POOL SUMMARY (Env-Wt 311.10)

Delineations of vernal pools shall be based on the characteristics listed in the definition of "vernal pool" in Env-Wt 104.44. To assist in the delineation, individuals may use either of the following references:

- *Identifying and Documenting Vernal Pools in New Hampshire 3rd Ed.*, 2016, published by the New Hampshire Fish and Game Department; or
- The USACE *Vernal Pool Assessment* draft guidance dated 9-10-2013 and form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

All vernal pool ID numbers are to be displayed and located on the wetland delineation of the subject property.

"Important Notes" are to include documented reproductive and wildlife values, landscape context, and relationship to other vernal pools/wetlands.

Note: For projects seeking federal approval from the USACE, please attach a completed copy of The USACE "Vernal Pool Assessment" form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

VERNAL POOL ID NUMBER	DATE(S) OBSERVED	PRIMARY INDICATORS PRESENT (LIST)	SECONDARY INDICATORS PRESENT (LIST)	LENGTH OF HYDROPERIOD	IMPORTANT NOTES
1	4/15/24	Spotted salamander		permanent	South end of Wet 3 and site
2	5/2/22	Spotted salamanders Wood frogs	caddis fly larvae	permanent	These Identified egg locations included the west side of Wetland 3 as well as northern edge
3					
4					
5					

SECTION 6 - STREAM RESOURCES SUMMARY

DESCRIPTION OF STREAM: Intermittent outlet at Shaker	STREAM TYPE (ROSGEN):
HAVE FISHERIES BEEN DOCUMENTED? ☐ Yes ☐ No	DOES THE STREAM SYSTEM APPEAR STABLE? ☐ Yes ☐ No
OTHER KEY ON-SITE FUNCTIONS OF NOTE:	

The following table can be used to compile data on stream resources. "Important Notes" are to include characteristics the evaluator used to determine principal function and value of each stream. The functions and values reference number are defined in Section 4.

FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	☐ Yes ☐ No		☐ Yes ☐ No	
2	☐ Yes ☐ No		☐ Yes ☐ No	
3	☐ Yes ☐ No		☐ Yes ☐ No	
4	☐ Yes ☐ No		☐ Yes ☐ No	
5	☐ Yes ☐ No		☐ Yes ☐ No	
6	☐ Yes ☐ No		☐ Yes ☐ No	
7	☐ Yes ☐ No		☐ Yes ☐ No	
8	☐ Yes ☐ No		☐ Yes ☐ No	
9	☐ Yes ☐ No		☐ Yes ☐ No	
10	☐ Yes ☐ No		☐ Yes ☐ No	
11	☐ Yes ☐ No		☐ Yes ☐ No	
12	☐ Yes ☐ No		☐ Yes ☐ No	
13	☐ Yes ☐ No		☐ Yes ☐ No	
14	☐ Yes ☐ No		☐ Yes ☐ No	

SECTION 7 - ATTACHMENTS (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)

☐ Wildlife and vegetation diversity/abundance list.

☒ Photograph of wetland.

☐ Wetland delineation plans showing wetlands, vernal pools, and streams in relation to the impact area and surrounding landscape. Wetland IDs, vernal pool IDs, and stream IDs must be indicated on the plans.

☐ For projects in tidal areas only: additional information required by Env-Wt 603.03/603.04. Please refer to the Coastal Area Worksheet (NHDES-W-06-079) for more information.

APPENDIX C

ACOE Functional Assessment

Wetland Function-Value Evaluation Form

Total area of wetland 2 acres+ Human made? No Is wetland part of a wildlife corridor? Yes _____ or a "habitat island"? No

Adjacent land use Forest Land and residential Distance to nearest roadway or other development At northern edge

Dominant wetland systems present PFO1C Contiguous undeveloped buffer zone pres o No

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? Mid-

How many tributaries contribute to the wetland? One Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. 1

Latitude _____ Longitude _____

Prepared by: JRF Date 6/10/2024

Wetland Impact:

