



LEBANON CONSERVATION COMMISSION
OCTOBER 12, 2023 - 6:30 PM
COUNCIL CHAMBERS, CITY HALL OR
REMOTE VIA VIRTUAL PLATFORM
LEBANONNH.GOV/LIVE

-
- 1. Call to Order**
 - 2. Approval of Minutes**
 - A. September 13, 2023 - Site Walk
 - B. September 14, 2023 - Public Hearing
 - C. September 14, 2023
 - 3. Open to the Public**
 - 4. Permit Review**
 - A. **Review and Comment to NH DES and Lebanon Zoning Board of Adjustment: City of Lebanon/Department of Public Works** - City right-of-way at the intersection of Lahaye Drive and Mt Support Road: Review and Comment on NHDES Wetland Permit application (major impact) for improvements to the intersection of Mt. Support Road and Lahaye Drive. Proposed work includes the construction of a roundabout, drainage infrastructure improvements, reconstruction/extension of a paved pedestrian/bike path along Mt. Support, and relocation of overhead utilities. The improvements result in approx 16,665 sq ft of wetland impact. (DES No 2023-02602) **CC2023-04**
 - 5. Study Items**
 - A. Boston Lot Management Plan - continued from 6/8/2023 meeting
 - B. Public GIS MapGeo Tool - Web Training
 - 6. Committee Reports**
 - A. Biodiversity Group (Invasives)
 - B. Stewardship
 - Ranger
 - Trail Coordinator
 - Monitors and Stewards
 - C. Wild about Lebanon
 - D. Amphibian Crossings
 - E. LUCT/Current Use
 - F. Other Subcommittees
 - 7. Other Business**
 - A. FYIs
 - B. Follow Up

- C. Workshops and Educational Opportunities
- 8. Future Agenda Items**
- 9. Adjournment**

The order of agenda items is subject to change.

Meetings are open for in-person and remote attendance. Members of the public that wish to attend remotely may do so by going to LebanonNH.gov/Live where you will find instructions on how to enter the meeting. Members of the public will be able to participate and ask questions through the City's virtual platform or by phone. Please note: Should technical difficulties occur during the meeting that disrupts virtual or phone connection(s), the meeting will continue without remote access capabilities.

DRAFT

LEBANON CONSERVATION COMMISSION

SPECIAL MEETING - SITE WALK

Wednesday, September 13, 2023 - 4:00 PM

Hall Road Trail Head – Poverty Lane

Members present:

Bruce James, Erling Heistad, Barbara Hirai, Sarah Riley, and Susan Almy

Others present:

Peg Merrens, Upper Valley Land Trust

Patrick Aidrian, Valley News

The site walk commenced at 3 pm from the Hall Road trailhead

The group walked westerly on the Hall Road, then southwesterly down the powerline, observed the wetland, and then looped back to the Hall Road via an old skid road

The meeting adjourned at 5:30 pm.

Respectfully submitted,

Mark Goodwin

Staff Liaison, Lebanon Conservation Commission

DRAFT

**LEBANON CONSERVATION COMMISSION
PUBLIC HEARING
CITY COUNCIL CHAMBERS, CITY HALL OR
REMOTE VIA VIRTUAL PLATFORM
5:30PM WEDNESDAY SEPTEMBER 14, 2023**

MEMBERS PRESENT: Sarah Riley (Chair), Erling Heistad (City Council Rep.), Donald Lacey, Susan Almy, Ernst Oidtman, Bruce James (Vice Chair), Chris Johnson, Barbara Hirai (Alt.)

MEMBERS ABSENT: Sean Dittrich (Alt.)

STAFF PRESENT: Mark Goodwin (GIS Coordinator), Shaun Mulholland (Lebanon City Manager), Carl Gross (Lebanon Airport Manager)

OTHERS PRESENT: Peg Merrens, Vice President of Conservation, Upper Valley Land Trust
Jeanie McIntyre, President, Upper Valley Land Trust

1. CALL TO ORDER

Chair Riley called the meeting to order at 5:33pm.

2. PUBLIC HEARING ITEMS:

A. Support the Purchase of Conservation Land - Receive public input and take action within the provisions of RSA 36-A:4-a, I(B), authorizing the expenditure of \$500,000 from the Lebanon Open Space Trust (L.O.S.T) Fund, as a contribution towards the Upper Valley Land Trust's purchase and permanent protection of a 180 +/-acre parcel of land with frontage on Poverty Lane, identified as Tax Map 161, Lot 3.

Ms. Merrens gave an overview of the property, which she said is currently owned in trust by the Stockwell family, that would be purchased by the Upper Valley Land Trust. She noted that the UVLT has been in communication with Lebanon Airport Manager Carl Gross as to how best manage the portion that is affected by the proposed Airport safety improvement project.

Ms. Merrens said the property includes wetlands and forest habitats. She said one area is listed as an exceptional wetland corridor for wildlife, tree populations, and rare plants. She said the property is on Poverty Lane at the intersection of Hall Road, which is a Class IV Road that becomes a Class A Trail.

Mr. Goodwin said he would describe the property as special with unique natural qualities.

1 Chair Riley opened the meeting to the public.

2
3 Mr. Tony Palazzo (Ward 3) asked if the City had plans to use the property other than for
4 recreational activities. Mr. Goodwin said the property will be maintained as a natural
5 resource. He also noted that the land will be owned by the UVLT, not the City, as had
6 been incorrectly stated in an Upper Valley News article published recently. Mr. Goodwin
7 said the UV News will be printing a correction to state that the UVLT will own the land.
8

9 City Manager Shaun Mulholland asked the Conservation Commission to include in its
10 motion that the transfer of the funds to the UVLT be contingent on an agreement with the
11 Lebanon Airport that includes the successful execution of an aviation easement. He
12 explained an aviation easement would allow cutting the tops of the trees in the flight
13 path. He said large vehicles/equipment would not be used to cut the trees so the land will
14 not be damaged.
15

16 Lebanon Airport Manager Carl Gross said an aviation easement would involve the air
17 space over the portion of the property that is impacted by the proposed Airport safety
18 improvement project. He said a requirement of the FAA safety improvement project is to
19 mitigate existing hazards and prevent the establishment of future hazards in that air space.
20

21 Chair Riley and Mr. James asked if the FAA was requiring the aviation easement as part
22 of the safety improvement project. Mr. Gross said it was brought to light, during the
23 planning of the safety improvement project, that an aviation easement should be
24 obtained for the affected section.
25

26 Mr. Brian Moses (248 Poverty Lane) said his property abuts the property in question and
27 he said he supports the appropriation of funds from the LOST fund to the UVLT to
28 purchase the property.
29

30 Mr. Stephen Wood (REMOTE) said the property being discussed is very valuable and the
31 issue for the public hearing is whether the Conservation Commission should approve the
32 transfer of funds to the UVLT for the purchase of the land. He said the other issues being
33 discussed should be between the UVLT and the Airport. He said he thinks the
34 Conservation Commission should not make the UVLT agree to the aviation easement as
35 part of the funds transfer.
36

37 Ms. Janet Davis (REMOTE) (218 Poverty Lane) said she is concerned that the aviation
38 easement will allow for the encroachment of the Airport, bigger planes coming in to the
39 Airport, or expansion of the Airport. She said she is concerned the property will be
40 destroyed by sound and air pollution from the Airport and she said she is concerned about
41 the impact the easement will have on this property.
42

1 Lebanon Mayor Tim McNamara (Ward 1) said there already exists a power line easement
2 on the property being discussed. He said the power line equipment will be maintained in
3 whatever manner the power company chooses, so mechanical methods may be used. He
4 said conserving this property does not guarantee that large equipment will not be driven
5 across it.
6

7 Jeanie McIntyre, president of the UVLT, said the UVLT understands the need for
8 discussion between the City's and the UVLT's attorneys about legal protection of the air
9 space affected by the safety improvement project, but she said she is not comfortable
10 with an avigation easement being included in the vote for the funds transfer. She said the
11 UVLT is not fully knowledgeable on what is the best way to harvest timber or what is the
12 best treatments of tall trees. She said she feels it makes sense to assess the resources on
13 the property and develop a treatment that will preserve, to the greatest extent possible, the
14 ecological functions and values of those resources. She said the UVLT will work with the
15 City to keep the air space affected by the Airport safety improvement project safe for the
16 Airport and still preserve the land, trees, and wildlife under the designated air space. She
17 said it would not take long to come to an agreement if both entities' attorneys work
18 together.
19

20 Mr. Heistad said the Commission members need to agree on spending \$500,000 from the
21 LOST fund in support of purchasing this land. He said that is the question that needs to
22 be voted on today.
23

24 ***A MOTION was made by Mr. Oidtmann to authorize the expenditure of \$500,000 from***
25 ***the Lebanon Open Space Trust (L.O.S.T) Fund, as a contribution towards the Upper***
26 ***Valley Land Trust's purchase and permanent protection of a 180 +/-acre parcel of land***
27 ***with frontage on Poverty Lane, identified as Tax Map 161, Lot 3.***
28

29 ***The Motion was seconded by Mr. Heistad.***
30

31 Ms. Almy recused herself from the vote because she is an abutter to the property.
32

33 At 6:19pm, Chair Riley approved the appointment of Ms. Hirai to sit in for Ms. Almy.
34

35 **** The Vote on the MOTION was approved (7-0).***
36

37 **3. ADJOURNMENT**

38 ***The Public Hearing was closed at 6:20pm.***
39

40 Respectfully submitted,
41 Paula Roux
42 Recording Secretary

DRAFT

**LEBANON CONSERVATION COMMISSION
CITY COUNCIL CHAMBERS, CITY HALL OR
REMOTE VIA VIRTUAL PLATFORM
6:30PM WEDNESDAY SEPTEMBER 14, 2023**

MEMBERS PRESENT: Sarah Riley (Chair), Erling Heistad (City Council Rep.), Donald Lacey, Susan Almy, Ernst Oidtmann, Bruce James (Vice Chair), Chris Johnson, Barbara Hirai (Alt.)

MEMBERS ABSENT: Sean Dittrich (Alt.)

STAFF PRESENT: Mark Goodwin (GIS Coordinator), Carl Gross (Lebanon Airport Manager)

OTHERS PRESENT: Stantec Engineering Services:
Gregg Cohen, Sr. Environmental Analyst, Wetland Permitting

1. CALL TO ORDER

Chair Riley called the meeting to order at 6:32pm.

2. APPROVAL OF MINUTES – August 10, 2023

Amendments:

Page 2, Line 5: Change “REIVEW” to “REVIEW”

Page 2 Line 27: Change “in” to “is”

Page 3 Line 5: Add “She said the Poverty Lane area has wooded hills and valleys that distort the noise in ways that current technology cannot easily measure.” after the first sentence.

Page 4, Line 20: Add “stated that” after “Mr. Cohen”

Page 5, Lines 6&7: Remove the second “for safety improvements projects”

Page 6, Line 7: Change “foliage view” to “Foliage View Neighborhood”

Page 7 Line 4: Do not capitalize “rip rap”

Page 7 Line 28: Change “is” to “are”

Page 8, Line 34: Change “Goodman” to “Goodwin”; add “by the UVLT” after “acquisition”

A MOTION was made by Erling Heistad to approve the August 10, 2023 meeting minutes as amended. The Motion was seconded by Ernst Oidtmann.

** The Vote on the MOTION was approved (7-0).*

3. OPEN TO THE PUBLIC

No members of the public were present.

1 **4. PERMIT REVIEW**

2
3 **A. Review and comment to the Zoning Board of Adjustment on a Special Exception**
4 **Application - Review of a proposal by the City of Lebanon and Lebanon Municipal**
5 **Airport for safety improvement projects for the Lebanon Municipal Airport.**
6 **Extension and relocation of Taxiway 'A' and associated relocation of localizer**
7 **antenna, localizer shed & localizer access road, 5 Airpark Rd & 0 Hall Rd (Tax**
8 **Map 131, Lot 1 & Tax Map 159, Lot 7), pursuant to Sections 401.7.D and 410.8.B of**
9 **the Zoning Ordinance. - ZB2023-13-SE**
10

11 Chair Riley explained that the Commission's comments to the ZBA will be different than
12 the comments it made to the DES when recommending the project last month. She said
13 she will probably be at the Zoning Board meeting when this project is discussed so she
14 can answer any questions the ZBA may have.
15

16 Mr. Goodwin said, for a project with large impacts to wetlands, the Commission should
17 give the ZBA its input on what wetlands would be impacted by the project, why the
18 impacts cannot be avoided, and what the plan is to mitigate those impacts. He said the
19 Commission's comments on this project may be very similar to the concerns and
20 comments it made to the DES at the last meeting.
21

22 The group discussed Zoning Ordinance Section 401.1, Parts A, B, and C, which are the
23 purposes of the Wetlands Conservation District and Section 401.7, Parts B and D, which
24 relate to Environmental Impact Assessments and the role of the Conservation
25 Commission in ZBA decisions. Chair Riley said the Zoning Ordinance includes
26 requirements for which, in order to grant special exceptions, the board must the findings
27 stated in Section 401.5.
28

29 Ms. Almy asked what kind of conditions can be put into a decision or approval by the
30 ZBA. Mr. Goodwin said the ZBA can modify projects to lessen the impact to wetlands.
31 He said he did not think this is that kind of situation because the impacts are unavoidable.
32 He said the Commission could remind the ZBA that wetlands are valuable, but, as
33 presented, the impacts resulting from this project cannot be avoided and the applicant will
34 be seeking mitigation.
35

36 Chair Riley asked Mr. Cohen to explain what triggered the need for the special exception.
37 Mr. Goodwin said the special exception must involve a use proposed to occur in the
38 wetland or wetland buffer. Mr. Cohen said the only activity that created a need for special
39 exception is the removal of vegetation that obstructs the air space involved in the Airport
40 safety improvement project. Chair Riley noted that wetland buffers were not included in
41 the comments the Commission made to DES.
42

1 The group discussed whether the concerns that the Commission gave to the DES in last
2 month's motion should be copied and included with the current motion to ZBA. Ms.
3 Almy said she is afraid of providing more information than the ZBA may need in this
4 case. Chair Riley said the ZBA did not see the Commission's comments to the DES, so
5 they probably don't know them exactly.

6
7 Ms. Hirai said she asked at last meeting if potential mitigation funds could be used in
8 Lebanon, so the impact in Lebanon is mitigated in Lebanon and not another region. She
9 said she did not mean at the Airport only; she said she meant anywhere in Lebanon. Mr.
10 Cohen said the mitigation area would have to be within a five-mile perimeter around the
11 Airport.

12
13 Chair Riley suggested the Commission discuss the purposes of the Wetland Conservation
14 District portion (Section 401.1) of the Zoning Ordinance and identify how the special
15 exception for the proposed safety improvements projects may be contrary to those
16 purposes. She said she would like the City to work hard to regain the mitigation funds
17 resulting from the wetland impacts of this project.

18
19 From the Lebanon Zoning Ordinance, Section 401.1:

20 The purposes of the Wetlands Conservation District are to:

- 21 A. Preserve **wetlands**, which provide flood protection, recharge groundwater supply,
augment stream flow during dry periods, provide wildlife habitat, and enhance
water quality; and which are important for such other reasons as those cited in
RSA 482-A:1.
- 22 B. Prevent the development of structures and land uses on **wetlands**, which would
contribute to the pollution of surface or ground water, disrupt **wetland** ecosystems,
and damage property due to flooding.
- C. Prevent unnecessary or excessive expenses to the City of Lebanon for **essential
services** and utilities because of the incompatible use of **wetlands**.
- 21 D. Allow those uses that can be appropriately and safely located in **wetlands**,
following **best management practices** recognized by the State of New
Hampshire.
- E. Protect wetland-dependent wildlife habitat for native flora & fauna.
- 22 F. Enhance protection for the high quality **wetlands** located in the City of Lebanon,
which require naturally vegetated **buffers** for the integrity of their ecosystems.
- G. Preserve and enhance scenic and educational values associated with the
wetlands in the City of Lebanon.
- 23 H. Achieve a higher level of protection in **wetlands** categorized as of high or very high
function and value, by prohibiting inappropriate uses.

1 Chair Riley noted the first purpose of the Wetland Conservation District is to preserve
2 wetlands and this project is contrary to that. She said the second purpose is to prevent the
3 development of structures and land uses on wetlands that contribute to pollution of
4 groundwater. She said the Commission has concerns for the pollution of groundwater for
5 Wetland D, which is located within the project parameters.
6

7 Chair Riley suggested they could hire a hydrogeologist to fully assess the impact to the
8 groundwater for Wetland D. Mr. Johnson said he has spoken to a hydrogeologist at
9 Dartmouth who has worked with towns in the past and may be able to help.
10

11 Chair Riley said she felt many of the comments/concerns that the Commission made to
12 the DES could also apply to what the Commission suggests to the ZBA. She said those
13 comments may be more detailed than the ZBA typically receives, but she said the
14 comments shared with the DES are the concerns of the Commission.
15

16 ***A MOTION was made by Chair Sarah Riley that,***
17

18 ***For the Special Exception Application made by the City of Lebanon and Lebanon***
19 ***Municipal Airport for safety improvement projects for the Lebanon Municipal Airport,***
20 ***which includes extension and relocation of Taxiway 'A' and associated relocation of***
21 ***localizer antenna, localizer shed & localizer access road, 5 Airpark Rd & 0 Hall Rd***
22 ***(Tax Map 131, Lot 1 & Tax Map 159, Lot 7), pursuant to Sections 401.7.D and 410.8.B***
23 ***of the Zoning Ordinance. - ZB2023-13-SE;***
24

25 ***The Conservation Commission notes that the project as described is not consistent with***
26 ***the purpose and intent of Section 401.1, Parts A, B, and C of the Zoning Ordinance,***
27 ***that it is important that adequate conservation measures are taken, and that***
28 ***communication and cooperation is maintained from the City to recover the in-lieu fees***
29 ***by pursuing ARM fund grants; and***
30

31 ***With respect to Section 401.5, Part G of the Zoning Ordinance, the Conservation***
32 ***Commission feels it is very important that this project take into consideration best***
33 ***management practices to avoid and remove invasive plant species and to maintain the***
34 ***ecological integrity of wooded areas when removing obstructions from wetland and***
35 ***high value or very high value wetland buffers.***
36

37 ***As such, the Conservation Commission asks that the following concerns, that were***
38 ***shared with the DES, be considered:***
39

- 40 ***1. The Lebanon Conservation Commission is concerned that Wetland D may be***
41 ***hydrologically connected to the larger Trues Brook watershed and would not want***
42 ***the project to divert waters from or contaminate that watershed. (The City's NRI***
43 ***states "The continued attraction of Trues Brook will rest upon the careful***

1 *monitoring of upstream affects from the roadway and nearby development. In spite*
2 *of some scattered concerns, the water quality still remains very high.")*
3

- 4 2. *The Lebanon Conservation Commission is concerned about the method of*
5 *'obstruction' (meaning trees) removal and would like to see snags left standing for*
6 *wildlife where appropriate (so please consider girdling as a form of snag creation),*
7 *and request that the applicant please notify the Conservation Commission directly*
8 *when marking trees for removal. If forestry does need to happen on the*
9 *conservation easement, we expect that easement restriction 1A will be followed:*
10 *"Activity shall be reviewed by the Lebanon Conservation Commission and done*
11 *with care so as to produce minimal impact on the environment and be done in*
12 *accordance with recognized forestry and conservation practices..."*
13
- 14 3. *Invasive vegetation (e.g., glossy buckthorn, purple loosestrife) can become more*
15 *dominant following vegetation management activities and will require*
16 *management. Loosestrife is already present in Wetland F and likely many others.*
17 *Buckthorn is ready and waiting to take over in obstruction removal in the cut areas.*
18 *What is the invasives management plan?*
19
- 20 4. *We recommend maintaining wildlife friendly habitat where possible on the*
21 *Lebanon Airport, and that the Lebanon Airport or DES work with NH Audubon on*
22 *a Memorandum of Understanding regarding mowing to support rare or threatened*
23 *grassland bird species where safe to do so. If any of the affected area is suitable for*
24 *the Karner Blue Butterfly, is reintroduction of this species and its host lupine an*
25 *option?*
26
- 27 5. *We recommend that DES and the Lebanon Airport work with the NH Natural*
28 *Heritage Bureau on conserving the rare plant species found on site where*
29 *appropriate, with particular attention to impacted wetlands with enriched seepages*
30 *and high plant species diversity.*
31
- 32 6. *The Lebanon Conservation Commission is concerned that noise pollution may*
33 *increase in nearby neighborhoods, including the Foliage View Neighborhood.*
34 *Given the complicated topography from landforms and trees, have the noise-level*
35 *analyses correctly captured how vegetation removal will impact noise levels in and*
36 *around the area?*
37

38 *The Motion was seconded by Bruce James.*
39

40 ** The Vote on the MOTION was approved (7-0).*
41

42 5. STUDY ITEMS 43

1 **A. LOST Fund Update**

2 The Commission reviewed the report from the City's Assessing team (included in the
3 Agenda Packet for this meeting) that outlines the bills sent to Land Use/Current Use
4 owners that are paid to the LOST Fund.

5
6 The group agreed that the report is confusing and seems incomplete. Mr. Goodwin said
7 the Commission needs to know the process by which bills/reports are triggered and needs
8 to have more detailed information in the report itself. Chair Riley said she will contact the
9 Assessing team to learn more about how and when bills and the report are produced.

10
11 **B. Boston Lot Management Plan** – Continued from the 06/08/23

12 Chair Riley said this discussion will be rescheduled to a future meeting. Mr. James
13 confirmed the Lakeside Trail is still closed because of damage from the excessive rain.
14 Ms. Hirai asked that a sign be posted at the bottom of the trail at the kiosk.

15
16 **C. Public GIS MapGeo Tool – Web Training**

17 Chair Riley said this training will be rescheduled to a future meeting.

18
19
20 **6. COMMITTEE REPORTS**

21 **A. Biodiversity Group (Invasives)**

22 No update

23
24 **B. Stewardship**

25 Mr. James said many trails have experienced downed trees because of the rain. He said
26 Ranger John is going out to the trails to remove the trees. Mr. Goodwin thanked Mr.
27 James for his work on the maintenance and upkeep of the trails.

28
29 Mr. Goodwin said an Eagle Scout candidate is working on a historic identification/
30 memorial project at the cellar hole on the Ticknor property. He said the project involves
31 the installation of a mini kiosk and plaque.

32
33 Dr. Oidtmann said the Mascoma River Greenway Cleanup has been cancelled for
34 September 23, 2023 and will be rescheduled for next spring or summer. Mr. Johnson said
35 the Upper Valley Young Professionals members have been told the cleanup is cancelled
36 but they are very interested in participating in similar projects. Chair Riley told him that
37 Kristine Flythe of the Lebanon Recreation Department is looking for volunteers to clean
38 up the area behind the former JC Penny building. Mr. Johnson said he would contact Ms.
39 Flythe. Mr. Lacey said the fisherman's access road has a lot of trash also.

40
41 Mr. Lacey said that he needed to give Lebanon DPW credit for cleaning up Baker's
42 Crossing. He said he had said the Rotary Club had done it, but DPW's hired contractor,
43 who mows the lawn at Baker's Crossing, had also cleaned it up.

1
2 **C. Wild About Lebanon**

3 No update
4

5 **D. Amphibian Crossings**

6 No update
7

8 **E. LUCT/Current Use**

9 No update
10

11 **F. Other Subcommittees**
12

13 **7. OTHER BUSINESS**

14 **A. FYIs**

15 Chair Riley referenced a letter sent from a Lebanon resident to Mr. John Plummer of the
16 NH Society for the Protection of NH Forests. She said the letter was written to contest the
17 fact that the resident is not allowed to put a dock in the water near his house. Chair Riley
18 said she, Ms. Hirai, and Mr. Plummer have talked with the resident about removing the
19 dock, but the resident disagrees and is still using it in the water. Chair Riley said the
20 matter will now be handled by NH DES.
21

22 **B. Follow Ups**
23

24 **C. Workshops and Educational Opportunities**

25 Chair Riley reminded the group that two Blueberry workdays are scheduled at Jackson
26 Property:

- 27 • September 16, 2023 from 9am-12pm
- 28 • September 30, 2023 from 1pm-4pm
29

30 **8. ADJOURNMENT**
31

32 *A MOTION was made by Erling Heistad adjourn the meeting at 8:52pm.*
33

34 *The Motion was seconded by Susan Almy.*
35

36 ** The Vote on the MOTION was approved (7-0).*
37

38 Respectfully submitted,

39 Paula Roux

40 Recording Secretary

**LAHAYE DRIVE AT MT SUPPORT ROAD
INTERSECTION IMPROVEMENTS
LEBANON, NH**

NH WETLANDS PERMIT APPLICATION

Submitted for:
CITY OF LEBANON
NEW HAMPSHIRE

Prepared by:



Concord, NH

September 2023

TABLE OF CONTENTS

NHDES Wetlands Permit Application Form

Supplemental Narrative

Project Description

Project Location

Existing Conditions

Wetland Resources

Drainage and Stormwater Treatment

Wetland Impacts

Project Alternatives and Avoidance & Minimization Measures

Mitigation

Endangered Species

Coordination with Federal Agencies

Coordination with Lebanon Conservation Commission

Construction Sequence / Erosion and Sediment Control

Attachment A: Minor and Major Projects

Avoidance and Minimization Narrative

USGS Location Map

Functional Assessment Worksheets

Pre-Application Meeting Minutes

ARM Fund Calculator

USACE General Permit Requirements

Appendix B Checklist

NH Division of Historical Resources Request for Project Review

USFWS IPaC Results

NLEB Consistency Letter

USFWS Correspondence

Wetland Determination Data Forms

Natural Heritage Bureau Review Report and Correspondence

Photographs

Tax Map

Abutter List & Template Abutter Notification Letter

Certified Mail Receipts

Project Plans



**STANDARD DREDGE AND FILL
WETLANDS PERMIT APPLICATION**
Water Division/Land Resources Management
Wetlands Bureau
[Check the Status of your Application](#)



RSA/Rule: RSA 482-A/Env-Wt 100-900

APPLICANT'S NAME: City of Lebanon

TOWN NAME: Lebanon

Administrative Use Only	Administrative Use Only	Administrative Use Only	File No.:
			Check No.:
			Amount:
			Initials:

A person may request a waiver of the requirements in Rules Env-Wt 100-900 to accommodate situations where strict adherence to the requirements would not be in the best interest of the public or the environment but is still in compliance with RSA 482-A. A person may also request a waiver of the standards for existing dwellings over water pursuant to RSA 482-A:26, III(b). For more information, please consult the [Waiver Request Form](#).

SECTION 1 - REQUIRED PLANNING FOR ALL PROJECTS (Env-Wt 306.05; RSA 482-A:3, I(d)(2))

Please use the [Wetland Permit Planning Tool \(WPPT\)](#), the Natural Heritage Bureau (NHB) [DataCheck Tool](#), the [Aquatic Restoration Mapper](#), or other sources to assist in identifying key features such as: [priority resource areas \(PRAs\)](#), [protected species or habitats](#), coastal areas, designated rivers, or designated prime wetlands.

Has the required planning been completed?	☒ Yes ☐ No
Does the property contain a PRA? If yes, provide the following information:	☒ Yes ☐ No
Does the project qualify for an Impact Classification Adjustment (e.g. NH Fish and Game Department (NHF&G) and NHB agreement for a classification downgrade) or a Project-Type Exception (e.g. Maintenance or Statutory Permit-by-Notification (SPN) project)? See Env-Wt 407.02 and Env-Wt 407.04.	☐ Yes ☒ No
- Protected species or habitat? - If yes, species or habitat name(s): Appalachian barren-strawberry - NHB Project ID #: NHB22-3089	☒ Yes ☐ No
Bog?	☐ Yes ☒ No
Floodplain wetland contiguous to a tier 3 or higher watercourse?	☐ Yes ☒ No
Designated prime wetland or duly-established 100-foot buffer?	☐ Yes ☒ No
Sand dune, tidal wetland, tidal water, or undeveloped tidal buffer zone?	☐ Yes ☒ No
Is the property within a Designated River corridor? If yes, provide the following information:	☐ Yes ☒ No
- Name of Local River Management Advisory Committee (LAC): - A copy of the application was sent to the LAC on Month: Day: Year:	

lrn@des.nh.gov or (603) 271-2147

NHDES Wetlands Bureau, 29 Hazen Drive, PO Box 95, Concord, NH 03302-0095

www.des.nh.gov

For dredging projects, is the subject property contaminated? • If yes, list contaminant:	☐ Yes ☒ No
Is there potential to impact impaired waters, class A waters, or outstanding resource waters?	☐ Yes ☒ No
For stream crossing projects, provide watershed size (see WPPT or Stream Stats): N/A	
SECTION 2 - PROJECT DESCRIPTION (Env-Wt 311.04(i))	
Provide a brief description of the project and the purpose of the project, outlining the scope of work to be performed and whether impacts are temporary or permanent. DO NOT reply "See attached"; please use the space provided below.	
The project involves improvements to the intersection of Mt. Support Road and Lahaye Drive in Lebanon. Proposed work includes the construction of a roundabout, drainage infrastructure improvements, reconstruction/extension of a paved pedestrian/bike path along Mt. Support Road, and relocation of overhead utilities. The intersection currently does not function well during periods of high traffic volume and improvements are needed to improve safety and traffic flow. Approximately 16,665 square feet of wetland impact is anticipated to result from the project. This includes approximately 8,306 square feet of direct permanent impact from fill and grading to construct the roundabout and drainage improvements. Approximately 1,672 square feet of this impact is within excavated treatment swales/roadside swales. The remaining 6,634 square feet of direct permanent impact is within forested/scrub-shrub wetlands. An additional 8,359 square feet of tree and shrub clearing within wetlands is proposed for the relocation of overhead utility lines. This area is proposed to be periodically mowed/maintained, so impacts will occur from the conversion of forested/scrub-shrub wetlands to emergent wetlands.	
SECTION 3 - PROJECT LOCATION	
Separate wetland permit applications must be submitted for each municipality within which wetland impacts occur.	
ADDRESS: Mt. Support Road/Lahaye Drive intersection	
TOWN/CITY: Lebanon	
TAX MAP/BLOCK/LOT/UNIT: See attached list	
US GEOLOGICAL SURVEY (USGS) TOPO MAP WATERBODY NAME: N/A	
(Optional) LATITUDE/LONGITUDE in decimal degrees (to five decimal places):	
	43.67256° North
	72.26439° West

SECTION 4 - APPLICANT (DESIRED PERMIT HOLDER) INFORMATION (Env-Wt 311.04(a))

If the applicant is a trust or a company, then complete with the trust or company information.

NAME: City of Lebanon, Department of Public Works

MAILING ADDRESS: 193 Dartmouth College Highway

TOWN/CITY: Lebanon

STATE: NH

ZIP CODE: 03766

EMAIL ADDRESS: brian.vincent@lebanonnh.gov

FAX:

PHONE: 603-448-3112

ELECTRONIC COMMUNICATION: By initialing here: , I hereby authorize NHDES to communicate all matters relative to this application electronically.

SECTION 5 - AUTHORIZED AGENT INFORMATION (Env-Wt 311.04(c))☐ N/A

LAST NAME, FIRST NAME, M.I.: Riordan, Jennifer, M.

COMPANY NAME: GM2 Associates, Inc.

MAILING ADDRESS: 197 Loudon Rd, Suite 310

TOWN/CITY: Concord

STATE: NH

ZIP CODE: 03301

EMAIL ADDRESS: jriordan@gm2inc.com

FAX:

PHONE: 603-856-7854

ELECTRONIC COMMUNICATION: By initialing here JMR, I hereby authorize NHDES to communicate all matters relative to this application electronically.

SECTION 6 - PROPERTY OWNER INFORMATION (IF DIFFERENT THAN APPLICANT) (Env-Wt 311.04(b))

If the owner is a trust or a company, then complete with the trust or company information.

☒ Same as applicant

NAME:

MAILING ADDRESS:

TOWN/CITY:

STATE:

ZIP CODE:

EMAIL ADDRESS:

FAX:

PHONE:

ELECTRONIC COMMUNICATION: By initialing here , I hereby authorize NHDES to communicate all matters relative to this application electronically.

SECTION 7 - RESOURCE-SPECIFIC CRITERIA ESTABLISHED IN Env-Wt 400, Env-Wt 500, Env-Wt 600, Env-Wt 700, OR Env-Wt 900 HAVE BEEN MET (Env-Wt 313.01(a)(3))

Describe how the resource-specific criteria have been met for each chapter listed above (please attach information about stream crossings, coastal resources, prime wetlands, or non-tidal wetlands and surface waters):

Env-Wt 400: Wetland resources within the project area were delineated in accordance with Env-Wt 400. Additional information is provided in the attached supplemental narrative.

Env-Wt 500: The project meets the criteria for Env-Wt 527 (Public Highways). The project is not located within a 100-year floodplain and involves improvements to an existing intersection with the least amount of environmental impact to wetlands practicable. The project will enhance public safety at the intersection. Wetland impacts have been minimized to the extent possible.

Env-Wt 600: N/A - The project is not within a coastal/tidal area.

Env-Wt 700: N/A - There are no Prime Wetlands within or adjacent to the project area.

Env-Wt 900: N/A - The project does not involve any stream crossings.

SECTION 8 - AVOIDANCE AND MINIMIZATION

Impacts within wetland jurisdiction must be avoided to the maximum extent practicable (Env-Wt 313.03(a)).* Any project with unavoidable jurisdictional impacts must then be minimized as described in the [Wetlands Best Management Practice Techniques For Avoidance and Minimization](#) and the [Wetlands Permitting: Avoidance, Minimization and Mitigation Fact Sheet](#). For minor or major projects, a functional assessment of all wetlands on the project site is required (Env-Wt 311.03(b)(10)).*

Please refer to the application checklist to ensure you have attached all documents related to avoidance and minimization, as well as functional assessment (where applicable). Use the [Avoidance and Minimization Checklist](#), the [Avoidance and Minimization Narrative](#), or your own avoidance and minimization narrative.

**See Env-Wt 311.03(b)(6) and Env-Wt 311.03(b)(10) for shoreline structure exemptions.*

SECTION 9 - MITIGATION REQUIREMENT (Env-Wt 311.02)

If unavoidable jurisdictional impacts require mitigation, a mitigation [pre-application meeting](#) must occur at least 30 days but not more than 90 days prior to submitting this Standard Dredge and Fill Permit Application.

Mitigation Pre-Application Meeting Date: Month: **6** Day: **1** Year: **2023**

(☐ N/A - Mitigation is not required)

SECTION 10 - THE PROJECT MEETS COMPENSATORY MITIGATION REQUIREMENTS (Env-Wt 313.01(a)(1)c)

Confirm that you have submitted a compensatory mitigation proposal that meets the requirements of Env-Wt 800 for all permanent unavoidable impacts that will remain after avoidance and minimization techniques have been exercised to the maximum extent practicable: ☒ I confirm submittal.

(☐ N/A – Compensatory mitigation is not required)

SECTION 11 - IMPACT AREA (Env-Wt 311.04(g))

For each jurisdictional area that will be/has been impacted, provide square feet (SF) and, if applicable, linear feet (LF) of impact, and note whether the impact is after-the-fact (ATF; i.e., work was started or completed without a permit).

For intermittent and ephemeral streams, the linear footage of impact is measured along the thread of the channel. *Please note, installation of a stream crossing in an ephemeral stream may be undertaken without a permit per Rule Env-Wt 309.02(d), however other dredge or fill impacts should be included below.*

For perennial streams/ivers, the linear footage of impact is calculated by summing the lengths of disturbances to the channel and banks.

Permanent impacts are impacts that will remain after the project is complete (e.g., changes in grade or surface materials).

Temporary impacts are impacts not intended to remain (and will be restored to pre-construction conditions) after the project is completed.

JURISDICTIONAL AREA		PERMANENT			TEMPORARY		
		SF	LF	ATF	SF	LF	ATF
Wetlands	Forested Wetland	14,993		☐	0		☐
	Scrub-shrub Wetland			☐			☐
	Emergent Wetland	1,672		☐	0		☐
	Wet Meadow			☐			☐
	Vernal Pool			☐			☐
	Designated Prime Wetland			☐			☐
	Duly-established 100-foot Prime Wetland Buffer			☐			☐
Surface Water	Intermittent / Ephemeral Stream			☐			☐
	Perennial Stream or River			☐			☐
	Lake / Pond			☐			☐
	Docking - Lake / Pond			☐			☐
	Docking - River			☐			☐
Banks	Bank - Intermittent Stream			☐			☐
	Bank - Perennial Stream / River			☐			☐
	Bank / Shoreline - Lake / Pond			☐			☐
Tidal	Tidal Waters			☐			☐
	Tidal Marsh			☐			☐
	Sand Dune			☐			☐
	Undeveloped Tidal Buffer Zone (TBZ)			☐			☐
	Previously-developed TBZ			☐			☐
	Docking - Tidal Water			☐			☐
TOTAL		16,665			0		

SECTION 12 - APPLICATION FEE (RSA 482-A:3, I)

☐ **MINIMUM IMPACT FEE:** Flat fee of \$400.

☐ **NON-ENFORCEMENT RELATED, PUBLICLY-FUNDED AND SUPERVISED RESTORATION PROJECTS, REGARDLESS OF IMPACT CLASSIFICATION:** Flat fee of \$400 (refer to RSA 482-A:3, 1(c) for restrictions).

☒ **MINOR OR MAJOR IMPACT FEE:** Calculate using the table below:

Permanent and temporary (non-docking):	16,665 SF	× \$0.40 =	\$ 6,666
Seasonal docking structure:	SF	× \$2.00 =	\$
Permanent docking structure:	SF	× \$4.00 =	\$
Projects proposing shoreline structures (including docks) add \$400 =			\$
Total =			\$ 6,666

lrn@des.nh.gov or (603) 271-2147

NHDES Wetlands Bureau, 29 Hazen Drive, PO Box 95, Concord, NH 03302-0095

www.des.nh.gov

The application fee for minor or major impact is the above calculated total or \$400, whichever is greater = \$ 6,666		
SECTION 13 - PROJECT CLASSIFICATION (Env-Wt 306.05)		
Indicate the project classification.		
☐ Minimum Impact Project	☐ Minor Project	☒ Major Project
SECTION 14 - REQUIRED CERTIFICATIONS (Env-Wt 311.11)		
Initial each box below to certify:		
Initials: JMR	To the best of the signer's knowledge and belief, all required notifications have been provided.	
Initials: JMR	The information submitted on or with the application is true, complete, and not misleading to the best of the signer's knowledge and belief.	
Initials: JMR	The signer understands that: • The submission of false, incomplete, or misleading information constitutes grounds for NHDES to: 1. Deny the application. 2. Revoke any approval that is granted based on the information. 3. If the signer is a certified wetland scientist, licensed surveyor, or professional engineer licensed to practice in New Hampshire, refer the matter to the joint board of licensure and certification established by RSA 310-A:1. • The signer is subject to the penalties specified in New Hampshire law for falsification in official matters, currently RSA 641. • The signature shall constitute authorization for the municipal conservation commission and the Department to inspect the site of the proposed project, except for minimum impact forestry SPN projects and minimum impact trail projects, where the signature shall authorize only the Department to inspect the site pursuant to RSA 482-A:6, II.	
Initials: JMR	If the applicant is not the owner of the property, each property owner signature shall constitute certification by the signer that he or she is aware of the application being filed and does not object to the filing.	
SECTION 15 - REQUIRED SIGNATURES (Env-Wt 311.04(d); Env-Wt 311.11)		
SIGNATURE (OWNER): 	PRINT NAME LEGIBLY: 	DATE:
SIGNATURE (APPLICANT, IF DIFFERENT FROM OWNER): 	PRINT NAME LEGIBLY: 	DATE:
SIGNATURE (AGENT, IF APPLICABLE): 	PRINT NAME LEGIBLY: Jennifer Riordan	DATE:
SECTION 16 - TOWN / CITY CLERK SIGNATURE (Env-Wt 311.04(f))		
As required by RSA 482-A:3, I(a)(1), I hereby certify that the applicant has filed four application forms, four detailed plans, and four USGS location maps with the town/city indicated below.		
TOWN/CITY CLERK SIGNATURE: 	PRINT NAME LEGIBLY: 	

TOWN/CITY: Lebanon	DATE:
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DIRECTIONS FOR TOWN/CITY CLERK:

Per RSA 482-A:3, I(a)(1)

1. IMMEDIATELY sign the original application form and four copies in the signature space provided above.
2. Return the signed original application form and attachments to the applicant so that the applicant may submit the application form and attachments to NHDES by mail or hand delivery.
3. IMMEDIATELY distribute a copy of the application with one complete set of attachments to each of the following bodies: the municipal Conservation Commission, the local governing body (Board of Selectmen or Town/City Council), and the Planning Board.
4. Retain one copy of the application form and one complete set of attachments and make them reasonably accessible for public review.