Type PFO 1/ CROSSING Area _____

Evaluation based on: Office X Field X

Corps manual wetland delineation completed? Y X N _____

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Y	2,5,7,8,9, 15		Outlet at Shaker Rd culvert appears to connects with Wetland 2 to east
Floodflow Alteration	Y	1,5,6,7,8,9,10,13,14,15,17	Y	This wetland includes low, flat stream and adjacent flood storage capacity
Fish and Shellfish Habitat	N	1,2,8,17		Intermittent flow associated with wetland with limited fisheries habitat.
Sediment/Toxicant Retention	Y	3,4,6,7,8,10,12,14,15,16	Y	No known sources above wetland, does have potential retention
Nutrient Removal	Y	3,5,7,8,9,10,13,14		This stream and wet. have potential to retain nutrients, but unknown sources
Production Export	N	3,7,8,10,13		Narrow forested wetland with stream but limited diversity
Sediment/Shoreline Stabilization	Y	1,2,6,7,12,14	Y	Narrow wetland with limited sediment input or flow. Adjacent woodlands
Wildlife Habitat	Y	6,7,11,14,15,		This narrow wetland may provide habitat, values but may provide corridor value
Recreation	N	6		Accessible from shaker Rd but no opportunity for rec.
Educational/Scientific Value	N			Site has limited access and limited educational value
Uniqueness/Heritage	N	2,5,6,7,16,30,		Narrow wetland with limited overall value to area
Visual Quality/Aesthetics	N	3,4,6		Wetland has limited visual qualities but it is observable from road
ES Endangered Species Habitat	N			Wetland has some corridor value but known species occur outside area
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 0.5 acres Human made? No Is wetland part of a wildlife corridor? N0 or a "habitat island"? No

Adjacent land use Forest land and residential Distance to nearest roadway or other development 300 feet+/-

Dominant wetland systems present PSS1C Contiguous undeveloped buffer zone present NO N

Is the wetland a separate hydraulic system? Yes If not, where does the wetland lie in the drainage basin? NA

How many tributaries contribute to the wetland? Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. 2

Latitude Longitude

Prepared by: JRF Date 6/10/2-24

Wetland Impact:
Type None Area

Evaluation based on: Office X Field X

Corps manual wetland delineation completed? Y X N

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Y	4,5,8,13,15	Y	Isolated wetland. No inlet or outlet noted, water levels ephemeral
Floodflow Alteration	N	1,9		This isolated wetland has limited potential to provide flood storage capacity
Fish and Shellfish Habitat	N	1,		This wetland is an isolated area with no potential fisheries habitat.
Sediment/Toxicant Retention	N	4,7,9,6,7		Limited opportunity for input with this isolated wetland.
Nutrient Removal	N	4,7,9		Limited input and unknown occurences in adjacent areas
Production Export	N			No export from this isolated wetland
Sediment/Shoreline Stabilization	N	6		Isolated wetland with limited duration of ponding and no flow
Wildlife Habitat	Y	1,3,4,7,10,15,		This isolated wetland does not provide VP habitat or ponding
Recreation	N	11,12		seasonal wetland with no opportunity for rec.
Educational/Scientific Value	N	2,4,9,10,14		Site has limited accessibility and limited educational value
Uniqueness/Heritage	N	2,8,13,16,18		Isolated wetland with limited overall value due to limited access
Visual Quality/Aesthetics	N	3,4,5,6,		Overall access limited to area and wetland has limited visual access
ES Endangered Species Habitat	N			Wetland has limited hydrology and value for offsite species
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 2.0+ acres Human made? No Is wetland part of a wildlife corridor? Yes or a "habitat island"? No

Adjacent land use Forest land and residential Distance to nearest roadway or other development 500 feet

Dominant wetland systems present PFO1E, PSS1E,Pub Contiguous undeveloped buffer zone present Yes

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin Upper end

How many tributaries contribute to the wetland? Unknown Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. 3