DIRECTIONS FOR APPLICANT:

Submit the original permit application form bearing the signature of the Town/City Clerk, additional materials, and the application fee to NHDES by mail or hand delivery at the address at the bottom of this page. Make check or money order payable to "Treasurer – State of NH".

SUPPLEMENTAL NARRATIVE

Project Description

The project involves improvements to the intersection of Mt. Support Road and Lahaye Drive in Lebanon. The intersection currently does not function well during periods of high traffic volume and improvements are needed to improve safety and traffic flow. Lahaye Drive at Mt. Support Road is a major intersection in the City of Lebanon, with Dartmouth-Hitchcock Medical Center located to the northwest and NH Route 120 to the east. The current intersection is signalized and operating at a level of service of E with a projected future level of service of F. Level of service is used to categorize vehicle movement and delays, with A being the best and F being the worst. Level of Service E typically has unstable traffic flow with intolerable delays. Level of Service F has forced flow with traffic jams.

The proposed project involves replacing the traffic signal with a two-lane roundabout to improve traffic conditions for vehicles, bikes, and pedestrians. The project includes reconstruction of approximately 1,500 linear feet of Lahaye Drive and approximately 1,200 linear feet of Mt. Support Road. The project also includes installation of drainage infrastructure and pedestrian and biking accommodations, including an approximate 1,200 foot long, 10-foot wide paved shared use path along Mount Support Road.

The Lahaye Drive Path is a separate project being undertaken by the City of Lebanon in the same area. The project includes the construction of a 10-foot-wide multi-use path along the north side of Lahaye Drive, connecting the Mt. Support Road multi-use path to the sidewalk on NH Route 120. A separate NHDES Wetlands Permit was obtained for this project (NHDES File #2021-02369) for a total of 13,094 square feet of wetland impact.

Project Location

The majority of the project is located within the City right-of-way for Lahaye Drive and Mt. Support Road, although easements on the following properties will be required:

Map-Lot	Owner
10-8-200 24-6 10-22 10-23 10-25	Mary Hitchcock Medical Center One Medical Center Drive Lebanon, NH 03756
24-3 24-4 10-24-100 10-24-200	Dartmouth College Trustees PO Box 5188 Hanover, NH 03755

The City does not have formal written easements at this time but has been involved in discussions with the two property owners, Dartmouth Hospital (Mary Hitchcock Medical Center) and Dartmouth College, that are affected by the project. Both have verbally agreed to work with the City to provide the easements required for the project.

Existing Conditions

The area surrounding the project consists of Mt. Support Road north and south, with Lahaye Drive east and west. The areas nearest to the intersection include undeveloped forested land, wetlands, and a multi-use

path to the southeast of the intersection. Beyond the intersection are areas of developed commercial and residential land interspersed with large forested areas, wetlands, and small undeveloped cleared areas.

There are no streams, prime wetlands, or mapped floodplains within the project area.

The project area is not within a designated river corridor and will not impact any impaired, Class A, or outstanding resource waters.

According to the Wildlife Action Plan, the project area is not mapped as Highest Ranked Habitat in NH or the Region.

Wetland Resources

Wetlands within the project area were field delineated in November and December 2021, and August 2022 by Jennifer Riordan (CWS #269) of GM2 Associates, Inc. in accordance with the US Army Corps of Engineers (USACE) 1987 Methodology and the USACE Northcentral and Northeast Regional Supplement (2012). The following provides a description of the resources present.

Wetland A

Wetland A is a large wetland to the northeast of the Lahaye Drive and Mt. Support Road intersection. It continues along the northern side of Lahaye Drive. Within the project area, it is classified as palustrine scrub-shrub/forested, broad-leaved deciduous, seasonally flooded/saturated (PSS/FO1E). Wetland A also includes an emergent portion beyond the project limits. Vegetation includes red maple (*Acer rubrum*), gray birch (*Betula populifolia*), glossy buckthorn (*Frangula alnus*), speckled alder (*Alnus incana*), cinnamon fern (*Osmunda cinnamomea*), and sensitive fern (*Onoclea sensibilis*). The emergent portion of the wetland is vegetated with broad-leaved cattail (*Typha latifolia*) and purple loosestrife (*Lythrum salicaria*). Appalachian barren-strawberry (*Geum fragarioides*), a state-listed threatened plant species, is located in Wetland A, beyond the project limits.

Functions provided by Wetland A include ecological integrity, flood storage, groundwater recharge, noteworthiness, nutrient trapping, sediment trapping, and wildlife habitat. Of these functions, flood storage, noteworthiness, and nutrient trapping are provided at a principal level.

Wetland B

Wetland B is a large wetland located southeast of the intersection. It continues east along the southern side of Lahaye Drive. The proposed impact area is classified as palustrine, forested, broad-leaved deciduous, seasonally flooded/saturated (PFO1E). Wetland B also includes an emergent portion beyond the project area. The vegetation within Wetland B is similar to Wetland A and includes red maple, glossy buckthorn, speckled alder, cinnamon fern, sensitive fern, broad-leaved cattail, purple loosestrife, and horsetail (*Equisetum* sp.). Appalachian barren-strawberry is scattered throughout the forested portion of Wetland B.

Functions provided by Wetland B include ecological integrity, flood storage, groundwater recharge, noteworthiness, nutrient trapping, sediment trapping, and wildlife habitat. Of these functions, flood storage, noteworthiness, and nutrient trapping are provided at a principal level.

Wetland C

Wetland C is a small forested and emergent wetland located on the east side of Mt. Support Road, south of the intersection. It is located adjacent to the project but will not be impacted by the proposed work.

Wetland D

Wetland D is a forested wetland located on the west side of Mt. Support Road, north of the intersection. It is classified as palustrine forested, broad-leaved deciduous, seasonally flooded/saturated (PFO1E). Dominant vegetation includes Eastern hemlock (*Tsuga canadensis*), red maple, and sensitive fern.

Functions provided by Wetland D include flood storage, groundwater recharge, and wildlife habitat. Of these, flood storage and wildlife habitat are provided at a principal level.

Wetland D1 (roadside swale)

Wetland D1 is an excavated roadside swale located along the west side of Mt. Support Road, north of the intersection. It is separated from Wetland D by a small berm and does not connect to Wetland D or other wetland resource areas. It is classified as palustrine, emergent, persistent, seasonally flooded/saturated, excavated (PEM1Ex). Dominant vegetation includes soft rush (*Juncus effusus*), sensitive fern, and various grasses. The swale contains hydric soils and periodically has standing water.

Wetland D1 provides limited functions since it is a narrow, mowed swale. Since it is located along a roadway, it likely provides some nutrient and sediment retention. It also appears to receive hydrology from groundwater (groundwater recharge function). None of these functions are provided at a principal level.

Wetland E

Wetland E is a forested wetland located in the northwest intersection quadrant. It is classified as palustrine forested, broad-leaved deciduous, seasonally flooded/saturated (PFO1E) and is vegetated with white pine (*Pinus strobus*), red oak (*Quercus rubra*), glossy buckthorn, sensitive fern, and intermediate wood fern (*Dryopteris intermedia*).

Functions provided by Wetland E include flood storage, groundwater recharge, and wildlife habitat. Of these, flood storage and wildlife habitat are provided at a principal level.

Wetland F

Wetland F is a large forested/scrub-shrub wetland to the southwest of the intersection. It is classified as palustrine, scrub-shrub/forested, broad-leaved deciduous, seasonally flooded/saturated (PSS/FO1E). Dominant vegetation includes Eastern hemlock, glossy buckthorn, sensitive fern, intermediate wood fern, and cinnamon fern. American beech (*Fagus grandifolia*) saplings, white pine, and birch (*Betula* sp.) are located at the edge of the wetland.

Functions provided by Wetland F include flood storage, groundwater recharge, noteworthiness, and wildlife habitat. All of these are provided at a principal level except groundwater recharge.

Wetland G

Wetland G is a forested wetland located on the east side of Mt. Support Road, north of the intersection. It is beyond the project limits and will not be impacted.

Wetland H

Wetland H is forested and emergent wetland located on the east side of Mt. Support Road, south of the intersection. An intermittent stream flows east through the wetland, beginning from a culvert under Mt. Support Road. The wetland and stream are beyond the project limits and will not be impacted.

Drainage and Stormwater Treatment

There are no existing catch basins within the roadway. Currently, roadway drainage sheet flows into swales and wetlands. The proposed drainage improvements focus on collecting runoff from the new roadway and conveying it through a closed storm sewer system to an existing outfall in the northeast intersection quadrant. The improvements also include providing outlet protection and water quality.

The proposed closed drainage system and swales were designed in accordance with the latest City of Lebanon Site Plan Review Regulations and NH Department of Transportation Highway and Drainage Manuals. The two proposed water quality treatment measures were designed in accordance with the latest NHDES Stormwater Manual.

Existing Conditions

Along the western leg of Lahaye Drive, roadway drainage sheet flows into upland roadside swales. There are four (4) catch basins north of Lahaye Drive and three (3) catch basins south of Lahaye Drive. The drainage system conveys drainage north of Lahaye Drive through 12-inch or 15-inch pipes south of the roadway, and the system ultimately outlets at a 24-inch RCP culvert end near the inlet of a 30-inch culvert that conveys water from the southwest corner of the intersection to the northeast corner.

Along the western side of the southern leg of Mount Support Road between Stations 100+00 and 103+36, there is a rip rap drainage swale that is over three feet deep. This swale ("Wetland I") is a stormwater treatment swale that was constructed in 2011 as part of the Mt. Support Road Reconstruction project. The drainage swale has two outlets: a 24-inch HDPE pipe at Station 100+57 and an 18-inch HDPE pipe at Station 103+41. A high point between the two outlet pipes divides the drainage areas. North of the 18-inch HDPE pipe, an upland grass swale and 18-inch stone and fabric encased perforated pipe convey stormwater north to an 18-inch RCP culvert end near the inlet of the 30-inch culvert. The flow discharges to Wetland F and then enters the 30-inch culvert under the intersection.

On the northern leg of Mount Support Road, roadway drainage sheet flows off the roadway into Wetlands A and D. Culverts are located under the driveways adjacent to Mt. Support Road.

On the eastern leg of Lahaye Drive, roadway drainage sheet flows off the roadway into Wetlands A and B. There is an existing equalizing 36-inch RCP culvert on Lahaye Drive (400-feet east of the intersection). The culvert is relatively flat and allows flow to pass between the wetlands on either side of the road.

Proposed Conditions

The proposed drainage system was designed in conformance with NHDOT and NHDES requirements to the maximum extent practicable. The following modifications were included to minimize impacts to wetlands and the rare plant species:

- Proposing curb only in the roundabout and approach to allow for sheet flow everywhere else in the project area;
- Proposing "beehive" catch basins southwest of the roundabout rather than extending existing pipes or installing a headwall to connect to the 30-inch culvert; and,
- Proposing deep sump catch basins.

The 30-inch culvert crossing the intersection will remain; however, an additional 30-inch RCP will be added to each end due to the roadway widening required to install a roundabout. Lahaye Drive will also be widened for the roundabout construction. Along the northern side of the western leg, the roadside swale will be shifted north; therefore, two (2) of the existing catch basins will be converted to manholes. The existing

culvert south of Lahaye Drive is proposed be cut at Station 307+58 Offset 59 Rt, and a drainage manhole will be installed as well as a beehive catch basin at the new low point, which will connect to the drainage manhole Station 308+16 Offset 75 feet RT. A catch basin is proposed to replace the 18-inch culvert end at Sta 103+35 and connect to the existing 18-inch HDPE pipe, which will be cut at Station 105+00 Offset 29 Left, and the system will continue to a beehive catch basin and ultimately discharge to the new manhole before the 30-inch culvert. A new end wall will be constructed at the outlet of the 30-inch RCP on the northeast side of the intersection. The proposed outfall will have riprap outlet protection to reduce erosion and trap sediments.

The drainage swale along the west side of the northern leg of Mt. Support Road will be shifted west due to roadway widening. South of the intersection, the drainage swale along the west side of Mt. Support Road will be reconstructed. A swale is also proposed along the south side of Lahaye Drive, west of the intersection.

The drainage system was modeled to have adequate capacity to convey a 25-year storm, based on the City's regulations. The proposed pipes range in size from 12-inches to 30-inches. There are five (5) catch basins proposed on the northern leg of Mount Support Road (north of the 30-inch RCP) and there are six (6) catch basins proposed to the south of the culvert 30-inch RCP culvert.

Pre-impervious cover is approximately 2.41 acres of existing impervious roadway, shared use path, and driveways. Post-impervious cover increases to approximately 3.57 acres with the extension 1,200 LF of the paved shared use path. The increased impervious area is required to mitigate the existing traffic congestion. The following water quality measures are included in the project:

- All proposed catch basins include 4-foot deep sumps
- Two hydrodynamic separators will be located before the closed drainage systems connect to the existing 30-inch RCP culvert. The hydrodynamic separators treat the pervious area within the curbed area of the roundabout and adjacent intersection. One hydrodynamic separator treats the area north of the culvert, and the other treats the area south of the culvert. Both culverts are upstream of the drainage manhole before the proposed outfall. Hydrodynamic separators dissipate velocity and allow oil and debris to rise and sediment to settle out.

Wetland Impacts

Approximately 16,665 square feet (0.38 acres) of wetland impact is anticipated to result from the project. This includes approximately 8,306 square feet of direct permanent impact from fill and grading to construct the roundabout and drainage improvements. Approximately 1,672 square feet of this impact is within excavated treatment swales/roadside ditches. The remaining 6,634 square feet of permanent impact is within forested/scrub-shrub wetlands. An additional 8,359 square feet of tree and shrub clearing within wetlands is proposed for the relocation of overhead utility lines. No grubbing will occur within wetlands for the relocated utility lines. The following table provides a summary of the proposed impacts.

Wetland Impacts

Wetland ID	Classification	Permanent Impact	
		Direct (fill/grading)	Conversion (tree/shrub clearing)
A	PSS1E/PFO1E	2,016 SF	0 SF
B	PFO1E	2,046 SF	4,765 SF
D	PFO1E	0 SF	530 SF
D1 (swale)	PEM1Ex	1,026 SF	0 SF
E	PFO1E	0 SF	81 SF
F	PSS1E/PFO1E	2,572 SF	2,983 SF
I (swale)	PEM1Ex	646 SF	0
Total		8,306 SF / 0.19 ac.	8,359 SF / 0.19 ac.

Project Alternatives and Avoidance & Minimization Measures

Wetland impacts cannot be completely avoided since the project involves improvements to an existing intersection. Wetlands are present at all corners of the intersection and the construction of a roundabout requires roadway widening that extends into the wetland resources.

During the design process, the project team reviewed the future traffic operations of the intersection looking at the approved housing projects and other future growth potential along the corridor. The following three alternatives were considered:

1. No Build
2. Upgrading the existing traffic signal to add more lanes
3. Roundabout (proposed)

While the upgraded traffic signal did provide for improved operations during the peak hours, the roundabout showed a slightly better overall operation in the peak hours and a dramatic improvement during off peak hours. Because the roundabout results in less stopped vehicles it also reduces the volume of idling cars during peak and off peak time periods resulting in a reduction of greenhouse gas emissions. Lastly the roundabout reduces the potential for serious vehicle crashes and potential for fatalities given its lower speed and geometry. The three alternatives were discussed with the planning, engineering, bicycle and pedestrian committee, and the conservation commission and the roundabout was seen as the best alternative. Although the No Build and traffic signal upgrade alternatives would result in less wetland impact, they would not have the desired traffic flow and safety improvements.

Once the roundabout alternative was selected, the roadway and associate roadway approaches were laid out using both NHDOT and AASHTO design guidelines which included 12 foot travel lanes, 5 foot shoulders, and flatter side slopes. Given that there are existing wetlands in all four corners of the intersection, care was taken to place the roundabout in a location that attempted to avoid or minimize impacts. The initial layout resulted in approximately 18,000 square feet of wetland impacts. Through discussions with the City, the lane widths were reduced to 11 feet and the shoulder widths to two feet to help reduce the amount of pavement. In addition, given the lower speeds within a roundabout, the existing superelevations along Lahaye Drive were able to be removed, which reduces the slope impacts along the southern side of the roadway by lowering the outer edge of pavement. Along the southern side of Lahaye Drive to east of the intersection a steeper slope with guardrail is proposed to further reduce slope impacts. In other locations along the roadway, the side slopes were reduced from 4:1 to 3:1 to further decrease slope impacts. These changes to the design resulted in approximately 50% reduction in wetland impacts.

Several modifications were also made to the drainage improvements to minimize wetland impacts. These include installing curb only in the roundabout and approach to allow for sheet flow in the rest of the project

area, proposing beehive catch basins southwest of the roundabout rather than extending existing pipes or installing a headwall, and proposing deep sump catch basins for water quality treatment.

Mitigation

Wetland impacts have been avoided and minimized where possible. Since the project involves more than 5,000 square feet of permanent wetland impact, mitigation is required. A pre-application meeting was held on June 1, 2023 to discuss wetland impacts and required mitigation. Meeting minutes are enclosed. A few mitigation options were reviewed and discussed with the USACE, EPA, and NHDES at this meeting. These options included:

- Wetland creation area in the northeast intersection quadrant. This parcel is owned by Dartmouth-Hitchcock. There is approximately 10,000 square feet of upland that could be used to create wetland.
- Wetland Buffer Preservation. This would involve the creation of a protected wetland buffer around wetlands in the vicinity of the project. The opportunities within the project area are limited so other options nearby would need to be explored.
- ARM fund payment

The USACE had concerns over the wetland creation and buffer options. It was mentioned that the wetland creation area may be too close to the road and future impacts would be difficult to avoid if roadway changes are made. Also, the entire Dartmouth parcel would need to be permanently protected. Preservation of the parcel(s) northeast of the intersection could potentially meet the mitigation requirements, however there would need to be an upland buffer present. USACE also noted that even if a wetland is created it needs to be monitored for five years and if it is unsuccessful an ARM payment would then be required. Given these considerations, an ARM fund payment is the proposed mitigation method.

It is assumed that full mitigation is required for the 6,634 SF of permanent, direct impact to forested and scrub-shrub wetlands. Based on the guidance provided in the USACE New England District Compensatory Mitigation Standard Operating Procedures (Table C2a) it is assumed that mitigation will be required for 30% of the proposed conversion impacts (permanent conversion of forested wetlands to emergent wetlands for overhead utility line relocation), as shown in the table below.

The project involves approximately 1,672 square feet of impact to a roadside swale and a stormwater treatment swale. The roadside swale (Wetland D1) will be reconstructed at the edge of the proposed roadway. The stormwater treatment swale (Wetland I) will only be partially impacted by the project and a roadside swale will be constructed along Mt. Support Road, just north of Wetland I. Since these swales are being reconstructed, it is assumed that mitigation is not required for the 1,672 square feet of swale impact.

Mitigation		
Impact Type	Impact Amount	Mitigation Amount
Direct permanent impact	6,634 SF*	6,634 SF
Conversion impact	8,359 SF	2,508 SF (30%)
Total Required Mitigation		9,142 SF
Total ARM Fund Payment**		\$53,764.71

*An additional 1,672 SF of roadside and treatment swales will be directly impacted. Since these swales are being shifted/reconstructed within the project area, it is assumed that mitigation is not required.

**ARM Fund Wetland Payment Calculation spreadsheet is enclosed.

Endangered Species

State-Listed Species

The NHB report did not include any state-listed animal species within the vicinity of the project.

Appalachian barren-strawberry (*Geum fragarioides*), a state-listed threatened plant species, is present within the project area. Field reviews were conducted in November 2021 and May 2022. The approximate number of plants within each impact area were counted in July 2023. The locations of *G. fragarioides* are shown on the enclosed plans. Since Wetlands A, B, and F have documented occurrences of this species, they meet the definition of Priority Resource Area under Env-Wt 103.65.

G. fragarioides is relatively abundant beyond the project area, particularly to the southeast of the intersection. An estimated 20,000+ plants are located in the wooded area southeast of the intersection (this number was extrapolated from two sample plots located southeast of the project area).

Patches of *G. fragarioides* are located within three separate areas of the project. Anticipated impacts include:

- Southwest intersection quadrant – Plants are scattered throughout the proposed impact area (an estimated 140 plants). Each plant, on average, has 2 to 3 stems. This area will be impacted to construct the roundabout and drainage improvements.
- Southeast intersection quadrant – The proposed slope limits for the roundabout are at the edge of a large patch of scattered *G. fragarioides*. Impacts to approximately 145 plants at the edge of this patch may occur. Many of these plants are slightly larger and have 3 to 4 stems.
- West side of Mt. Support Road, north of Lahaye Drive intersection – *G. fragarioides* is located next to the road, between a swale and stone wall, within and adjacent to the proposed slope limits. The impact area is approximately 1,830 square feet. Plants are scattered throughout this area and an estimated 160 plants would be impacted by the project. Each plant, on average, has 2 to 3 stems.

The impact areas described above include the portion of the project within the proposed ground disturbance limits (areas to be excavated, filled, or paved for the roundabout and drainage work). In addition to this work, several areas adjacent to the project will be cleared of trees and shrubs in order to relocate overhead utility lines. No grubbing is proposed in these areas, but they will be periodically mowed/maintained to prevent the regrowth of trees under the powerlines. Since no grubbing is proposed and the existing groundcover will remain, it is assumed that this work will not result in a loss of habitat for *G. fragarioides*. The species was found under the existing overhead powerlines along the west side of Mt. Support Road, so it appears that these areas provide suitable habitat.

Coordination with NHB occurred to discuss impacts to *G. fragarioides*. NHB provided the following recommendations to minimize impacts to this species:

- Fence off *Geum fragarioides* occurrences to avoid incidental impacts to rare plants that are adjacent to, but outside the impact areas. This should be done prior to initiation of work, and please provide NHB with photos of fenced off areas.
- The use of silt socks rather than silt fences as sediment controls, as silt socks do not require digging to install.
- In areas where the additional clearing is proposed for the relocation of overhead utility lines, please complete this portion of work during frozen ground conditions, if possible, to minimize impacts to the rare species habitat in that area.

- If it is not possible to complete the proposed tree and brush cutting in the *G. fragarioides* habitat during frozen conditions, use of timber matting is encouraged to avoid rutting, and accidental take of rare plant species.

NHB indicated that if the above recommendations can be followed, there is evidence that minimization has occurred to the extent that transplanting is not warranted (refer to enclosed email correspondence). These requirements will be included in the contract plans and adhered to during construction.

Federally-Listed Species

The USFWS IPaC report indicated that northern long-eared bat (NLEB) and monarch butterfly may occur within the project area. A No Effect Determination for NLEB was received using the Rangewide Determination Key in IPaC.

In anticipation of the listing of tricolored bat as a federally endangered species, an acoustic survey was completed in summer 2023 to evaluate the presence or probable absence of the species within the project area. Time of year restrictions on tree clearing are not feasible for the project's schedule and tree clearing will likely occur within the bat's active season. Coordination with the USACE and USFWS occurred and it was determined that a negative survey for tricolored bat along with a No Effect determination for NLEB would complete federal Endangered Species Act consultation for bat species.

The results of the 2023 acoustic survey indicated that tricolored bat was considered unlikely to be present at the survey sites. USFWS requested that the survey also evaluate for the presence/probable absence of NLEB. The survey results indicated that NLEB is unlikely to be present. The final report was submitted to USFWS in August 2023. Comments from USFWS have not been received to date, however it is assumed that no further surveys or consultation related to federally-listed bat species will be required.

Coordination with Federal Agencies

The project was discussed with the USACE and the EPA at a pre-application meeting on June 1, 2023 (minutes enclosed). The USACE provided feedback related to endangered species consultation and wetland mitigation, as discussed above. The EPA agreed with the USACE's comments on the mitigation options. No additional concerns were raised.

Coordination with Lebanon Conservation Commission

The project was presented to the Lebanon Conservation Commission at a meeting on August 10, 2023. The Commission did not express specific concerns related to the project. Previously, the Commission had provided some feedback related to the mapped locations of Appalachian barren-strawberry. Additional site visits were completed by GM2 Associates to update the plant locations and extents.

Construction Sequence / Erosion and Sediment Control

Proposed Construction Sequence:

1. It is anticipated that once the wetland permit is issued, the utility companies will work with the City to relocate the overhead utility poles as shown on the plan. This will require cutting of trees within the wetland to allow space for overhead wires. If tree cutting within the wetland cannot be completed during frozen conditions, the utility contractor will use timber matting to avoid rutting and reduce disturbance of the rare plant.
2. Contractor to mobilize to the site and set up survey control and all perimeter erosion control methods and protections for rare plants.
3. Contractor to clear and grub areas along the roadway using caution not to impact areas outside perimeter controls.

4. Contractor to construct shoulder widening areas along Lahaye Drive and Mt. Support Road and install new swales and drainage structures. At this time, Contractor will install additional erosion and sediment control measures within swales and at new catch basins to limit the transmission of sediment.
5. Contractor will perform a reclaim of the entire roadway within the project limits and then binder pave the area.
6. Contractor will install center island and truck apron within the roundabout and all curbing.
7. Contractor to final pave roadway and install pavement markings.
8. Contractor to finalize all slopes and make complete all landscaping and slope turf establishment. Once all slopes are stabilized and turf is established the Contractor will remove perimeter controls.

Proposed erosion and sediment controls are shown on the enclosed plans. Compost socks will be installed around the perimeter of the work area near wetlands. Catch basin inlet protection measures will also be installed. The project will require an Alteration of Terrain Permit from NHDES as well as coverage under the NPDES Construction General Permit and development of a Stormwater Pollution Prevention Plan (SWPPP). Monitoring of erosion and sediment controls will be completed by the Contractor in accordance with permit requirements.



STANDARD DREDGE AND FILL WETLANDS PERMIT APPLICATION ATTACHMENT A: MINOR AND MAJOR PROJECTS



Water Division/Land Resources Management

Wetlands Bureau

[Check the Status of your Application](#)

RSA/ Rule: RSA 482-A/ Env-Wt 311.10; Env-Wt 313.01(a)(1); Env-Wt 313.03

APPLICANT'S NAME: City of Lebanon

TOWN NAME: Lebanon

Attachment A is required for *all minor and major projects*, and must be completed *in addition* to the [Avoidance and Minimization Narrative](#) or [Checklist](#) that is required by Env-Wt 307.11.

For projects involving construction or modification of non-tidal shoreline structures over areas of surface waters having an absence of wetland vegetation, only Sections I.X through I.XV are required to be completed.

PART I: AVOIDANCE AND MINIMIZATION

In accordance with Env-Wt 313.03(a), the Department shall not approve any alteration of any jurisdictional area unless the applicant demonstrates that the potential impacts to jurisdictional areas have been avoided to the maximum extent practicable and that any unavoidable impacts have been minimized, as described in the [Wetlands Best Management Practice Techniques For Avoidance and Minimization](#).

SECTION I.I - ALTERNATIVES (Env-Wt 313.03(b)(1))

Describe how there is no practicable alternative that would have a less adverse impact on the area and environments under the Department's jurisdiction.

WETLANDS IMPACTS CANNOT BE AVOIDED SINCE THE PROJECT INVOLVES IMPROVEMENTS TO AN EXISTING INTERSECTION. WETLANDS ARE PRESENT AT ALL CORNERS OF THE INTERSECTION AND CONSTRUCTION OF A ROUNDABOUT REQUIRES ROADWAY WIDENING THAT EXTENDS INTO THE WETLAND RESOURCES.

OTHER PROJECT ALTERNATIVES THAT WERE CONSIDERED INCLUDE A NO BUILD ALTERNATIVE AND UPGRADING THE EXISTING TRAFFIC SIGNAL TO ADD MORE LANES. ALTHOUGH THESE ALTERNATIVES WOULD RESULT IN LESS WETLAND IMPACT, THEY WOULD NOT HAVE THE DESIRED TRAFFIC FLOW AND SAFETY IMPROVEMENTS.

IMPACTS TO WETLANDS FROM THE CONSTRUCTION OF A ROUNDABOUT WERE MINIMIZED BY REDUCING LANE AND SHOULDER WIDTHS, REMOVING THE EXISTING ROADWAY SUPERELEVATION ON LAHAYE DRIVE, AND ADDING GUARDRAIL TO ALLOW FOR STEEPER SLOPES. THESE CHANGES RESULTED IN AN APPROXIMATE 50% REDUCTION IN WETLAND IMPACTS. SEVERAL MODIFICATIONS WERE ALSO MADE TO THE DRAINAGE IMPROVEMENTS TO MINIMIZE WETLAND IMPACTS. THESE INCLUDE INSTALLING CURB ONLY IN THE ROUNDABOUT AND APPROACH TO ALLOW FOR SHEET FLOW IN THE REST OF THE PROJECT AREA, PROPOSING BEEHIVE CATCH BASINS SOUTHWEST OF THE ROUNDABOUT RATHER THAN EXTENDING EXISTING PIPES OR INSTALLING A HEADWALL, AND PROPOSING DEEP SUMP CATCH BASINS FOR WATER QUALITY TREATMENT.

ADDITION INFORMATION ON PROJECT ALTERNATIVES IS INCLUDED IN THE PROJECT NARRATIVE.

lrn@des.nh.gov or (603) 271-2147

NHDES Wetlands Bureau, 29 Hazen Drive, PO Box 95, Concord, NH 03302-0095

www.des.nh.gov

SECTION I.II - MARSHES (Env-Wt 313.03(b)(2))

Describe how the project avoids and minimizes impacts to tidal marshes and non-tidal marshes where documented to provide sources of nutrients for finfish, crustacean, shellfish, and wildlife of significant value.

N/A - The project does not include impacts to marshes.

SECTION I.III - HYDROLOGIC CONNECTION (Env-Wt 313.03(b)(3))

Describe how the project maintains hydrologic connections between adjacent wetland or stream systems.

The project is not expected to disrupt existing hydrologic connections between adjacent wetland systems. Existing drainage and culverts within the project area will be maintained. Roadside swales within the project area will be reconstructed. The existing 30-inch culvert that crosses diagonally through the intersection and connects Wetland F to Wetland A will remain in place and be extended on each end.

No streams are present within the project area.

SECTION I.IV - JURISDICTIONAL IMPACTS (Env-Wt 313.03(b)(4))

Describe how the project avoids and minimizes impacts to wetlands and other areas of jurisdiction under RSA 482-A, especially those in which there are exemplary natural communities, vernal pools, protected species and habitat, documented fisheries, and habitat and reproduction areas for species of concern, or any combination thereof.

There are no exemplary natural communities, vernal pools, documented fisheries, or habitat and reproduction areas for species of concern within the project area.

A NH Natural Heritage Bureau (NHB) Report indicated that Appalachian barren-strawberry (*Geum fragarioides*), a state-listed threatened plant species, occurs within the project area. Field reviews were conducted in November 2021, May 2022, and July 2023. The plants are located in several areas within the project limits and an estimated 400-500 plants will be impacted by the project. NHB provided several recommendations to minimize impacts to this species (refer to enclosed supplemental narrative and NHB correspondence).

The NHB report did not include any state-listed animal species.

The USFWS IPaC report indicated that northern long-eared bat (NLEB) and monarch butterfly may occur within the project area. A No Effect Determination for NLEB was received using the Rangewide Determination Key in IPaC. Since the tri-colored bat (TCB) is anticipated to become federally listed as endangered in 2023 and the project involves tree clearing, an acoustic survey was completed in summer 2023. The results indicated that TCB and NLEB were considered unlikely to be present at the survey sites.

The proposed impacts are limited to the areas immediately adjacent to Mt. Support Road and Lahaye Drive and the intersection. Erosion and sedimentation controls and other Best Management Practices (BMPs) will be in place to limit impacts to the wetlands surrounding the project area during construction.

SECTION I.V - PUBLIC COMMERCE, NAVIGATION, OR RECREATION (Env-Wt 313.03(b)(5))

Describe how the project avoids and minimizes impacts that eliminate, depreciate or obstruct public commerce, navigation, or recreation.

No impacts to navigation are anticipated since there are no navigable waters within the project area.

The wetlands within the project area are not used for recreation so no impacts are anticipated.

Temporary traffic disruptions are anticipated during construction, however no long term impacts will occur. The project will improve traffic flow and safety at the intersection. It will also improve pedestrian access by extending a paved multi-use path along Mt. Support Road.

SECTION I.VI - FLOODPLAIN WETLANDS (Env-Wt 313.03(b)(6))

Describe how the project avoids and minimizes impacts to floodplain wetlands that provide flood storage.

There are no mapped FEMA floodplains within the project area, but all of the wetlands were determined to provide flood storage since they receive and retain runoff from the roadways and surrounding uplands.

Impacts to these wetlands have been avoided and minimized where possible. Most of the impacts are located along the edges of wetlands, adjacent to the existing roadway and will affect only a small percentage of the overall wetland area and flood storage potential.

SECTION I.VII - RIVERINE FORESTED WETLAND SYSTEMS AND SCRUB-SHRUB – MARSH COMPLEXES (Env-Wt 313.03(b)(7))

Describe how the project avoids and minimizes impacts to natural riverine forested wetland systems and scrub-shrub – marsh complexes of high ecological integrity.

N/A - The project does not include impacts to natural riverine forested wetland systems or scrub-shrub - marsh complexes.

SECTION I.VIII - DRINKING WATER SUPPLY AND GROUNDWATER AQUIFER LEVELS (Env-Wt 313.03(b)(8))

Describe how the project avoids and minimizes impacts to wetlands that would be detrimental to adjacent drinking water supply and groundwater aquifer levels.

The wetlands within the project area appear to receive hydrology from both roadway runoff and groundwater. Impacts to groundwater resources are not anticipated since the proposed wetland impacts will occur at the edges of these wetland systems, near the roadway, and the interior portions of the wetlands will remain undisturbed. The amount of proposed fill within these wetlands is small compared to the overall wetland system and no loss of groundwater recharge is anticipated.

SECTION I.IX - STREAM CHANNELS (Env-Wt 313.03(b)(9))

Describe how the project avoids and minimizes adverse impacts to stream channels and the ability of such channels to handle runoff of waters.

N/A - The project does not involve impacts to stream channels.

SECTION I.X - SHORELINE STRUCTURES - CONSTRUCTION SURFACE AREA (Env-Wt 313.03(c)(1))

Describe how the project has been designed to use the minimum construction surface area over surface waters necessary to meet the stated purpose of the structures.

N/A - The project does not involve the construction of shoreline structures.

SECTION I.XI - SHORELINE STRUCTURES - LEAST INTRUSIVE UPON PUBLIC TRUST (Env-Wt 313.03(c)(2))

Describe how the type of construction proposed is the least intrusive upon the public trust that will ensure safe docking on the frontage.

N/A - The project does not involve the construction of shoreline structures.

SECTION I.XII - SHORELINE STRUCTURES – ABUTTING PROPERTIES (Env-Wt 313.03(c)(3))

Describe how the structures have been designed to avoid and minimize impacts on ability of abutting owners to use and enjoy their properties.

N/A - The project does not involve the construction of shoreline structures.

SECTION I.XIII - SHORELINE STRUCTURES – COMMERCE AND RECREATION (Env-Wt 313.03(c)(4))

Describe how the structures have been designed to avoid and minimize impacts to the public's right to navigation, passage, and use of the resource for commerce and recreation.

N/A - The project does not involve the construction of shoreline structures.

SECTION I.XIV - SHORELINE STRUCTURES – WATER QUALITY, AQUATIC VEGETATION, WILDLIFE AND FINFISH HABITAT (Env-Wt 313.03(c)(5))

Describe how the structures have been designed, located, and configured to avoid impacts to water quality, aquatic vegetation, and wildlife and finfish habitat.

N/A - The project does not involve the construction of shoreline structures.

SECTION I.XV - SHORELINE STRUCTURES – VEGETATION REMOVAL, ACCESS POINTS, AND SHORELINE STABILITY (Env-Wt 313.03(c)(6))

Describe how the structures have been designed to avoid and minimize the removal of vegetation, the number of access points through wetlands or over the bank, and activities that may have an adverse effect on shoreline stability.

N/A - The project does not involve the construction of shoreline structures.

PART II: FUNCTIONAL ASSESSMENT**REQUIREMENTS**

Ensure that project meets the requirements of Env-Wt 311.10 regarding functional assessment (Env-Wt 311.04(j); Env-Wt 311.10).

FUNCTIONAL ASSESSMENT METHOD USED:

US Army Corps of Engineers Highway Methodology Workbook Supplement.

NAME OF CERTIFIED WETLAND SCIENTIST (FOR NON-TIDAL PROJECTS) OR QUALIFIED COASTAL PROFESSIONAL (FOR TIDAL PROJECTS) WHO COMPLETED THE ASSESSMENT: JENNIFER RIORDAN (CWS #269)

DATE OF ASSESSMENT: 9/11/2023

Check this box to confirm that the application includes a NARRATIVE ON FUNCTIONAL ASSESSMENT:



For minor or major projects requiring a standard permit without mitigation, the applicant shall submit a wetland evaluation report that includes completed checklists and information demonstrating the RELATIVE FUNCTIONS AND VALUES OF EACH WETLAND EVALUATED. Check this box to confirm that the application includes this information, if applicable:



Note: The Wetlands Functional Assessment worksheet can be used to compile the information needed to meet functional assessment requirements.



**AVOIDANCE AND MINIMIZATION
WRITTEN NARRATIVE**
Water Division/Land Resources Management
Wetlands Bureau
[Check the Status of your Application](#)



RSA/ Rule: RSA 482-A/ Env-Wt 311.04(j); Env-Wt 311.07; Env-Wt 313.01(a)(1)b; Env-Wt 313.01(c)

APPLICANT'S NAME: City of Lebanon

TOWN NAME: Lebanon

An applicant for a standard permit shall submit with the permit application a written narrative that explains how all impacts to functions and values of all jurisdictional areas have been avoided and minimized to the maximum extent practicable. This attachment can be used to guide the narrative (attach additional pages if needed). Alternatively, the applicant may attach a completed [Avoidance and Minimization Checklist \(NHDES-W-06-050\)](#) to the permit application.

SECTION 1 - WATER ACCESS STRUCTURES (Env-Wt 311.07(b)(1))

Is the primary purpose of the proposed project to construct a water access structure?

No - The project involves improvements to an intersection and does not propose to construct a water access feature.

SECTION 2 - BUILDABLE LOT (Env-Wt 311.07(b)(1))

Does the proposed project require access through wetlands to reach a buildable lot or portion thereof?

No

SECTION 3 - AVAILABLE PROPERTY (Env-Wt 311.07(b)(2))*

For any project that proposes permanent impacts of more than one acre, or that proposes permanent impacts to a PRA, or both, are any other properties reasonably available to the applicant, whether already owned or controlled by the applicant or not, that could be used to achieve the project's purpose without altering the functions and values of any jurisdictional area, in particular wetlands, streams, and PRAs?

**Except as provided in any project-specific criteria and except for NH Department of Transportation projects that qualify for a categorical exclusion under the National Environmental Policy Act.*

The project involves less than one acre of permanent wetland impact but permanent impacts to PRA wetlands are proposed. Within the project area, Wetlands B and F are considered PRA wetlands due to the presence of a state-listed plant species. Wetland A also contains this plant species beyond the project limits.

There are no other properties available to the City that could be used to achieve the project's purpose since the project involves improvements to an existing intersection. Relocating the roadway/intersection would likely result in greater impacts to wetland resources and the surrounding environment. Impacts have been minimized where possible and are located at the edges of wetlands. The interior, higher-functioning portions of Wetlands A, B, and F will remain undisturbed. Impacts to the listed plant species will be minimized by following NHB's recommendations during construction (refer to enclosed supplemental narrative and NHB correspondence).

SECTION 4 - ALTERNATIVES (Env-Wt 311.07(b)(3))

Could alternative designs or techniques, such as different layouts, different construction sequencing, or alternative technologies be used to avoid impacts to jurisdictional areas or their functions and values as described in the [Wetlands Best Management Practice Techniques For Avoidance and Minimization](#)?

Wetland impacts cannot be completely avoided since the project involves improvements to an existing intersection. Wetlands are present at all corners of the intersection and construction of a roundabout requires roadway widening that extends into the wetland resources.

Other project alternatives that were considered include a No Build alternative and upgrading the existing traffic signal to add more lanes. Although these alternatives would result in less wetland impact, they would not have the desired traffic flow and safety improvements.