Latitude Longitude

Prepared by: JRF Date 6/10 /24

Wetland Impact: Area

Type None

Evaluation based on: Office X Field X

Corps manual wetland delineation completed? Y X N

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Y	2,4,5,7,9,12,15	Y	Hydrologically connected to Wet. 1 with series of diverse wet areas
Floodflow Alteration	Y	1,2,3,6,8,9,10,13, 17,18	Y	This diverse wetland community includes variety of wet types and hydrology
Fish and Shellfish Habitat	N	1,2,4,5,8,14		Wetlands within this area included pockets of intermittent ponding- habitat?
Sediment/Toxicant Retention	Y	3,4,5,7,9,10,120,13,15,16	Y	No known sources above wetland but retention time available
Nutrient Removal	Y	1,2,3,5,6,7,8,9,1213		Unknown sources but area does provide ability to attenuate potential sources
Production Export	Y	4,8,10,		Diverse wetlands with offsite flows
Sediment/Shoreline Stabilization	Y	5,7,14		Wetlands and vegetated edge on this site may provide stabilization
Wildlife Habitat	Y	3,4,6,7,9,10,11,14,15,17,18	Y	Wetland has varied pools, shrub areas and wooded wet to provide habitat.
Recreation	N	5,6,		Private property with limited accessibility
Educational/Scientific Value	N	2,5,9,14		Site has limited accessability
Uniqueness/Heritage	N	2,5,6,8,9,16,18		Wetland is known to have vernal pool species and other available habitat
Visual Quality/Aesthetics	N	2,3,4,5,7,8		Diverse wet habitat provides visual qualities
ES Endangered Species Habitat	N			Diverse habitat available but no known usage
Other				

Notes:

* Refer to backup list of numbered considerations.

APPENDIX D

Photo log

Wetland Report
Shaker Road, Concord, New Hampshire

Photo Log

Photo 1. Western edge of Wetland 1 from Shaker Road looking south
Photo taken: July 1, 2024August 23, 2023

Photo 2. Wetland 1 interior just east of Shaker Road, looking south to interior of site
Photo taken: July 1, 2024

Photo Log

Photo 3. Wetland 2 near southern edge looking north
Photo taken: July 1, 2024

Photo 4. Wetland 2 interior
Photo taken: July 1, 2024

Photo Log

Photo 5. Wetland 3, typical pool area with dense sphagnum
Photo taken: July 1, 2024

Photo 6. Wetland 3, illustrating wetland, wooded edge and dense vegetation
Photo taken: July 1, 2024

Vernal Pool Report

Tax Map 411Z, Lot 49
Shaker Road
Concord, NH

Prepared for:
Jones and Beach
85 Portsmouth Avenue
Stratham, NH 03885

Prepared by:
Pond View Wetland Consultants, L.L.C.
237 Beauty Hill Road
Center Barnstead, NH 03225

July 8, 2024

INTRODUCTION

Pond View Wetland Consultants, LLC (PVW) has prepared this document to describe the findings of a vernal pool assessment of wetland communities on the parcel identified as Map 411Z, Lot 49 on Shaker Road in Concord, NH. This assessment was conducted by Jim Fougere of PVW (CWS #161) on April 15, 2024. The site was previously investigated for vernal pool species on May 2, 2022, as part of a separate project. A wetland delineation for this same study area was conducted by PVW on June 10, 2024.

WETLAND DESCRIPTIONS AND ASSESSMENT

The wetlands associated with this assessment occur across the parcel beginning at the western border at Shaker Road and extending to the eastern boundary. All wetlands are described as Palustrine Forested, Broad-leaved deciduous or Scrb/shrub. Wetland 1 adjacent to Shaker Rd appears to be hydrologically connected to Wetland 3 at the east side of the site, although the connection is located off the property. A narrow, intermittent stream is associated with Wetland 1. This stream flows under Shaker Road in a westerly direction. Other wetland features in the study area include a modest isolated wetland near the center of the site (Wetland 2) and Wetland 3 at the east side of the property with a series of interconnected wetlands.

Wetland 1 is a long, narrow forested wetland that occupies the western side of the property with Shaker Road forming the western boundary of the wetland. A small, intermittent stream occurs within the wetland bordered by a forested wetland community and adjacent uplands. This wetland flows from the southeast side of the study area and appears to be connected to Wetland 3 off the property. Based on numerous site visits, this stream is considered to be intermittent in nature and no areas of the wetland appear to be capable of providing ponded water of sufficient nature to provide vernal pool habitat.

Wetland 2 is predominately a scrub-shrub wetland with a forested edge, more or less in the center of the site and extending to the northern boundary. This isolated wetland is notable because the hydrology is extremely variable. The wetland may be 1 foot deep one day and dry the next, a condition most likely due to the sandy soils that occur in the area. Vegetation was dense at the time of the wetland delineation in June 2024, but the wetland was only saturated.