Wetland impacts were minimized by reducing lane and shoulder widths, removing the existing roadway superelevation on Lahaye Drive, and adding guardrail to allow for steeper slopes. These changes resulted in an approximate 50% reduction in wetland impacts.

Impacts to the state-listed plant species will be minimized by following NHB's recommendations during construction. Erosion and sediment controls will be used to minimize water quality impacts to adjacent wetlands.

Additional information on avoidance and minimization measures is provided in the supplemental narrative.

SECTION 5 - CONFORMANCE WITH Env-Wt 311.10(c) (Env-Wt 311.07(b)(4))**

How does the project conform to Env-Wt 311.10(c)?

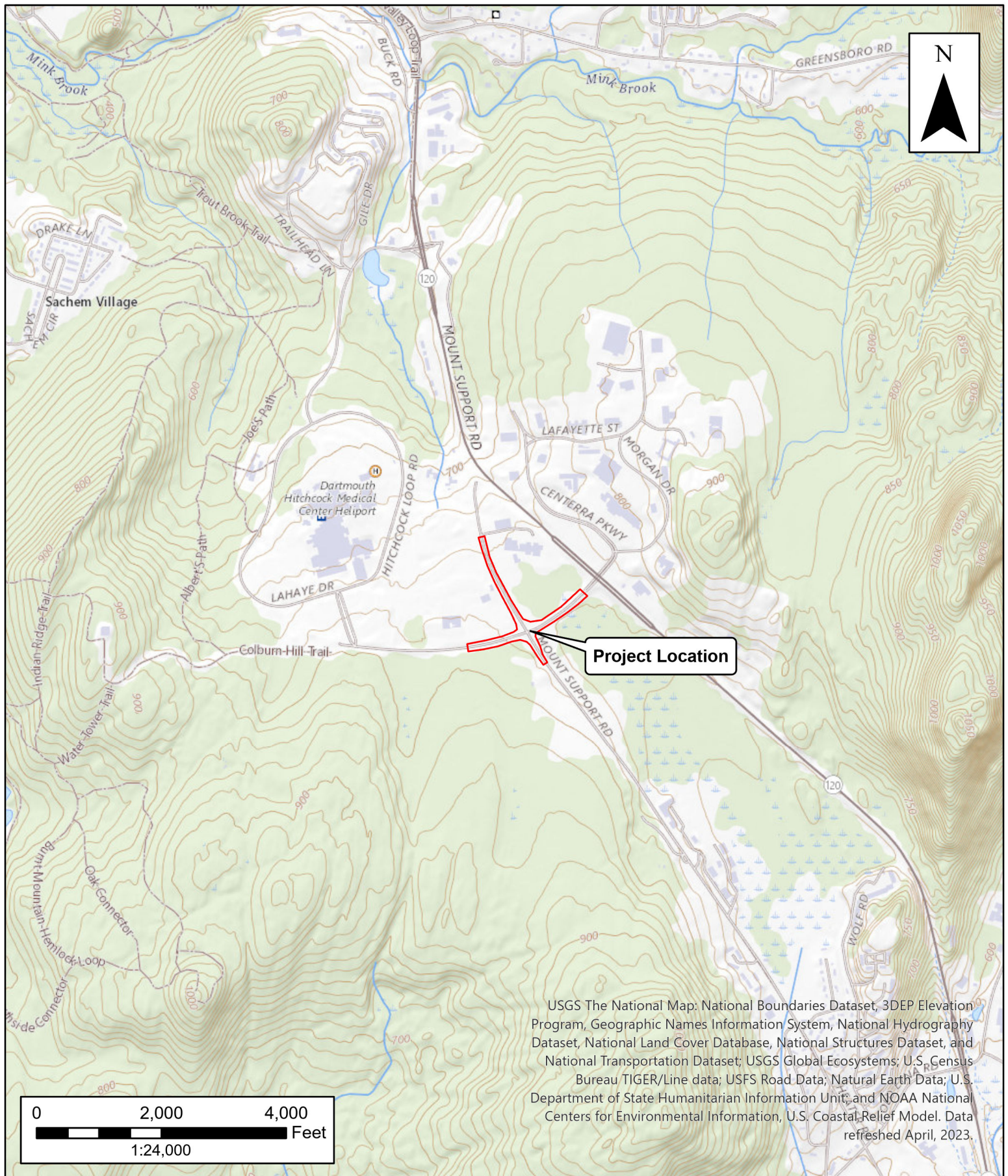
***Except for projects solely limited to construction or modification of non-tidal shoreline structures only need to complete relevant sections of Attachment A.*

Functional assessments were completed for the wetlands that will be impacted by the project (functional assessment forms are enclosed).

The project will not result in any substantial impacts to wetland functions since the majority of the impacts are located along the edges of the wetlands, adjacent to the existing roadway, and only a small percentage of the overall wetland will be lost. One roadside swale and one stormwater treatment swale will be impacted by the project, however these swales will be reconstructed.

The wetlands within the project area provide flood storage, groundwater recharge, noteworthiness, nutrient trapping/retention, sediment trapping, and wildlife habitat functions. The proposed impacts are generally located at the edges of the wetlands and the interior, higher quality portions will remain undisturbed. Since the higher functioning portions of the wetlands are generally located beyond the project limits, no substantial loss of wetland functions is anticipated.

The project will result in impacts to a state-listed plant species within Wetlands B and F. NHB provided recommendations to minimize impacts to this species. These recommendations will be adhered to during construction. The rare plants that will be impacted by the project represent only a small portion of the overall population near the project site, so the impacts are not expected to have an adverse impact on this species. Wetlands B and F will continue to provide noteworthiness as a principal function.



USGS Location Map

Lahaye Drive at Mt. Support Road
Intersection Improvements
Lebanon, NH



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.: City of Lebanon

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: Undeveloped forest, roadway, hospital

CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? ☐ Yes ☒ No

DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): Less than 20 feet

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: Jennifer Riordan (CWS #269)

DATE(S) OF SITE VISIT(S): 11/24/21

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):

irm@des.nh.gov or (603) 271-2147

NHDES Wetlands Bureau, 29 Hazen Drive, PO Box 95, Concord, NH 03302-0095

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SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
WETLAND ID: Wetland A and Wetland B	LOCATION: (LAT/ LONG) 43.67/72.26
WETLAND AREA: Unknown	DOMINANT WETLAND SYSTEMS PRESENT: palustrine
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? Unknown	COWARDIN CLASS: PFO1E, PEM1E, PSS1E
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? ☐ Yes ☒ No if not, where does the wetland lie in the drainage basin? Upper	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:	PROPOSED WETLAND IMPACT AREA:
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 <i>The Highway Methodology Workbook Supplement</i>. Second, indicate which functions and values are principal ("Principal Function/value?" column). As described in <i>The Highway Methodology Workbook Supplement</i>, "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.	

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FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE (Reference #)	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	☒ Yes ☐ No		☐ Yes ☒ No	Provides some functions but not unique to the area and surrounded by roadways
2	☐ Yes ☒ No	None	☐ Yes ☒ No	Wetlands are surrounded by heavily traveled roads. No safe access
3	☐ Yes ☒ No	1	☐ Yes ☒ No	No stream channel
4	☒ Yes ☐ No	1, 2, 5, 6, 7, 8, 9, 18	☒ Yes ☐ No	Hydric soils and large emergent portion have the potential to store floodwater
5	☒ Yes ☐ No	2, 4	☐ Yes ☒ No	Wetlands are fed by runoff and groundwater
6	☒ Yes ☐ No	1	☒ Yes ☐ No	A state-listed threatened plant species occurs within both wetlands
7	☒ Yes ☐ No	1, 3, 4, 5, 8, 9, 11	☒ Yes ☐ No	Potential to retain nutrients in the emergent portions
8	☐ Yes ☒ No	2, 7	☐ Yes ☒ No	Few indicators of production export
9	☐ Yes ☒ No	None	☐ Yes ☒ No	Not visually or aesthetically significant. No safe access
10	☒ Yes ☐ No	3, 5, 8	☐ Yes ☒ No	Sediment retention potential in ponded emergent areas
11	☐ Yes ☒ No	None	☐ Yes ☒ No	Not associated with a watercourse
12	☐ Yes ☒ No	4, 5, 6, 17	☐ Yes ☒ No	Not unique to the area
13	☐ Yes ☒ No	None	☐ Yes ☒ No	No recreational opportunities
14	☒ Yes ☐ No	9, 11, 13, 15	☐ Yes ☒ No	Wetlands are fragmented by development

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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.

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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.: City of Lebanon

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: Undeveloped forest, roadway, hospital

CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? ☐ Yes ☒ No

DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): ~20 feet

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: Jennifer Riordan (CWS #269)

DATE(S) OF SITE VISIT(S): 11/24/21

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):

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SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
WETLAND ID: Wetlands C, D, E, and F	LOCATION: (LAT/ LONG) 43.67/72.26
WETLAND AREA: Unknown	DOMINANT WETLAND SYSTEMS PRESENT: palustrine
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? Unknown	COWARDIN CLASS: PFO1E, PSS1E
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? ☐ Yes ☒ No if not, where does the wetland lie in the drainage basin? Upper	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:	PROPOSED WETLAND IMPACT AREA:
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 <i>The Highway Methodology Workbook Supplement</i>. Second, indicate which functions and values are principal ("Principal Function/value?" column). As described in <i>The Highway Methodology Workbook Supplement</i>, "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.	

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FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE (Reference #)	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	☐ Yes ☒ No		☐ Yes ☒ No	Not unique to the area and doesn't provide many functions
2	☐ Yes ☒ No	None	☐ Yes ☒ No	No safe access to wetlands. They are not educationally significant
3	☐ Yes ☒ No	None	☐ Yes ☒ No	Not associated with a watercourse
4	☒ Yes ☐ No	5, 6, 7, 8, 9, 18	☒ Yes ☐ No	Potential for floodwater storage
5	☒ Yes ☐ No	4, 15	☐ Yes ☒ No	Wetlands are fed by groundwater and roadway runoff
6	☒ Yes ☐ No	1 (F)	☒ Yes ☐ No	A state-listed threatened plant species occurs within Wetland F
7	☐ Yes ☒ No	4, 11	☐ Yes ☒ No	Potential for nutrient removal does not appear to be significant
8	☐ Yes ☒ No	None	☐ Yes ☒ No	No evidence of substantial production export within project area
9	☐ Yes ☒ No	None	☐ Yes ☒ No	Not visually or aesthetically significant
10	☐ Yes ☒ No	None	☐ Yes ☒ No	Wetlands are not associated with a watercourse
11	☐ Yes ☒ No	None	☐ Yes ☒ No	Not associated with a watercourse
12	☐ Yes ☒ No	None	☐ Yes ☒ No	Wetlands are not unique to the area and don't provide many functions
13	☐ Yes ☒ No	None	☐ Yes ☒ No	No recreational opportunities
14	☒ Yes ☐ No	3, 4 (F), 5 (F), 7, 8	☒ Yes ☐ No	Wetland F has a large undeveloped forested area to the south

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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.

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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.: City of Lebanon

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: Undeveloped forest, roadway, hospital

CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? ☐ Yes ☒ No

DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): ~10 feet

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: Jennifer Riordan (CWS #269)

DATE(S) OF SITE VISIT(S): 11/24/21

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):

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SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
WETLAND ID: Wetlands D1 and I (swales)	LOCATION: (LAT/ LONG) 43.67/72.26
WETLAND AREA: <0.1 acres	DOMINANT WETLAND SYSTEMS PRESENT: palustrine
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? None	COWARDIN CLASS: PEM1Ex
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? ☐ Yes ☒ No if not, where does the wetland lie in the drainage basin? Upper	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:	PROPOSED WETLAND IMPACT AREA:
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 <i>The Highway Methodology Workbook Supplement</i>. Second, indicate which functions and values are principal ("Principal Function/value?" column). As described in <i>The Highway Methodology Workbook Supplement</i>, "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.	

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Wetlands D1 and I (swales)

FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE (Reference #)	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	☐ Yes ☒ No		☐ Yes ☐ No	Wetlands are constructed swales
2	☐ Yes ☒ No		☐ Yes ☐ No	Wetlands are located next to a busy road
3	☐ Yes ☒ No		☐ Yes ☐ No	Not associated with a watercourse
4	☐ Yes ☒ No		☐ Yes ☐ No	Wetlands are narrow swales and do not provide much flood storage potential
5	☒ Yes ☐ No	6	☐ Yes ☒ No	Wetlands are constructed swales but appear to receive some hydrology from groundwater
6	☐ Yes ☒ No		☐ Yes ☐ No	A state-listed threatened plant species occurs next to Wetland D1 but not within it
7	☒ Yes ☐ No	9 (I)	☐ Yes ☒ No	Wetland I is a constructed treatment swale.
8	☐ Yes ☒ No		☐ Yes ☐ No	No evidence of substantial production export within project area
9	☐ Yes ☒ No		☐ Yes ☐ No	Not visually or aesthetically significant
10	☒ Yes ☐ No	1,2	☐ Yes ☒ No	Wetland I is a constructed treatment swale
11	☐ Yes ☒ No		☐ Yes ☐ No	Not associated with a watercourse
12	☐ Yes ☒ No		☐ Yes ☐ No	Wetlands are constructed roadside swales
13	☐ Yes ☒ No		☐ Yes ☐ No	No recreational opportunities
14	☐ Yes ☒ No	7	☐ Yes ☐ No	Wetlands are narrow swales, adjacent to roadway

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Wetlands D1 and I (swales)**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.

irm@des.nh.gov or (603) 271-2147

NHDES Wetlands Bureau, 29 Hazen Drive, PO Box 95, Concord, NH 03302-0095

www.des.nh.gov

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.

Lahaye Drive at Mt. Support Road Intersection Improvements, Lebanon

NHDES Pre-Application Meeting

October 12, 2022, 2:00 PM – 3:00 PM

Held virtually via Microsoft Teams

Attendees:

Lori Sommer, Stephanie Tetreault, Emmaunel Uwizeye (NHDES Wetlands Bureau)

Ridge Mauck (NHDES Alteration of Terrain Bureau)

Jessica Bouchard, Maddie Severance, Ashley Litwinenko (NH Natural Heritage Bureau)

Brian Vincent (City of Lebanon)

Jeffrey Santacruce, Connor Golden (Weston & Sampson)

Jenn Riordan (GM2 Associates)

Minutes

Project Introduction

The project is being undertaken by the City of Lebanon to improve the intersection of Lahaye Drive and Mt. Support Road. The intersection has high traffic volumes during certain periods of the day and improvements are needed to improve safety and traffic flow. Jeff Santacruce gave an overview of the proposed improvements. Several options were considered, including signal improvements, the addition of lanes, and the construction of a roundabout. It was determined through coordination with the City and other stakeholders that a roundabout is the preferred option. The current design includes a 2-lane roundabout. The project also includes drainage improvements and the extension of a multi-use path along the east side of Mt. Support Road north of the intersection.

A separate project to extend the multi-use path along the northern side of Lahaye Drive is currently being undertaken by the City. A NHDES Wetlands application has already been submitted and is under review.

There are several design constraints that had to be considered. These included the extensive wetlands adjacent to the roadways, the presence of a rare plant species, and the multi-use path project (impacts to the proposed path need to be avoided).

Efforts to minimize impacts included removing the existing roadway superelevation on Lahaye Drive east of the intersection. This would lower the proposed edge of pavement by over 1.5 feet and reduce slope impacts. Guardrail is also proposed in this area so a 2:1 slope can be utilized to touch down to the existing ground earlier than what would be allowable without guardrail. All other proposed slopes are 3:1, which was chosen to limit the width of impacts. Roadway shoulders were also narrowed.

The preliminary design proposes to outlet stormwater drainage directly to the wetlands. There is limited space for stormwater treatment measures and construction of these features would result in further wetland impacts. Two beehive catch basins are proposed in the southwest corner of the roundabout rather than a headwall to limit the temporary and permanent impacts to Wetland F and the rare plant in the area. Installing a headwall in this area would require a significant amount of excavation and re-grading in the area, as the existing pipe invert is well below the proposed grade.

Environmental Resources and Impacts

Jenn Riordan gave an overview of the wetland resources. The preliminary design would result in approximately 7,400 SF of permanent wetland impact. Temporary wetland impacts have not yet been determined. There are no streams, prime wetlands, or floodplains within the project limits. A state-listed

plant species, Appalachian barren-strawberry (*Geum fragarioides*) was found within the project area. Plant patches were mapped during field reviews in fall 2021 and spring 2022.

Drainage/Treatment Swales

Two non-jurisdictional swales are located in the project area. Both will be impacted by the project but they were not included in the wetland impact amount since they are assumed to not be regulated resources. One swale, located north of the intersection, is a constructed roadside drainage swale and does not connect to the forested wetland located in the wooded area west of the road.

The second swale is located south of the intersection and is a constructed treatment swale. The 2011 final design plans from the Mt. Support Road Reconstruction Project show this swale as a proposed treatment swale.

Stephanie Tetreault asked how the non-jurisdictional determination was made. Jenn responded that the swale north of the intersection is a roadside drainage swale and does not connect to the larger, forested wetland further west. The swale south of the intersection was constructed for stormwater treatment. Both swales are maintained by the City. Stephanie stated that data forms would be needed to document that the swales don't have the 3 wetland delineation parameters in order to be considered non-jurisdictional. Later in the meeting, Lori Sommer mentioned that if the swales are being reconstructed, then they wouldn't need to be mitigated. Stephanie said that the impacts should be accounted for in the application.

Alteration of Terrain/Stormwater Treatment

Ridge asked if the intent of the beehive grates is to pick up area drainage. Jeff confirmed and mentioned that these catch basins are located outside of the curb area.

Stephanie asked if the roundabout island could be used for stormwater treatment. Jeff said that this would require fencing around the treatment BMP. Structures in the roundabout should be avoided. Maintenance of treatment BMPs in the roundabout would also be an issue.

Ridge asked about the drainage area that is not receiving treatment and raised the issue of transitioning from sheet flow to concentrated flow. He suggested looking at a mechanical means of treatment (tree box filters, hydrodynamic separators). Stephanie seconded this statement, particularly if other alternatives would avoid/minimize wetland impacts. Brian stated that the City is open to other options. Maintenance would be their only concern.

Appalachian Barren-Strawberry

Jessica Bouchard said the NHB would require the rare plant patches to be marked with fencing or flagging prior to construction to avoid impacts. The slope limits in the southeast intersection quadrant are very close to a large patch of barren-strawberry plants. The project as currently proposed impacts small plant patches in two other locations (southwest intersection quadrant and north of the intersection on the west side of Mt. Support Road).

Jessica recommended pulling back the fill slopes where possible to avoid and minimize impacts to the plants. NHB will need to see the number of plants being impacted (or the square footage of impact) to determine whether transplanting is worthwhile. Avoidance of impacts is preferred, and transplanting is a last resort. If the plants are relocated, they should be transplanted nearby.

Mitigation

Lori Sommer mentioned that the US Army Corps of Engineers (USACE) now requires mitigation if the wetland impacts are greater than 5,000 SF. She recommended contacting the USACE once impacts have been further defined to see if they will require mitigation for the project. NHDES mitigation requirements will be based on USACE requirements, as well as whether wetland and rare plant impacts have been avoided and minimized. Jeff mentioned that impacts have already been significantly reduced. The original layout for the project would have resulted in approximately 18,000 SF of wetland impact and steps have been taken to reduce these impacts in the current design.

**Lahaye Drive at Mt. Support Road Intersection Improvements
Lebanon, NH**

**Meeting Minutes
NHDES Wetlands Bureau Pre-Application Meeting
6/1/2023, 10:30 AM – 11:30 AM
Held virtually via Microsoft Teams**

Attendees:

- Stefanie Tetreault – NHDES
- Emmanuel Uwizeye – NHDES
- Jean Brochi – EPA
- Lindsey Lefebvre - USACE
- Ashley Litwinenko – NHB
- Brian Vincent – City of Lebanon
- Jeffrey Santacruce, Connor Golden - Weston & Sampson
- Jenn Riordan, Ethan Maskiell – GM2 Associates, Inc

Minutes:

Jeffrey Santacruce opened with an overview of the project and its location. The project involves improvements to the intersection of Lahaye Drive and Mt Support Road in Lebanon. The preliminary design includes the construction of a “hybrid” roundabout, drainage infrastructure improvements and reconstruction/extension of a 10-foot-wide paved pedestrian/bike path along Mt. Support Road. The existing signalized intersection currently does not function well during periods of high traffic volume and improvements are needed to improve safety and traffic flow.