Given the limited hydrology, it is assumed this wetland most likely does not provide breeding habitat for vernal pool species. That fact was confirmed during the thorough search for vernal pool species activity in April 2024.

Wetland 3 includes a series of shrub and forested wetlands with interconnected pools throughout much of the eastern third of the site. This diverse wetland habitat with highbush blueberry scattered throughout as well as red maple, cinnamon fern, and sphagnum provides a variety of wildlife habitat values including vernal pool habitat as identified in 2024 and 2022.

VERNAL POOL ASSESSMENT

The site wetlands were reviewed in order to address their potential to provide vernal pool habitat as described in the NH Wetlands Administrative Rules. NH Wetland Rules (Env. WT. 104.44) defines vernal pool, to mean, a surface water or wetland, including an area intentionally created for purposes of compensatory mitigation, which provides breeding habitat for amphibians and invertebrates that have adapted to the unique environments provided by such pools and that:

(a) Is not the result of on-going anthropogenic activities that are intended to provide compensatory mitigation, including but not limited to:
  (1) Gravel pit operations in a pit that has been mined at least every other year, and
  (2) Logging and agricultural operations conducted in accordance with all applicable New Hampshire statutes and rules; and

(b) Typically has the following characteristics:
  (1) Cycles annually from flooded to dry conditions, although the hydroperiod, size and shape of the pool might vary from year to year.
  (2) Forms in a shallow depression or basin.
  (3) Has not permanently flowing outlet.
  (4) Holds water for at least 2 continuous months following spring ice-out.
  (5) Lacks a viable fish population; and
  (6) Supports one or more primary vernal pool indicators, or three or more secondary indicators.

The assessment of the study area wetlands for vernal pool habitats was based on a site review of wetland characteristics and their potential to provide breeding habitat for specific amphibian species, as well as the physical evidence of breeding activity (egg masses) and other indicator species. If a site is providing vernal pool habitat, it would be expected to exhibit evidence of the species that require this habitat, such as salamanders (Ambystoma spp.), wood frogs (Rana sylvatica) and/or invertebrate species such as fairy shrimp or caddisfly larvae. Some of this evidence is only available during the early spring months, such as egg masses or later in the development stage which includes larval forms of frogs and salamanders. The timing of the site visits was intended to coincide with the typical breeding season for these amphibian species.

This review followed the guidelines described in the document "The "Identification and Documentation of Vernal Pools in New Hampshire," second edition (2004), published by NH Fish and Game Department. Field data was collected on the New Hampshire Vernal Pool Documentation Form, Version March 2015. These forms are included in Appendix D.

A site visit was conducted on April 15th, 2024, specifically for this project. A previous project on this same parcel included an assessment of vernal pool habitat on May 2, 2022.

VERNAL POOL FINDINGS

Wetland 3. This large and diverse wetland had significant evidence of primary indicators utilizing the various pools and pockets of standing water. Egg masses of spotted salamanders (*Ambystoma maculatum*) and wood frogs (*Rana sylvatica*) were observed in several locations across the site, as illustrated on the attached map. No evidence of secondary indicators was observed.

Pools generally contained 6 inches to 16 inches of standing water at the time of the survey. Water in some portions of the site tended to be dark stained which made it difficult to observe deeper portions; other evidence may have been missed due to these conditions.

2024 Season: During the most recent site visit on April 15th, 4 spotted salamander egg masses plus a large cluster of wood frog eggs were noted in a ponded area on the east side of the site. This was a large pool with 6-12 inches of water and pockets of dense vegetation across the site. No evidence of egg masses was noted in the other pools at that time including those areas previously containing egg masses.

2022 Season: During the May 2, 2022, site visit, water levels were lower in some pools exhibiting the sphagnum layers of these wetlands. However, a cluster of 4 spotted salamander eggs were observed in an isolated pool near the northern boundary. In addition, two separate clusters of wood frog eggs were observed in the vicinity of the 2024 salamander eggs. A third area was noted in includes ten clusters of wood frog eggs near the west side of Wetland 3.

These various locations are illustrated on the attached map. A photo log of the most recent findings is also provided in an attachment.

SUMMARY

Wetlands associated with the Shaker Road site include three distinct areas but only the westernmost wetland community had the appropriate habitat to provide vernal pool species breeding habitat. Wetland 3 contains a number of interconnected pools with forested edges and patches of shrub habitat in addition to the dense sphagnum species occurring throughout the area. The pools across the site were noted to be fairly shallow with 6 inches to 16 inches of water.

Confirmed vernal pool habitats were identified on April 15, 2024, and May 2, 2022, with evidence of wood frog and spotted salamander egg masses occurring in three separate locations of Wetland 3. A total of 4 clusters of spotted salamander eggs plus 8a large cluster of wood frog eggs were observed in 2024, while 3 spotted salamander egg masses were observed in 2022. Additional findings in 2022 included two different locations of wood frog egg with 2 clusters on the east side and 10 clusters on the west side. No secondary vernal pool indicator species were noted in this pool.

The attached map identifies these specific locations.

TECHNICAL REFERENCES

Cowardin, L.M., Carter, V., Golet, F.C., and LaRoe, E.T. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Fish and Wildlife Service. Washington, D.C. 1979.

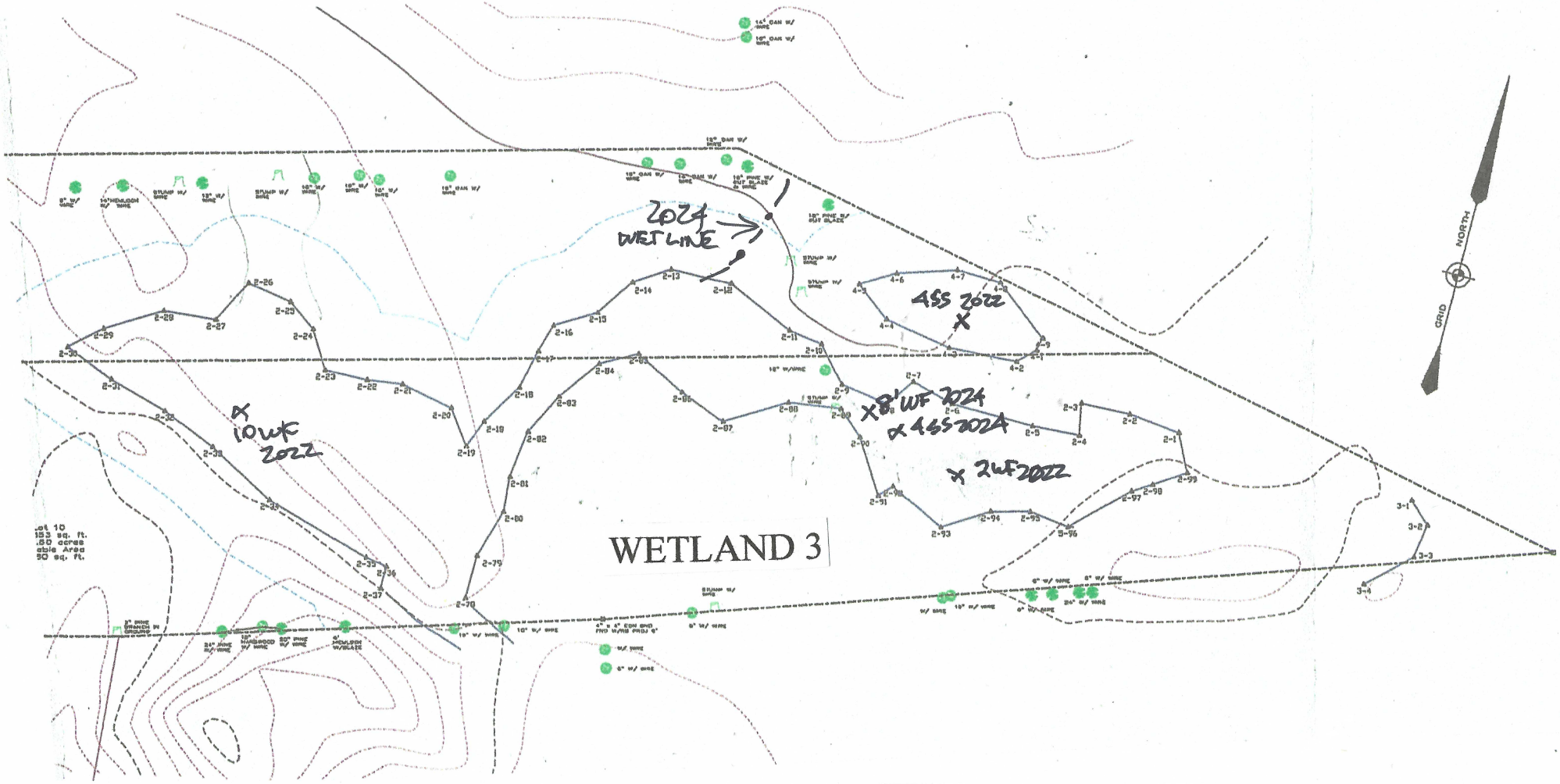
Marchand, Mike, ed. *Identifying and Documenting Vernal Pools in New Hampshire, Third Edition.* New Hampshire Fish and Game Department, Non-Game and Endangered Wildlife Program. 2016.