Jeffrey explained that the city has seen an influx of development in the area and the current intersection is not sufficient for increased traffic. He then gave a brief overview of the wetland and rare plant impacts, which are unavoidable due to road widening for roundabout approaches, extension of the shared-use path, and drainage improvements. Weston & Sampson has worked with the City to narrow the project to reduce impacts.

Proposed drainage improvements include curbing on the edges of the road beyond the roundabout islands, hydrodynamic separators, and potential grass swales. There is limited space for stormwater treatment due to the extensive wetlands.

Jenn Riordan then began with an overview of the wetland and overall environmental impacts. She stated that an Alteration of Terrain permit is required and gave an overview of wetland resources within and near the project area. These include forested and scrub-shrub wetlands in all four quadrants surrounding the intersection. There is a roadside ditch north of the intersection and a treatment swale south of the intersection, along Mt. Support Road. Both swales have all three wetland indicators present. The swale south of the intersection is a stormwater treatment swale that was built when Mt. Support Road was reconstructed.

A state-listed threatened plant species occurs in the project area (Appalachian barren-strawberry). Field surveys were completed by GM2 and plant locations are shown on the project plans.

No streams, prime wetlands, or mapped floodplains are located within the project area.

Total proposed wetland impacts are approximately 9,000 SF. Approximately 7,212 SF if treatment swale and roadside ditch are not included in wetland impacts. Jenn noted that the original proposed wetland

impacts were approximately 18,000 SF and have since been reduced. There are three areas of anticipated impacts to the rare plant; northwest, southwest, and southeast of the intersection.

Mitigation options were discussed. One option is a potential wetland creation area located northeast of the intersection. There's an estimated 10,000 square feet of upland between the proposed roadway and the wetland that could be used for wetland mitigation. Jeff added that the land is not currently owned by the City, so discussions with Dartmouth-Hitchcock Medical Center, the land owner, would need to occur for this option. A second option is wetland buffer preservation. The third option is an ARM fund payment which would be approximately \$48,000 for 9,000 SF of impact.

The NHDHR Request for Project Review concluded that there would be no historic properties affected.

The project has been discussed with the Lebanon Conservation Commission. They requested a larger survey for the rare plant, which was completed by GM2.

Jenn then opened it up for discussion on the project asking specifically for input on:

- Bat Survey - A no effect determination for NLEB was provided using the USFWS IPaC Rangewide Determination Key. An acoustic survey for tri-colored bat (TCB) is being considered. Time of year restrictions on tree clearing could be problematic for the construction schedule.
- Whether mitigation is required for the swale impacts.
- Mitigation options & amount necessary.
- Whether an updated rare plant survey required and if NHB needs the number of plants vs. the area being impacted.

Lindsey Lefebvre – Responded to the bat acoustic survey question saying that once a no-effect determination is reached, no time of year restriction is necessary. She did not have any guidance for the TCB survey for now, but did note that USACE would not go back on what was already permitted if TCB listing occurs after the permit was issued and work began. However, if there is an amendment to the permit a new consultation process would begin. She said a TCB acoustic survey would be good to do, but possibly not required. She suggested discussing further with USFWS about a survey plan. Jenn added that USACE authorization is unlikely before TCB listing.

Lindsey then responded to the mitigation requirement questions. She has concerns over the potential wetland creation area and option of wetland buffer preservation. She believes it may be too close to the road and future impacts would be difficult to avoid if roadway changes are made. Also, the entire Dartmouth parcel would need to be permanently protected. Preservation of the parcel(s) northeast of the intersection could potentially meet the mitigation requirements, however there needs to be an upland buffer present. She also noted that even if a wetland is created it needs to be monitored for five years and if it is unsuccessful an ARM payment would then be required. ARM payments would be initial first choice for mitigation.

Jean Brochi – Agreed with Lindsey and added that property owner concerns/approvals would need to be addressed.

Brian Vincent – Explained the process of potential easements for nearby properties/acquisitions. He also suggested a conversation with Dartmouth about potential mitigation options.

Jeffrey then asked if mitigation is required for the swale impacts. Also noted that the swales will be recreated. **Stefanie Tetreault** asked if the swales were connected to any wetlands and Jenn answered that the roadside ditch to the northwest is not connected, but the treatment swale to the southwest is connected by a culvert to a wetland on the east side of Mt. Support Road.

Stefanie and Lindsey both agreed that they would need more time to look at the swales to determine the mitigation necessary. Stefanie said she would respond with a better answer for swale mitigation once she reviews further. She noted that the swales should be included in the impact tally due to the three wetland indicators being present, however alternatives could limit the mitigation necessary.

Jeff then went over the culvert and drainage plan for drainage in the southwest quadrant, which includes two proposed beehive catch basins instead of a standard culvert with a headwall. Installing a headwall in this area would result in additional wetland impacts from excavation and grading since the existing pipe invert is below the proposed grade. The beehive catch basins will help retain water in Wetland F. Stephanie asked if this would be considered a stormwater treatment area, which wouldn't be allowed within an existing wetland. Jenn stated that she considered this to be more of a drainage structure rather than a traditional stormwater treatment measure.

Stefanie asked about stormwater runoff near Wetland F and if there would be an overall improvement of Wetland F water quality. Jeff said stormwater would be collected in the drainage area and Jenn added that the beehive catch basins will help retain sheet flow and keep runoff from entering Wetland F.

Emmanuel Uwizeye – Asked if the shared-use path project from 2021 is connected to this project or if they are standalone projects. Jeffrey explained that they are separate projects, but coordination will be necessary for future progress on both projects.

Ashley Litwinenko – Suggested a count of plants to be impacted shown on the plans would be helpful for NHB. Also, a count of plants that will not be impacted to determine necessary mitigation. Polygon areas could be used to determine approximate total amount.

2023 VALUES

TOWN	Land Value	NHDES AQUATIC RESOURCE MITIGATION FUND WETLAND PAYMENT CALCULATION ***INSERT AMOUNTS IN YELLOW CELLS***			
Acworth	\$2,095	INSERT SQ FT OF IMPACT	1 Convert square feet of impact to acres:		
Albany	\$1,303		Square feet of impact = 9142.00		
Alexandria	\$3,962		43560.00		
Allenstown	\$13,080		Acres of impact = 0.2099		
Alstead	\$4,102				
Alton	\$37,380				
Amherst	\$39,639				
Andover	\$6,603				
Antrim	\$5,885	2 Determine acreage of wetland construction:			
Ashland	\$20,978		Forested wetlands:	0.3148	
Atkinson	\$67,802		Tidal wetlands:	0.6296	
Auburn	\$30,681		All other areas:	0.3148	
Barnstead	\$13,032				
Barrington	\$16,260				
Bartlett	\$9,729	3 Wetland construction cost:			
Bath	\$2,650		Forested wetlands:	\$34,124.09	
Bean's Grant	\$619		Tidal Wetlands:	\$68,248.18	
Bean's Purchase	\$619		All other areas:	\$34,124.09	
Bedford	\$67,802				
Belmont	\$17,724				
Bennington	\$6,052	4 Land acquisition cost (See land value table):			
Benton	\$619	INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT. (Insert the amount do not copy and paste.)	Town land value:	33925	
Berlin	\$2,225		Forested wetlands:	\$10,679.83	
Bethlehem	\$1,509		Tidal wetlands:	\$21,359.67	
Boscawen	\$9,837		All other areas:	\$10,679.83	
Bow	\$28,228				
Bradford	\$6,391	5 Construction + land costs:			
Brentwood	\$27,495		Forested wetland:	\$44,803.92	
Bridgewater	\$22,302		Tidal wetlands:	\$89,607.84	
Bristol	\$23,501		All other areas:	\$44,803.92	
Brookfield	\$3,842				
Brookline	\$28,753	6 NHDES Administrative cost:			
Cambridge	\$619		Forested wetlands:	\$8,960.78	
Campton	\$7,546		Tidal wetlands:	\$17,921.57	
Canaan	\$7,392		All other areas:	\$8,960.78	
Candia	\$15,186				
Canterbury	\$6,356				
Carroll	\$4,182	*****	TOTAL ARM PAYMENT*****		
Center Harbor	\$54,231		Forested wetlands:	\$53,764.71	
Chandler's Purchase	\$619		Tidal wetlands:	\$107,529.41	
Charlestown	\$4,017		All other areas:	\$53,764.71	





**US Army Corps
of Engineers®**
New England District

Appendix B
New Hampshire General Permits
Required Information and USACE Section 404 Checklist

USACE Section 404 Checklist

1. Attach any explanations to this checklist. Lack of information could delay a USACE permit determination.
2. All references to “work” include all work associated with the project construction and operation. Work includes filling, clearing, flooding, draining, excavation, dozing, stumping, etc.
3. See GC 3 for information on single and complete projects.
4. Contact USACE at (978) 318-8832 with any questions.
5. The information requested below is generally required in the NHDES Wetland Application. See page 61 for NHDES references and Admin Rules as they relate to the information below.

1. Impaired Waters	Yes	No
1.1 Will any work occur within 1 mile upstream in the watershed of an impaired water? See the following to determine if there is an impaired water in the vicinity of your work area. * https://nhdes-surface-water-quality-assessment-site-nhdes.hub.arcgis.com/ https://www.des.nh.gov/water/rivers-and-lakes/water-quality-assessment https://www4.des.state.nh.us/onestopdatamapper/onestopmapper.aspx	X*	
2. Wetlands	Yes	No
2.1 Are there are streams, brooks, rivers, ponds, or lakes within 200 feet of any proposed work?	X	
2.2 Are there proposed impacts to tidal SAS, prime wetlands, or priority resource areas? Applicants may obtain information from the NH Department of Resources and Economic Development Natural Heritage Bureau (NHB) DataCheck Tool for information about resources located on the property at https://www4.des.state.nh.us/NHB-DataCheck/ .	X*	
2.3 If wetland crossings are proposed, are they adequately designed to maintain hydrology, sediment transport & wildlife passage?		N/A
2.4 Would the project remove part or all of a riparian buffer? (Riparian buffers are lands adjacent to streams where vegetation is strongly influenced by the presence of water. They are often thin lines of vegetation containing native grasses, flowers, shrubs and/or trees that line the stream banks. They are also called vegetated buffer zones.)		X
2.5 The overall project site is more than 40 acres?		X
2.6 What is the area of the previously filled wetlands?	unknown	
2.7 What is the area of the proposed fill in wetlands?	8,306 sf	
2.8 What % of the overall project sire will be previously and proposed filled wetlands?	at least 3%	
3. Wildlife	Yes	No
3.1 Has the NHB & USFWS determined that there are known occurrences of rare species, exemplary natural communities, Federal and State threatened and endangered species and habitat, in the vicinity of the proposed project? (All projects require an NHB ID number & a USFWS IPAC determination.) NHB DataCheck Tool: https://www4.des.state.nh.us/NHB-DataCheck/ . USFWS IPAC website: https://ipac.ecosphere.fws.gov/	X*	

3.2 Would work occur in any area identified as either "Highest Ranked Habitat in N.H." or "Highest Ranked Habitat in Ecological Region"? (These areas are colored magenta and green, respectively, on NH Fish and Game's map, "2010 Highest Ranked Wildlife Habitat by Ecological Condition.") Map information can be found at: • PDF: https://wildlife.state.nh.us/wildlife/wap-high-rank.html. • Data Mapper: www.granit.unh.edu. • GIS: www.granit.unh.edu/data/downloadfreedata/category/databycategory.html.		X
3.3 Would the project impact more than 20 acres of an undeveloped land block (upland, wetland/waterway) on the entire project site and/or on an adjoining property(s)?		X
3.4 Does the project propose more than a 10-lot residential subdivision, or a commercial or industrial development?		X
3.5 Are stream crossings designed in accordance with the GC 31?		N/A
4. Flooding/Floodplain Values	Yes	No
4.1 Is the proposed project within the 100-year floodplain of an adjacent river or stream?		X
4.2 If 4.1 is yes, will compensatory flood storage be provided if the project results in a loss of flood storage?		N/A
5. Historic/Archaeological Resources		
For a minimum, minor or major impact project - a copy of the RPR Form (www.nh.gov/nhdhr/review) with your DES file number shall be sent to the NH Division of Historical Resources as required on Page 37 GC 14(d) of the GP document**	X	
6. Minimal Impact Determination (for projects that exceed 1 acre of permanent impact)	Yes	No
Projects with greater than 1 acre of permanent impact must include the following: • Functional assessment for aquatic resources in the project area. • On and off-site alternative analysis. • Provide additional information and description for how the below criteria are met.	N/A - The project does not involve 1 acre of permanent impact.	
6.1 Will there be complete loss of aquatic resources on site?		
6.2 Have the impacts to the aquatic resources been avoided and minimized to the greatest extent practicable?		
6.3 Will all aquatic resource function be lost?		
6.4 Does the aquatic resource (s) have regional significance (watershed or ecoregion)?		
6.5 Is there an on-site alternative with less impact?		
6.6 Is there an off-site alternative with less impact?		
6.7 Will there be a loss to a resource dependent species?		
6.8 Are indirect impacts greater than 1 acre within and adjacent to the project area?		
6.9 Does the proposed mitigation replace aquatic resource function for direct, indirect, and cumulative impacts?		

*Although this checklist utilizes state information, its submittal to USACE is a federal requirement.

** If your project is not within Federal jurisdiction, coordination with NH DHR is not required under Federal law.

USACE Section 404 Checklist (Appendix B) Supplemental Information

1.1. The northern extent of the project is within the Mink Brook watershed which is listed as impaired for E. coli and mercury on the NHDES 2020/2022 Surface Water Quality Assessment Viewer.

2.1. A small stream runs beneath Mt. Support Road south of the intersection, approximately 150 feet south of the project limits.

2.2. A state-listed threatened plant species (*Geum fragarioides*) is present within the project area. Since Wetlands A, B, and F have documented occurrences of the plant species, they meet the definition of a Priority Resource Area. There are no tidal SAS or prime wetlands within the project area.

3.1. The NH Natural Heritage Bureau (NHB) Report indicated that Appalachian barren-strawberry (*Geum fragarioides*), a state-listed threatened plant species, occurs within the project area. Field reviews were conducted in November 2021, May 2022, and July 2023. The plants are located in several areas within the project limits and an estimated 400-500 plants will be impacted by the project. NHB provided several recommendations to minimize impacts to this species (refer to enclosed NHB correspondence). The NHB report did not include any state-listed animal species.

The USFWS IPaC report indicated that northern long-eared bat (NLEB) and monarch butterfly may occur within the project area. A No Effect Determination for NLEB was received using the Rangewide Determination Key in IPaC. Since the tri-colored bat (TCB) is anticipated to become federally listed as endangered in 2023 and the project involves tree clearing, an acoustic survey was completed in summer 2023. The results indicated that TCB and NLEB were considered unlikely to be present at the survey sites.

Please mail the completed form and required material to:

New Hampshire Division of Historical Resources
State Historic Preservation Office
Attention: Review & Compliance
19 Pillsbury Street, Concord, NH 03301-3570

RECEIVED JAN 14 2022

DHR Use Only	
R&C #	13407
Log In Date	1/14/22
Response Date	___/___/___
Sent Date	___/___/___

Request for Project Review by the New Hampshire Division of Historical Resources

- ☒ This is a new submittal
☐ This is additional information relating to DHR Review & Compliance (R&C) #:

GENERAL PROJECT INFORMATION

Project Title Mt. Support Road and Lahaye Drive Intersection Improvements Project

Project Location Mt. Support Road and Lahaye Drive Intersection

City/Town Lebanon Tax Map N/A Lot # N/A

NH State Plane - Feet Geographic Coordinates: Easting 826103 Northing 427894
(See RPR Instructions and R&C FAQs for guidance.)

Lead Federal Agency and Contact (if applicable) ACOE
(Agency providing funds, licenses, or permits)

Permit Type and Permit or Job Reference # 404 General Permit

State Agency and Contact (if applicable) NHDES

Permit Type and Permit or Job Reference # Wetlands Permit

APPLICANT INFORMATION

Applicant Name City of Lebanon

Mailing Address 193 Dartmouth College Highway Phone Number (603) 442-6252

City Lebanon State NH Zip 03766 Email brian.vincent@lebanonnh.gov

CONTACT PERSON TO RECEIVE RESPONSE

Name/Company Meg Gordon, GM2 Associates, Inc

Mailing Address 197 Loudon Road Suite 310 Phone Number (603) 856-7854

City Concord State NH Zip 03301 Email mgordon@gm2inc.com

This form is updated periodically. Please download the current form at www.nh.gov/nhdhr/review. Please refer to the Request for Project Review Instructions for direction on completing this form. Submit one copy of this project review form for each project for which review is requested. Include a self-addressed stamped envelope to expedite review response. Project submissions will not be accepted via facsimile or e-mail. This form is required. Review request form must be complete for review to begin. Incomplete forms will be sent back to the applicant without comment. Please be aware that this form may only initiate consultation. For some projects, additional information will be needed to complete the Section 106 review. All items and supporting documentation submitted with a review request, including photographs and publications, will be retained by the DHR as part of its review records. Items to be kept confidential should be clearly identified. For questions regarding the DHR review process and the DHR's role in it, please visit our website at: www.nh.gov/nhdhr/review or contact the R&C Specialist at marika.labash@dncr.nh.gov or 603.271.3558.

PROJECTS CANNOT BE PROCESSED WITHOUT THIS INFORMATION

Project Boundaries and Description

- ☒ Attach the Project Mapping *using EMMIT or relevant portion of a 7.5' USGS Map.* (See RPR Instructions and R&C FAQs for guidance.)
- ☒ Attach a detailed narrative description of the proposed project.
- ☐ Attach a site plan. The site plan should include the project boundaries and areas of proposed excavation.
- ☒ Attach photos of the project area (overview of project location and area adjacent to project location, and specific areas of proposed impacts and disturbances.) *(Informative photo captions are requested.)*
- ☒ A DHR records search must be conducted to identify properties within or adjacent to the project area. Provide records search results via EMMIT or in Table 1. *(Blank table forms are available on the DHR website.)*
EMMIT or in-house records search conducted on 01/05/2022.

Architecture

Are there any buildings, structures (bridges, walls, culverts, etc.) objects, districts or landscapes within the project area? ☒ Yes ☐ No
If no, skip to Archaeology section. If yes, submit all of the following information:

Approximate age(s): Unknown

- ☒ Photographs of *each* resource or streetscape located within the project area, with captions, along with a mapped photo key. (Digital photographs are accepted. All photographs must be clear, crisp and focused.)
- ☐ If the project involves rehabilitation, demolition, additions, or alterations to existing buildings or structures, provide additional photographs showing detailed project work locations. (i.e. Detail photo of windows if window replacement is proposed.)

Archaeology

Does the proposed undertaking involve ground-disturbing activity? ☒ Yes ☐ No
If yes, submit all of the following information:

- ☒ Description of current and previous land use and disturbances.
- ☒ Available information concerning known or suspected archaeological resources within the project area (such as cellar holes, wells, foundations, dams, etc.)

Please note that for many projects an architectural and/or archaeological survey or other additional information may be needed to complete the Section 106 process.

DHR Comment/Finding Recommendation *This Space for Division of Historical Resources Use Only*

- ☐ Insufficient information to initiate review. ☒ Additional information is needed in order to complete review.
- ☐ No Potential to cause Effects ☐ No Historic Properties Affected ☐ No Adverse Effect ☐ Adverse Effect

Comments: *PLEASE PROVIDE ADDITIONAL INFORMATION + PHOTOS FOR EXISTING CULVERTS (I.E. TYPES, LOCATIONS, AND MATERIALS). ARCHAEOLOGICAL SURVEY MAY BE NECESSARY DEPENDING ON FINAL DESIGN.*

If plans change or resources are discovered in the course of this project, you must contact the Division of Historical Resources as required by federal law and regulation.

Authorized Signature: *David Hardy*

Date: *1-21-22*



197 Loudon Road, Suite 310
Concord, NH 03301
Telephone: (603) 856-7854

Fax: (603) 856-7855

LETTER OF TRANSMITTAL

TO: Marika Labash

NH Division of Historical Resources
19 Pillsbury Street
Concord, NH 03301-3570

DATE	JOB NO.
10/28/22	40792
ATTENTION	
Marika Labash	
RE:	
Lahaye Drive at Mt. Support Road Intersection	
Lebanon, NH	
Additional Information	
R&C #13407	

WE ARE SENDING YOU

☒ Attached ☐ via e-mail the following items:

☐ Shop drawings

☐ Prints

☐ Plans

☐ Report

☐ Specifications

☐ Copy of letter

☐ Change Order

☐ Estimate

COPIES	DATE	NO.	DESCRIPTION
1	10/26/2022		Additional Information for R&C #13407

THESE ARE TRANSMITTED as checked below:

☐ For approval

☐ Approved as submitted

☐ Resubmit ____ copies for approval

☐ For your use

☐ Approved as noted

☐ Submit ____ copies for distribution

☐ As requested

☐ Returned for corrections

☐ Return ____ corrected prints

☒ For review and comment

☐ _____

☐ FOR BIDS DUE _____ 20__

REMARKS:

Enclosed please find a paper copy of the additional information requested for R&C #13407 (Lebanon - Lahaye Drive and Mt. Support Road Intersection Improvements). A PDF was emailed to David Trubey on 10/26/22.

Thank you.

COPY TO: _____

SIGNED: _____

Jennifer Riordan
Senior Environmental Scientist

If enclosures are not as noted, kindly notify us at once

RECEIVED

DEC 09 2022

13407

Project Boundaries and Description

- ☐ Attach the Project Mapping using EMMIT GM2 ASSOCIATES relevant portion of a 7.5' USGS Map. (See RPR Instructions and R&C FAQs for guidance.)
- ☐ Attach a detailed narrative description of the proposed project.
- ☐ Attach a site plan. The site plan should include the project boundaries and areas of proposed excavation.
- ☐ Attach photos of the project area (overview of project location and area adjacent to project location, and specific areas of proposed impacts and disturbances.) (Informative photo captions are requested.)
- ☐ A DHR records search must be conducted to identify properties within or adjacent to the project area. Provide records search results via EMMIT or in Table 1. (Blank table forms are available on the DHR website.) Please note, using EMMIT Guest View for an RPR records search does not provide the necessary information needed for DHR review.
EMMIT or in-house records search conducted on / / .

Architecture

Are there any buildings, structures (bridges, walls, culverts, etc.) objects, districts or landscapes within the project area? ☐ Yes ☐ No
If no, skip to Archaeology section. If yes, submit all of the following information:

Approximate age(s):

- ☐ Photographs of **each** resource or streetscape located within the project area, with captions, along with a mapped photo key. (Digital photographs are accepted. All photographs must be clear, crisp and focused.)
- ☐ If the project involves rehabilitation, demolition, additions, or alterations to existing buildings or structures, provide additional photographs showing detailed project work locations. (i.e. Detail photo of windows if window replacement is proposed.)

Archaeology

Does the proposed undertaking involve ground-disturbing activity? ☐ Yes ☐ No
If yes, submit all of the following information:

- ☐ Description of current and previous land use and disturbances.
- ☐ Available information concerning known or suspected archaeological resources within the project area (such as cellar holes, wells, foundations, dams, etc.)

DHR Comment/Finding Recommendation *This Space for Division of Historical Resources Use Only*

- ☐ review.
 - ☐ Additional information is needed in order to complete
 - ☐ No Potential to cause Effects ☒ No Historic Properties Affected ☐ No Adverse Effect ☐ Adverse Effect
- Comments: THANK YOU FOR PROVIDING REQUESTED CULTURAL INFORMATION, PROJECT PLANS.

If plans change or resources are discovered in the course of this project, you must contact the Division of Historical Resources as required by federal law and regulation.

Authorized Signature: Nedra Miller, DSHPO Date: 10/17/22



United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104



In Reply Refer To:

May 17, 2023

Project Code: 2023-0082794

Project Name: Lahaye Drive at Mt. Support Road Intersection Improvements

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

Updated 4/12/2023 - Please review this letter each time you request an Official Species List, we will continue to update it with additional information and links to websites may change.

About Official Species Lists

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Federal and non-Federal project proponents have responsibilities under the Act to consider effects on listed species.

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested by returning to an existing project's page in IPaC.

Endangered Species Act Project Review

Please visit the “**New England Field Office Endangered Species Project Review and Consultation**” website for step-by-step instructions on how to consider effects on listed

species and prepare and submit a project review package if necessary:

<https://www.fws.gov/office/new-england-ecological-services/endangered-species-project-review>

NOTE Please do not use the **Consultation Package Builder** tool in IPaC except in specific situations following coordination with our office. Please follow the project review guidance on our website instead and reference your **Project Code** in all correspondence.

Northern Long-eared Bat - (Updated 4/12/2023) The Service published a final rule to reclassify the northern long-eared bat (NLEB) as endangered on November 30, 2022. The final rule went into effect on March 31, 2023. You may utilize the **Northern Long-eared Bat Rangewide Determination Key** available in IPaC. More information about this Determination Key and the Interim Consultation Framework are available on the northern long-eared bat species page:

<https://www.fws.gov/species/northern-long-eared-bat-myotis-septentrionalis>

For projects that previously utilized the 4(d) Determination Key, the change in the species' status may trigger the need to re-initiate consultation for any actions that are not completed and for which the Federal action agency retains discretion once the new listing determination becomes effective. If your project was not completed by March 31, 2023, and may result in incidental take of NLEB, please reach out to our office at newengland@fws.gov to see if reinitiation is necessary.

Additional Info About Section 7 of the Act

Under section 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to determine whether projects may affect threatened and endangered species and/or designated critical habitat. If a Federal agency, or its non-Federal representative, determines that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Federal agency also may need to consider proposed species and proposed critical habitat in the consultation. 50 CFR 402.14(c)(1) specifies the information required for consultation under the Act regardless of the format of the evaluation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<https://www.fws.gov/service/section-7-consultations>

In addition to consultation requirements under Section 7(a)(2) of the ESA, please note that under sections 7(a)(1) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species. Please contact NEFO if you would like more information.

Candidate species that appear on the enclosed species list have no current protections under the ESA. The species' occurrence on an official species list does not convey a requirement to

consider impacts to this species as you would a proposed, threatened, or endangered species. The ESA does not provide for interagency consultations on candidate species under section 7, however, the Service recommends that all project proponents incorporate measures into projects to benefit candidate species and their habitats wherever possible.

Migratory Birds

In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see:

<https://www.fws.gov/program/migratory-bird-permit>

<https://www.fws.gov/library/collections/bald-and-golden-eagle-management>

Please feel free to contact us at **newengland@fws.gov** with your **Project Code** in the subject line if you need more information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat.

Attachment(s): Official Species List

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office

70 Commercial Street, Suite 300

Concord, NH 03301-5094

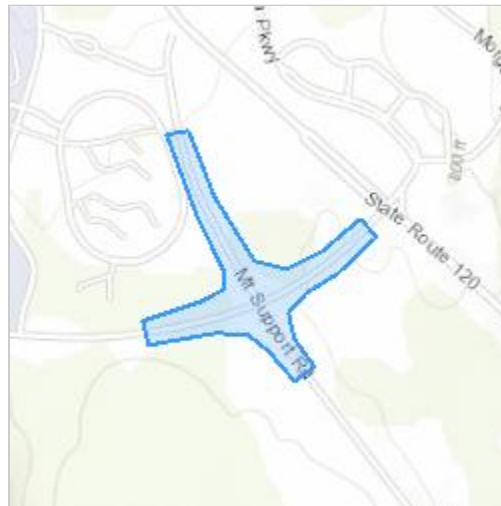
(603) 223-2541

PROJECT SUMMARY

Project Code: 2023-0082794
Project Name: Lahaye Drive at Mt. Support Road Intersection Improvements
Project Type: Road/Hwy - Maintenance/Modification
Project Description: The project involves improvements to the intersection of Mt. Support Road and Lahaye Drive in Lebanon. The preliminary design includes the construction of a roundabout, drainage infrastructure improvements, and reconstruction/extension of a 10-foot-wide paved pedestrian/bike path along Mt. Support Road. Construction is tentatively scheduled to begin in summer 2024.

Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@43.6733205,-72.26257996447657,14z>



Counties: Grafton County, New Hampshire

ENDANGERED SPECIES ACT SPECIES

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered

INSECTS

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: GM2 Associates, Inc.

Name: Jennifer Riordan

Address: 197 Loudon Road, Suite 310

City: Concord

State: NH

Zip: 03301

Email: jriordan@gm2inc.com

Phone: 6038567854



United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104



In Reply Refer To:

May 17, 2023

Project code: 2023-0082794

Project Name: Lahaye Drive at Mt. Support Road Intersection Improvements

Federal Action Agency (if applicable): Army Corps of Engineers

Subject: Record of project representative's no effect determination for 'Lahaye Drive at Mt. Support Road Intersection Improvements'

Dear Jennifer Riordan:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on May 17, 2023, for 'Lahaye Drive at Mt. Support Road Intersection Improvements' (here forward, Project). This project has been assigned Project Code 2023-0082794 and all future correspondence should clearly reference this number. **Please carefully review this letter.**

Ensuring Accurate Determinations When Using IPaC

The Service developed the IPaC system and associated species' determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into the IPaC must accurately represent the full scope and details of the Project. Failure to accurately represent or implement the Project as detailed in IPaC or the Northern Long-eared Bat Rangewide Determination Key (Dkey), invalidates this letter.

Determination for the Northern Long-Eared Bat

Based upon your IPaC submission and a standing analysis, your project has reached the determination of "No Effect" on the northern long-eared bat. To make a no effect determination, the full scope of the proposed project implementation (action) should not have any effects (either positive or negative), to a federally listed species or designated critical habitat. Effects of the action are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may

include consequences occurring outside the immediate area involved in the action. (See § 402.17).

Under Section 7 of the ESA, if a federal action agency makes a no effect determination, no consultation with the Service is required (ESA §7). If a proposed Federal action may affect a listed species or designated critical habitat, formal consultation is required except when the Service concurs, in writing, that a proposed action "is not likely to adversely affect" listed species or designated critical habitat [50 CFR §402.02, 50 CFR§402.13].

Other Species and Critical Habitat that May be Present in the Action Area

The IPaC-assisted determination for the northern long-eared bat does not apply to the following ESA-protected species and/or critical habitat that also may occur in your Action area:

- Monarch Butterfly *Danaus plexippus* Candidate

You may coordinate with our Office to determine whether the Action may affect the animal species listed above and, if so, how they may be affected.

Next Steps

Based upon your IPaC submission, your project has reached the determination of "No Effect" on the northern long-eared bat. If there are no updates on listed species, no further consultation/coordination for this project is required with respect to the northern long-eared bat. However, the Service recommends that project proponents re-evaluate the Project in IPaC if: 1) the scope, timing, duration, or location of the Project changes (includes any project changes or amendments); 2) new information reveals the Project may impact (positively or negatively) federally listed species or designated critical habitat; or 3) a new species is listed, or critical habitat designated. If any of the above conditions occurs, additional coordination with the Service should take place to ensure compliance with the Act.

If you have any questions regarding this letter or need further assistance, please contact the New England Ecological Services Field Office and reference Project Code 2023-0082794 associated with this Project.

Action Description

You provided to IPaC the following name and description for the subject Action.

1. Name

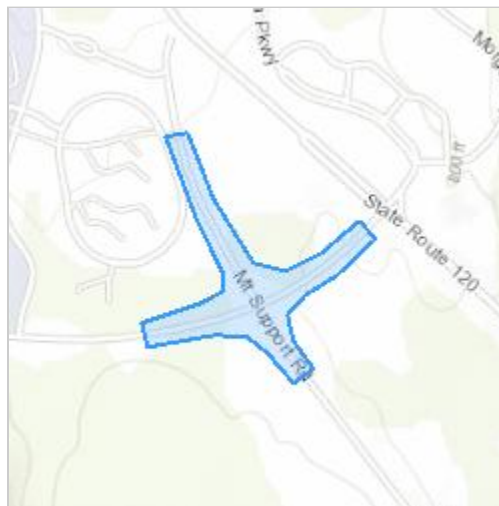
Lahaye Drive at Mt. Support Road Intersection Improvements

2. Description

The following description was provided for the project 'Lahaye Drive at Mt. Support Road Intersection Improvements':

The project involves improvements to the intersection of Mt. Support Road and Lahaye Drive in Lebanon. The preliminary design includes the construction of a roundabout, drainage infrastructure improvements, and reconstruction/extension of a 10-foot-wide paved pedestrian/bike path along Mt. Support Road. Construction is tentatively scheduled to begin in summer 2024.

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@43.6733205,-72.26257996447657,14z>



DETERMINATION KEY RESULT

Based on the information you provided, you have determined that the Proposed Action will have no effect on the Endangered northern long-eared bat (*Myotis septentrionalis*). Therefore, no consultation with the U.S. Fish and Wildlife Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (87 Stat. 884, as amended 16 U.S.C. 1531 *et seq.*) is required for those species.

QUALIFICATION INTERVIEW

1. Does the proposed project include, or is it reasonably certain to cause, intentional take of the northern long-eared bat or any other listed species?

Note: Intentional take is defined as take that is the intended result of a project. Intentional take could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered or proposed species?

No

2. The proposed action does not intersect an area where the northern long-eared bat is likely to occur, based on the information available to U.S. Fish and Wildlife Service as of the most recent update of this key. If you have data that indicates that northern long-eared bats are likely to be present in the action area, answer "NO" and continue through the key.

Do you want to make a no effect determination?

Yes

PROJECT QUESTIONNAIRE

IPAC USER CONTACT INFORMATION

Agency: GM2 Associates, Inc.
Name: Jennifer Riordan
Address: 197 Loudon Road, Suite 310
City: Concord
State: NH
Zip: 03301
Email: jriordan@gm2inc.com
Phone: 6038567854

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Army Corps of Engineers

Jennifer Riordan

From: Harrington, Margaret E <margaret_harrington@fws.gov>
Sent: Monday, August 21, 2023 2:11 PM
To: Jennifer Riordan
Cc: Ethan Maskiell
Subject: [WARNING-EXT] Re: [EXTERNAL] Lahaye Drive at Mt. Support Road Intersection Improvements

Received, thank you Jenn.

I appreciate that you included photos of the detectors in the report, including some with people for scale. Very helpful!

Best,
Meg

From: Jennifer Riordan <JRiordan@GM2INC.COM>
Sent: Monday, August 21, 2023 1:19 PM
To: Harrington, Margaret E <margaret_harrington@fws.gov>
Cc: Ethan Maskiell <EMaskiell@GM2INC.COM>
Subject: RE: [EXTERNAL] Lahaye Drive at Mt. Support Road Intersection Improvements

Hi Meg,

Attached is the reporting spreadsheet and summary report for the bat acoustic survey for the Lahaye Drive & Mt. Support Road Intersection Improvements in Lebanon, NH. The survey results indicate the likely absence of both tri-colored bat and northern long-eared bat. Qualitative analysis was not conducted since K-Pro did not identify any individual call files as tri-colored bat and the P-values for NLEB for each of the survey nights was >0.05.

Please let me know if you have questions or need further information.

Thanks,

Jenn

JENNIFER RIORDAN, CWS, CPESC
P 603.856.7854 | C 603.724.4950



From: Harrington, Margaret E <margaret_harrington@fws.gov>
Sent: Monday, July 10, 2023 10:00 AM
To: Jennifer Riordan <JRiordan@GM2INC.COM>
Subject: Re: [EXTERNAL] RE: [WARNING-EXT] Lahaye Drive at Mt. Support Road Intersection Improvements

Hi Jenn,

Thank you, sounds like you've got a thorough plan. Once you have selected the sub-contractor for manual vetting, please send me their name and resume.

Best,
Meg

From: Jennifer Riordan <JRiordan@GM2INC.COM>
Sent: Monday, July 10, 2023 9:48 AM
To: Harrington, Margaret E <margaret_harrington@fws.gov>
Subject: [EXTERNAL] RE: [WARNING-EXT] Lahaye Drive at Mt. Support Road Intersection Improvements

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Hi Meg,

Thanks for the email and reviewing our survey plan. Responses are below. Please let me know if you need any further information.

Jenn

JENNIFER RIORDAN, CWS, CPESC
P 603.856.7854 | C 603.724.4950



From: Harrington, Margaret E <margaret_harrington@fws.gov>
Sent: Monday, July 3, 2023 5:23 PM
To: Jennifer Riordan <JRiordan@GM2INC.COM>
Subject: [WARNING-EXT] Lahaye Drive at Mt. Support Road Intersection Improvements

Hi Jenn,

This is Meg Harrington writing from the US Fish and Wildlife Service New England Field Office. I'm reaching out regarding the bat study plan you submitted to our office re: the "Lahaye Drive at Mt. Support Road Intersection Improvements" project.

I've reviewed the materials you submitted; most of your plan looks well-aligned with Service guidelines. I have just a couple questions for you:

1. Thank you for running your project through IPaC. I see that you received a "no effect" determination for northern long-eared bats, which I found a bit surprising. I checked the Service's predicted occupancy model, and it looks like your study area falls within 1500 feet of the edge of the modeled area. In other words, your project does indeed fall within the "no effect" portion of the model, but realistically it's possible (albeit unlikely) that NLEB are present. Even though you received a "no effect"

determination, would it be possible for you to assess your results for NLEB as well as tri-colored bats? **Yes, we can assess for both NLEB and tri-colored bats.**

2. I noticed that you plan to conduct a qualitative assessment "if required". Could you please clarify what you mean by "if required"? The Service does not require manual vetting, although it's certainly helpful for tri-colored bats (in particular). We're receiving reports that K-Pro seems to be underpredicting PESU - we're working with Wildlife Acoustics to address this - but in the meantime, we are suggesting that folks with the capacity to manually vet do so for any calls KPro identifies as PESU, especially if the p value is low but not quite <0.05 . **We are planning to do qualitative analysis for any calls K-Pro identifies as PESU. This wasn't clearly stated in our survey plan – when I prepared the plan I wasn't aware of the issue with K-Pro underpredicting PESU. Rebecca Martin at NHDOT mentioned it to me recently so we'll follow the recommendation to manually vet any calls identified as PESU. GM2 hires a qualified subconsultant for manual vetting. I have some training but not enough experience to consider myself qualified.**

For NLEB, we'll follow Step 7 of the acoustic survey guidelines and do qualitative analysis for each detector site/night where K-Pro has a P-value of <0.05 for NLEB. All high frequency call files from that site/night will be reviewed.

Thanks for your coordination with our office. If it's easier to discuss any of this over the phone, you're welcome to give me a call on my cell at 603 – 513 – 9385.

Best,
Meg

Margaret (Meg) Harrington (she/her)
Biologist, USFWS Endangered Species Program
New England Field Office
70 Commercial Street Suite 300
Concord, NH 03301
Cell: 603-513-9385

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Mt. Support Road/Lahaye Drive City/County: Lebanon/Grafton Sampling Date: 11/24/21
 Applicant/Owner: City of Lebanon State: NH Sampling Point: A-Up
 Investigator(s): Jennifer Riordan and Meg Gordon Section, Township, Range: _____
 Landform (hillside, terrace, etc.): Hillside Local relief (concave, convex, none): None Slope (%): >5
 Subregion (LRR or MLRA): LRR R Lat: 43.6734 Long: 72.2625 Datum: _____
 Soil Map Unit Name: 341A - Stissing silt loam NWI classification: PSS1/EM1E

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: <u>Wetland A upland</u>
Hydric Soil Present?	Yes _____ No <u>X</u>	
Wetland Hydrology Present?	Yes _____ No <u>X</u>	
Remarks: (Explain alternative procedures here or in a separate report.) Upland data point located on roadway embankment upslope of Wetland A off of Lahaye Drive		

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ Water-Stained Leaves (B9) _____ High Water Table (A2) _____ Aquatic Fauna (B13) _____ Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION – Use scientific names of plants.