ATTACHMENT A

MAP

VERNAL POOL FINDINGS

2024 & 2022



WF = Wood Frog

SS = Spotted salamander

Figure based on:

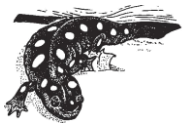
Richard Bartlett Survey Plan

Paul O. Bofinger Family Trust of 2019

April 2021

Attachment B

NH Vernal Pool Documentation Form



New Hampshire Vernal Pool Documentation Form

Purpose: This form is to provide a way to collect appropriate information necessary to document the presence of a vernal pool or potential vernal pool in New Hampshire. It is also appropriate to use this form to document the *absence* of certain physical and, especially, biological characteristics to describe a pool or depression within a wetland that may not meet the definition of a vernal pool.

I. Observer Contact information

Observer name	Jim Fougere, Pond View Wetland Consultants
Observer phone #:	603-520-6120
Observer email	jimfougere@gmail.com
Observer Mailing address:	237 Beauty Hill Rd, Center Barnstead NH 03225

II. Location and Owner Identification

Town: Concord	
Property name (if applicable): Shaker Road	
Location Description/ Property street address: No current street address; located south of Lot 68	
Vernal Pool Coordinates *Coordinates obtained by GPS or other means. Report in degrees minutes seconds or decimal degrees: Latitude 43.2164 Longitude -71.5192. Datum: Use NAD83 or WGS84 for all coordinates*	Latitude: 43 14.8813 N Longitude: 71 31.8368 W
SourGoogle Maps/	Tax map and lot # (if known): Map 411z, Lot49
Is observation on public land? No	Landowner permission obtained? Yes
Landowner name (if known) Aaron Leclerc & Cara Scala	29 Hot Hole Road, Concord NH 03301
Landowner address (if different than property address)	
Landowner phone or email	

Note: Provide a map that shows property and location of vernal pool (tax map/ USGS)

Vernal Pool Site Name: _Wetland 3_____

Project affiliation

- ☐ None
- ☐ Harris Center/AVEO
- ☐ Town _____
- ☒ Consultant
- ☐ Other _____

III. Survey Information

Date of survey:	4/15/2024 & 5/2/2022	**Visit # (for season):**	**1** ___
Survey start time:	9:00 **am**	**Survey end time:**	**11:30 am**
Air temperature (F):	46 dgrees		

Weather/Other Comments: provide any information about precipitation, cloud cover, wind, humidity, ice cover, etc here:
partly cloudy

IV. Vernal Pool Description

Photos: 1-3 photographs of vernal pool taken and provided with datasheet Yes / No

Pool characteristics

Vernal pool type (choose most appropriate description)

- ☐ Upland-isolated pool (not associated with a larger wetland)
- ☒ Wetland complex (pool within or associated with a larger wetland habitat, such as red maple swamp, marsh pond edge.
- ☐ Floodplain pool

Origin of pool (select one)

- ☒ Unknown
- ☐ Natural depression
- ☐ Natural, but altered
- ☐ Small pond / constructed pond
- ☐ Quarry/sand pit excavation
- ☐ Ditch along road or rut from vehicle
- ☐ Created wetland/ pool (such as for wetland mitigation purposes)
- ☐ Other: _This wetland has a number of pools and pockets spread out

_____

Pool size (dimensions): _____feet X _____feet (Area of open water in the pool depression)

If round, measure diameter; if long and narrow, provide length and width dimensions.

(check one): ☐Measured ☐Paced ☐XEstimated ☐ Other: _____

How long does the vernal pool hold water? (Hydroperiod)

- ☐ Seasonal (drying out entirely in most years)
- ☒ Semi-permanent (drying partially in most years)
- ☐ Permanent (Typically maintains water)
- ☐ Unknown

Maximum water depth on survey date

- ☐ < 6 inches (ankle deep)
- ☒ 6 inches – 1 foot (shin deep)
- ☐ 1 - 2 feet (knee deep)
- ☐ 2 - 3 feet (hip deep)
- ☐ 3 - 4 feet (chest deep)
- ☐ > 4 feet

Pool Outlet: Did you observe water flowing out of the pool on this date? **N**

Overstory/Shading of vernal pool depression

(Overstory is trees, shrubs, and associated limbs and leaves that block sunlight from penetrating the pool surface)

- ☒ Mostly shaded by trees (> 50%)
- ☐ Less shaded by trees (< 50%)
- ☐ Shaded only by vegetation **in** the pool (such as shrubs)

Vegetation in Pool (vernal pool depression)
Check (X) ***Vegetation type and proportion of vegetation <u>in the pool</u>*** *(percent coverage) that can provide egg attachment or offer concealment to aquatic or developing larvae.*

Vegetation type	**Percent coverage of pool by vegetation *in the pool***		
	<10%	**10-50%**	**>50%**
Shrubs		X	
Emergent vegetation (Grasses, sedges, rushes, cattails)	X		
Submergent vegetation	X		

Are **dead branches and downed woody material** (branches/twigs) available in pool for egg attachment?
(Select one category) ☐**None** ☐**1 - 10** ☒ **greater than 10**

Pool substrate (select all that apply)
☐ Leaf litter
☐ Sand/gravel
☒ Muck
☐ Bedrock
☐ Other: _____

Disturbance to vernal pool observed (select all that apply)
Observe any disturbance to the pool (direct or indirect by siltation, for example)
☐ Dumping
☐ Ditching/draining
☐ Ruts from wheeled vehicles
☐ Runoff /siltation from human sources
☐ Other: _____
☒ None

Surrounding habitat (within 100 feet of the pool)

Check habitat type and select/circle appropriate percentage

☒ Forest (10-50%,
☐ Open (shrublands, agriculture, grassland, etc.) (< 10%, 10-50%, > 50%)
☒ Wetlands (< 10%, 10-50%, > 50%)
☐ Open water (lakes/ponds, rivers/streams) (< 10%, 10-50%, > 50%)
☐ Residential (lawn, little amount of pavement/structures) (< 10%, 10-50%, > 50%)
☐ Industrial/Urban (mostly pavement and structures)(< 10%, 10-50%, > 50%)
☐ Paved Roads/driveways (< 10%, 10-50%, > 50%)
☐ Unpaved roads/driveways (< 10%, 10-50%, > 50%)

Describe any disturbance observed in the 100 foot area around the pool: _____

Areas to the north of this wetland complex does include old skidder trails, largely outside the footprint of these ponded areas

V. Survey for vernal pool fauna (amphibians and macroinvertebrates)

NOTE: Provide photographs when possible.

Species information - Primary Vernal Pool Indicators

Species observed	Adults			Egg masses (#)		Tadpoles, Salamander Larvae and Transforming Juveniles	
	Seen #	Courtship/ amplexus (Y/N)	Heard Y/N	Counted	Estimated	Tadpole/ Larvae estimated	#Transforming juveniles (#)
Wood frog					8 & 10		
Spotted salamander			NA	4&3			
Marbled salamander			NA				
Blue spotted/ Jefferson salamander			NA				
Mole salamander (unknown species)			NA				
Fairy shrimp		NA	NA	NA	NA	NA	NA

Record **other amphibian and reptile species** observed (such as spring peepers, etc.):

Species observed	Adults			Egg masses (#)		Tadpoles, Salamander Larvae and Transforming Juveniles	
	Seen #	Courtship/ amplexus (Y/N)	Heard Y/N	Counted)	Estimated	Tadpole/ Larvae estimated	#Transforming juveniles (#)

Was entire pool surveyed for egg masses? Yes If Yes, what percent of the pool? _____

(If the entire pool was not surveyed, is any part of the pool on an adjacent property? (N)

Sampling methods used during your survey (check all that apply):

- ☒ Visual search
- ☐ Audible detection (Recorded: : Yes / No)
- ☐ Dip net
- ☐ Trapping
- ☐ None (incidental observation)

Were **spermatophores** observed (see photo right) ? No

Were **fish** observed in the pool? No

Secondary vernal pool indicators - Invertebrates

During or after amphibian breeding season, there are other organisms whose presence or remains (larval cases, exuviae, or shells) indicate the presence of a vernal pool. These organisms are considered secondary vernal pool indicators.

The families or groups listed in the following table are among those **secondary vernal pool indicators** under the New Hampshire wetlands rules (Env-Wt 100). Additional species (family or groups) may qualify as secondary vernal pool indicators, hence blank spaces are provided to enter other species you observe.

Macroinvertebrate Common name of group	Common name of family members	Macroinvertebrate family	Observed?	Photo?
Caddisfly larvae or cases	Unknown type	Unknown type		
	Northern caddisflies	Limnephilidae		
	Giant case makers	Phryganeidae		
	Tube or trumpet caddisflies	Polycentropodidae		
Clam shrimp or shells	Unknown type	Unknown type		
	Clam shrimp	Laevicaudata		
	Clam shrimp	Spinicaudata		
Fingernail clams or shells	Fingernail clams	Sphaeriidae		
Aquatic beetle larvae	Unknown type	Unknown type		
	Diving beetle	Dytiscidae		
	Whirligig beetle	Gyrinidae		
	Crawling water beetle	Haliplidae		
	Water scavenger beetle	Hydrophilidae		
Dragonfly larvae or exuviae	Unknown type	Unknown type		
	Darners	Aeshnidae		
	Skimmers	Libellulidae		
Damselfly larvae or exuviae	Unknown type	Unknown type		
	Narrow-winged damselflies	Coenagrionidae		
	Spread-winged dragonflies	Lestidae		
True fly larvae or pupae	Unknown type	Unknown type		
	Mosquitoes	Culicidae		
	Phantom midges	Chaoboridae		
	Non-biting midges	Chironomidae		
Spire-shaped snails or shells	Unknown type	Unknown type		
	Tadpole snails or pouch snails	Physidae		
	Pond snails or limpets	Lymnaeidae		
Flat-spire snails or shells	Wheel snails, orb snail, or ram's horn snails	Planorbidae		
Other*:				
Other*:				

Completed datasheets can be submitted to NH Wildlife Sightings at: http://nhwildlifesightings.unh.edu/ or mailed to NH Fish & Game Department, Nongame & Endangered Wildlife Program, 11 Hazen Drive, Concord NH 03301.

Attachment C

Photo Log

Vernal Pool Report
Shaker Road, Concord, New Hampshire

Photo Log

Photo 1. Wetland 3 near western boundary of wetland
Photo taken: July 1, 2024

Photo 2. Wetland 1 interior just east of Shaker Road, looking south to interior of site
Photo taken: July 1, 2024

Vernal Pool Report
Shaker Road, Concord, New Hampshire

Photo Log

Photo 2. Spotted salamander egg mass east side of Wetland 3
Photo taken: April 15, 2024

Photo 2. Large cluster of wood frog eggs in Wetland 3
Photo taken: April 15, 2024

Letter of Authorization

I, Aaron Leclerc, 29 hot Hole Road, Concord, NH, 03301, owner of property located in Concord, NH, known as Tax Map 411Z, Lot 49, do hereby authorize Jones & Beach Engineers, Inc., PO Box 219, Stratham, NH, to act on my behalf concerning the previously-mentioned property. The parcel is located on Shaker Road in Concord, NH.

I hereby appoint Jones & Beach Engineers, Inc., as my agent to act on my behalf in the review process, to include any required signatures.

Witness

Aaron Leclerc

5/30/24
Date