Sampling Point: A-Up

	Absolute % Cover	Dominant Species?	Indicator Status																	
Tree Stratum (Plot size: <u>30'</u>)																				
1. <u>None</u>				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0%</u> (A/B)																
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
			=Total Cover	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>3</u></td> <td>x 2 = <u>6</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>3</u> (A)</td> <td><u>6</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>2.00</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>3</u>	x 2 = <u>6</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>3</u> (A)	<u>6</u> (B)	Prevalence Index = B/A = <u>2.00</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>3</u>	x 2 = <u>6</u>																			
FAC species <u>0</u>	x 3 = <u>0</u>																			
FACU species <u>0</u>	x 4 = <u>0</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>3</u> (A)	<u>6</u> (B)																			
Prevalence Index = B/A = <u>2.00</u>																				
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																				
1. <u>Salix sp.</u>	<u>10</u>	<u>Yes</u>																		
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
			=Total Cover	Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
			=Total Cover																	
Herb Stratum (Plot size: <u>5'</u>)																				
1. <u>Unknown grass</u>	<u>85</u>	<u>Yes</u>																		
2. <u>Goldenrod sp.</u>	<u>10</u>	<u>No</u>																		
3. <u>Goldenrod sp.</u>	<u>10</u>	<u>No</u>																		
4. <u>Phalaris arundinacea</u>	<u>3</u>	<u>No</u>	<u>FACW</u>																	
5. <u>Galium sp.</u>	<u>3</u>	<u>No</u>																		
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
11. _____																				
12. _____																				
			=Total Cover	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height. Hydrophytic Vegetation Present? Yes <u> </u> No <u> X </u>																
			=Total Cover																	
Woody Vine Stratum (Plot size: <u>30'</u>)																				
1. <u>None</u>																				
2. _____																				
3. _____																				
4. _____																				
			=Total Cover																	

Remarks: (Include photo numbers here or on a separate sheet.)
 Data point completed late in growing season and not all plant species could be identified

Sampling Point: A-Up

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Indicators for Problematic Hydric Soils³:

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

Hydric Soil Present? Yes No ☒ X

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Mt Support Road/Lahaye Drive City/County: Lebanon/Grafton Sampling Date: 11/24/21
 Applicant/Owner: City of Lebanon State: NH Sampling Point: A-Wet
 Investigator(s): Jennifer Riordan and Meg Gordon Section, Township, Range: _____
 Landform (hillside, terrace, etc.): Hillside Local relief (concave, convex, none): None Slope (%): 0%
 Subregion (LRR or MLRA): LRR R Lat: 43.6734 Long: 72.2626 Datum: _____
 Soil Map Unit Name: 341A - Stissing silt loam NWI classification: PSS1E/EM1E

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland A</u>
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks: (Explain alternative procedures here or in a separate report.) Data point located at edge of emergent/scrub-shrub portion of Wetland A off of Lahaye Drive	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <u>X</u> Surface Water (A1) _____ Water-Stained Leaves (B9) _____ High Water Table (A2) _____ Aquatic Fauna (B13) <u>X</u> Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>1</u> Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>1</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>surface</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION – Use scientific names of plants.

Sampling Point: A-Wet

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>None</u>				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
			=Total Cover	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = _____</td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species _____	x 2 = _____	FAC species _____	x 3 = _____	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: _____	(A) _____ (B) _____	Prevalence Index = B/A = _____	
Total % Cover of:	Multiply by:																			
OBL species _____	x 1 = _____																			
FACW species _____	x 2 = _____																			
FAC species _____	x 3 = _____																			
FACU species _____	x 4 = _____																			
UPL species _____	x 5 = _____																			
Column Totals: _____	(A) _____ (B) _____																			
Prevalence Index = B/A = _____																				
			10																	
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																				
1. <u>Alnus incana</u>	10	Yes	FACW																	
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
			10 =Total Cover																	
Herb Stratum (Plot size: <u>5'</u>)																				
1. <u>Typha latifolia</u>	85	Yes	OBL																	
2. <u>Juncus effusus</u>	20	No	OBL																	
3. <u>Lythrum salicaria</u>	10	No	OBL																	
4. <u>Unknown sedge</u>	3	No																		
5. _____																				
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
11. _____																				
12. _____																				
			118 =Total Cover																	
Woody Vine Stratum (Plot size: <u>30'</u>)																				
1. <u>None</u>																				
2. _____																				
3. _____																				
4. _____																				
			=Total Cover																	

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

Hydrophytic Vegetation
Present? Yes X No _____

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Indicators:
1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
3 - Prevalence Index is ≤3.0¹
4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 Problematic Hydrophytic Vegetation¹ (Explain)

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

SOIL

Sampling Point: A-Wet

[illegible]

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☒ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)

- ☐ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ☐ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ☐ High Chroma Sands (S11) (**LRR K, L**)
- ☐ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils³:

☐ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
☐ Coast Prairie Redox (A16) (**LRR K, L, R**)
☐ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
☐ Polyvalue Below Surface (S8) (**LRR K, L**)
☐ Thin Dark Surface (S9) (**LRR K, L**)
☐ Iron-Manganese Masses (F12) (**LRR K, L, R**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
☐ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
☐ Red Parent Material (F21)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes X No

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Mt Support Road/Lahaye Drive City/County: Lebanon/Grafton Sampling Date: 10/21/22
 Applicant/Owner: City of Lebanon State: NH Sampling Point: D1-up
 Investigator(s): Jennifer Riordan Section, Township, Range: _____
 Landform (hillside, terrace, etc.): roadside / fill Local relief (concave, convex, none): concave Slope (%): <2
 Subregion (LRR or MLRA): LRR R Lat: 43.6713 Long: 72.2636 Datum: _____
 Soil Map Unit Name: 336B - Pittstown loam, 3-8% slopes, very stony NWI classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Hydric Soil Present?	Yes _____ No <u>X</u>	
Wetland Hydrology Present?	Yes _____ No <u>X</u>	
Remarks: (Explain alternative procedures here or in a separate report.) Upland data point near roadside swale (Wetland D1)		

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ Water-Stained Leaves (B9) _____ High Water Table (A2) _____ Aquatic Fauna (B13) _____ Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION – Use scientific names of plants.

 Sampling Point: D1-up

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>None</u>				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
		=Total Cover		
Sapling/Shrub Stratum (Plot size: <u>15'</u>)				
1. <u>Frangula alnus</u>	38	Yes	FAC	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
	38	=Total Cover		
Herb Stratum (Plot size: <u>5'</u>)				
1. <u>Dennstaedtia punctilobula</u>	20	Yes	UPL	
2. <u>Pteridium aquilinum</u>	10	Yes	FACU	
3. <u>Osmundastrum cinnamomeum</u>	10	Yes	FACW	
4. <u>Aster sp.</u>	3	No		
5. <u>Betula sp.</u>	3	No		
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	46	=Total Cover		
Woody Vine Stratum (Plot size: <u>30'</u>)				
1. <u>None</u>				
2. _____				
3. _____				
4. _____				
		=Total Cover		

Dominance Test worksheet:

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

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

 Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>10</u>	x 2 = <u>20</u>
FAC species <u>38</u>	x 3 = <u>114</u>
FACU species <u>10</u>	x 4 = <u>40</u>
UPL species <u>20</u>	x 5 = <u>100</u>
Column Totals: <u>78</u> (A)	<u>274</u> (B)
Prevalence Index = B/A = <u>3.51</u>	

Hydrophytic Vegetation Indicators:
1 - Rapid Test for Hydrophytic Vegetation
2 - Dominance Test is >50%
3 - Prevalence Index is ≤3.0¹
4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes No X

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

SOIL

Sampling Point: D1-up

[illegible]¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- | | |
|--|--|
| ☐ Histosol (A1) | ☐ Polyvalue Below Surface (S8) (LRR R, |
| ☐ Histic Epipedon (A2) | MLRA 149B) |
| ☐ Black Histic (A3) | ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B) |
| ☐ Hydrogen Sulfide (A4) | ☐ High Chroma Sands (S11) (LRR K, L) |
| ☐ Stratified Layers (A5) | ☐ Loamy Mucky Mineral (F1) (LRR K, L) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Thick Dark Surface (A12) | ☐ Depleted Matrix (F3) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Redox Dark Surface (F6) |
| ☐ Sandy Gleyed Matrix (S4) | ☐ Depleted Dark Surface (F7) |
| ☐ Sandy Redox (S5) | ☐ Redox Depressions (F8) |
| ☐ Stripped Matrix (S6) | ☐ Marl (F10) (LRR K, L) |
| ☐ Dark Surface (S7) | |

Indicators for Problematic Hydric Soils³:

- ☐ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
☐ Coast Prairie Redox (A16) (**LRR K, L, R**)
☐ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
☐ Polyvalue Below Surface (S8) (**LRR K, L**)
☐ Thin Dark Surface (S9) (**LRR K, L**)
☐ Iron-Manganese Masses (F12) (**LRR K, L, R**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
☐ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
☐ Red Parent Material (F21)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches):

Hydric Soil Present?	Yes	No	X
----------------------	-----	----	---

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Mt Support Road/Lahaye Drive City/County: Lebanon/Grafton Sampling Date: 10/21/22
 Applicant/Owner: City of Lebanon State: NH Sampling Point: D1-wet
 Investigator(s): Jennifer Riordan Section, Township, Range: _____
 Landform (hillside, terrace, etc.): roadside swale Local relief (concave, convex, none): concave Slope (%): <2
 Subregion (LRR or MLRA): LRR R Lat: 43.6713 Long: 72.2636 Datum: _____
 Soil Map Unit Name: 336B - Pittstown loam, 3-8% slopes, very stony NWI classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation X, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland D1</u>
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks: (Explain alternative procedures here or in a separate report.) Data point is located in a mowed roadside swale	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ Water-Stained Leaves (B9) <u>X</u> High Water Table (A2) _____ Aquatic Fauna (B13) <u>X</u> Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>10</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>10</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: Standing water located in swale north of data point		

VEGETATION – Use scientific names of plants.

Sampling Point: D1-wet

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>None</u>				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
			=Total Cover	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species _____	x 2 = _____	FAC species _____	x 3 = _____	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: _____	(A) _____ (B) _____	Prevalence Index = B/A = _____	
Total % Cover of:	Multiply by:																			
OBL species _____	x 1 = _____																			
FACW species _____	x 2 = _____																			
FAC species _____	x 3 = _____																			
FACU species _____	x 4 = _____																			
UPL species _____	x 5 = _____																			
Column Totals: _____	(A) _____ (B) _____																			
Prevalence Index = B/A = _____																				
			=Total Cover																	
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																				
1. <u>None</u>																				
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
			=Total Cover	Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
			=Total Cover																	
Herb Stratum (Plot size: <u>5'</u>)																				
1. <u>Juncus effusus</u>	<u>20</u>	<u>Yes</u>	<u>OBL</u>																	
2. <u>Onoclea sensibilis</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>																	
3. <u>Grass species</u>	<u>10</u>	<u>No</u>																		
4. <u>Equisetum sp.</u>	<u>3</u>	<u>No</u>																		
5. <u>Spiraea latifolia</u>	<u>3</u>	<u>No</u>	<u>FACW</u>																	
6. <u>Trifolium pratense</u>	<u>3</u>	<u>No</u>	<u>FACU</u>																	
7. <u>Ranunculus</u>	<u>3</u>	<u>No</u>																		
8. _____																				
9. _____																				
10. _____																				
11. _____																				
12. _____																				
			<u>62</u> =Total Cover	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height. Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>																
			=Total Cover																	
Woody Vine Stratum (Plot size: <u>30'</u>)																				
1. <u>None</u>																				
2. _____																				
3. _____																				
4. _____																				
			=Total Cover																	

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

SOIL

Sampling Point: D1-wet

[illegible]¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

☐ Histosol (A1)	☐ Polyvalue Below Surface (S8) (LRR R ,
☐ Histic Epipedon (A2)	MLRA 149B)
☐ Black Histic (A3)	☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
☐ Hydrogen Sulfide (A4)	☐ High Chroma Sands (S11) (LRR K, L)
☐ Stratified Layers (A5)	☐ Loamy Mucky Mineral (F1) (LRR K, L)
☐ Depleted Below Dark Surface (A11)	☐ Loamy Gleyed Matrix (F2)
☐ Thick Dark Surface (A12)	☒ Depleted Matrix (F3)
☐ Sandy Mucky Mineral (S1)	☐ Redox Dark Surface (F6)
☐ Sandy Gleyed Matrix (S4)	☐ Depleted Dark Surface (F7)
☐ Sandy Redox (S5)	☐ Redox Depressions (F8)
☐ Stripped Matrix (S6)	☐ Marl (F10) (LRR K, L)
☐ Dark Surface (S7)	

Indicators for Problematic Hydric Soils³:

☐ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
☐ Coast Prairie Redox (A16) (**LRR K, L, R**)
☐ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
☐ Polyvalue Below Surface (S8) (**LRR K, L**)
☐ Thin Dark Surface (S9) (**LRR K, L**)
☐ Iron-Manganese Masses (F12) (**LRR K, L, R**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
☐ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
☐ Red Parent Material (F21)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes X No

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Mt. Support Road/Lahaye Drive City/County: Lebanon/Grafton Sampling Date: 11/24/21
 Applicant/Owner: City of Lebanon State: NH Sampling Point: E-up
 Investigator(s): Jennifer Riordan and Meg Gordon Section, Township, Range: _____
 Landform (hillside, terrace, etc.): Plain Local relief (concave, convex, none): None Slope (%): None
 Subregion (LRR or MLRA): LRR R Lat: 43.6725 Long: 72.2647 Datum: _____
 Soil Map Unit Name: 336B - Pittstown loam NWI classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: <u>Wetland E upland</u>
Hydric Soil Present?	Yes _____ No <u>X</u>	
Wetland Hydrology Present?	Yes _____ No <u>X</u>	
Remarks: (Explain alternative procedures here or in a separate report.)		

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ Water-Stained Leaves (B9) _____ High Water Table (A2) _____ Aquatic Fauna (B13) _____ Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION – Use scientific names of plants.

Sampling Point: E-up

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Fagus grandifolia</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33.3%</u> (A/B)																
2. <u>Pinus strobus</u>	<u>63</u>	<u>Yes</u>	<u>FACU</u>																	
3. <u>Fraxinus americana</u>	<u>3</u>	<u>No</u>	<u>FACU</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
<u>86</u> =Total Cover																				
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																				
1. <u>Quercus rubra</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="text-align: left;">Total % Cover of:</th> <th style="text-align: left;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>20</u></td> <td>x 2 = <u>40</u></td> </tr> <tr> <td>FAC species <u>20</u></td> <td>x 3 = <u>60</u></td> </tr> <tr> <td>FACU species <u>136</u></td> <td>x 4 = <u>544</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>176</u> (A)</td> <td><u>644</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>3.66</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>20</u>	x 2 = <u>40</u>	FAC species <u>20</u>	x 3 = <u>60</u>	FACU species <u>136</u>	x 4 = <u>544</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>176</u> (A)	<u>644</u> (B)	Prevalence Index = B/A = <u>3.66</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>20</u>	x 2 = <u>40</u>																			
FAC species <u>20</u>	x 3 = <u>60</u>																			
FACU species <u>136</u>	x 4 = <u>544</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>176</u> (A)	<u>644</u> (B)																			
Prevalence Index = B/A = <u>3.66</u>																				
2. <u>Fagus grandifolia</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>																	
3. <u>Frangula alnus</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>																	
4. <u>Lonicera tatarica</u>	<u>10</u>	<u>No</u>	<u>FACU</u>																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
<u>70</u> =Total Cover																				
Herb Stratum (Plot size: <u>5'</u>)																				
1. <u>Onoclea sensibilis</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <u>Unknown grass</u>	<u>3</u>	<u>No</u>	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
<u>23</u> =Total Cover																				
Woody Vine Stratum (Plot size: <u>30'</u>)																				
1. <u>None</u>	_____	_____	_____	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
_____ =Total Cover																				

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

Sampling Point: E-up

[illegible]¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Indicators for Problematic Hydric Soils³:

- | | | |
|---|--|--|
| _____ Histosol (A1) | _____ Polyvalue Below Surface (S8) (LRR R , | _____ 2 cm Muck (A10) (LRR K, L, MLRA 149B) |
| _____ Histic Epipedon (A2) | _____ MLRA 149B) | _____ Coast Prairie Redox (A16) (LRR K, L, R) |
| _____ Black Histic (A3) | _____ Thin Dark Surface (S9) (LRR R, MLRA 149B) | _____ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) |
| _____ Hydrogen Sulfide (A4) | _____ High Chroma Sands (S11) (LRR K, L) | _____ Polyvalue Below Surface (S8) (LRR K, L) |
| _____ Stratified Layers (A5) | _____ Loamy Mucky Mineral (F1) (LRR K, L) | _____ Thin Dark Surface (S9) (LRR K, L) |
| _____ Depleted Below Dark Surface (A11) | _____ Loamy Gleyed Matrix (F2) | _____ Iron-Manganese Masses (F12) (LRR K, L, R) |
| _____ Thick Dark Surface (A12) | _____ Depleted Matrix (F3) | _____ Piedmont Floodplain Soils (F19) (MLRA 149B) |
| _____ Sandy Mucky Mineral (S1) | _____ Redox Dark Surface (F6) | _____ Mesic Spodic (TA6) (MLRA 144A, 145, 149B) |
| _____ Sandy Gleyed Matrix (S4) | _____ Depleted Dark Surface (F7) | _____ Red Parent Material (F21) |
| _____ Sandy Redox (S5) | _____ Redox Depressions (F8) | _____ Very Shallow Dark Surface (TF12) |
| _____ Stripped Matrix (S6) | _____ Marl (F10) (LRR K, L) | _____ Other (Explain in Remarks) |
| _____ Dark Surface (S7) | | |

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

Restrictive Layer (if observed):

Type: _____

Depth (inches):

Hydric Soil Present?	Yes	No	X
----------------------	-----	----	---

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Mt. Support Road/Lahaye Drive City/County: Lebanon/Grafton Sampling Date: 11/24/21
 Applicant/Owner: City of Lebanon State: NH Sampling Point: E-wet
 Investigator(s): Jennifer Riordan and Meg Gordon Section, Township, Range: _____
 Landform (hillside, terrace, etc.): Plain Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR or MLRA): LRR R Lat: 43.6726 Long: 72.2648 Datum: _____
 Soil Map Unit Name: 336B - Pittstown loam NWI classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland E</u>
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes _____ No <u>X</u>	
Remarks: (Explain alternative procedures here or in a separate report.) Wetland hydrology indicators not observed. Area was identified as wetland due to hydric soils and vegetation.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ Water-Stained Leaves (B9) _____ High Water Table (A2) _____ Aquatic Fauna (B13) _____ Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION – Use scientific names of plants.

 Sampling Point: E-wet

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u><i>Pinus strobus</i></u>	38	Yes	FACU	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>60.0%</u> (A/B)																
2. <u><i>Quercus rubra</i></u>	20	Yes	FACU																	
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
	58	=Total Cover		Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species _____	x 2 = _____	FAC species _____	x 3 = _____	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: _____	(A) _____ (B) _____	Prevalence Index = B/A = _____	
Total % Cover of:	Multiply by:																			
OBL species _____	x 1 = _____																			
FACW species _____	x 2 = _____																			
FAC species _____	x 3 = _____																			
FACU species _____	x 4 = _____																			
UPL species _____	x 5 = _____																			
Column Totals: _____	(A) _____ (B) _____																			
Prevalence Index = B/A = _____																				
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																				
1. <u><i>Frangula alnus</i></u>	38	Yes	FAC																	
2. <u><i>Quercus rubra</i></u>	10	No	FACU																	
3. <u><i>Fagus grandifolia</i></u>	10	No	FACU																	
4. _____																				
5. _____																				
6. _____																				
7. _____																				
	58	=Total Cover		Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
Herb Stratum (Plot size: <u>5'</u>)																				
1. <u><i>Dryopteris intermedia</i></u>	3	Yes	FAC																	
2. <u><i>Onoclea sensibilis</i></u>	10	Yes	FACW																	
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
11. _____																				
12. _____																				
	13	=Total Cover																		
Woody Vine Stratum (Plot size: <u>30'</u>)																				
1. <u>None</u>				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																
2. _____																				
3. _____																				
4. _____																				
				Hydrophytic Vegetation Present? Yes <u>X</u> No _____																

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

SOIL Sampling Point: E-wet

Sampling Point: E-wet

[illegible]¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Indicators for Problematic Hydric Soils³:

- | | | |
|---|---|---|
| ☐ Histosol (A1) | ☐ Polyvalue Below Surface (S8) (LRR R , | ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B) |
| ☐ Histic Epipedon (A2) | ☐ MLRA 149B) | ☐ Coast Prairie Redox (A16) (LRR K, L, R) |
| ☐ Black Histic (A3) | ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B) | ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) |
| ☐ Hydrogen Sulfide (A4) | ☐ High Chroma Sands (S11) (LRR K, L) | ☐ Polyvalue Below Surface (S8) (LRR K, L) |
| ☐ Stratified Layers (A5) | ☐ Loamy Mucky Mineral (F1) (LRR K, L) | ☐ Thin Dark Surface (S9) (LRR K, L) |
| ☒ Depleted Below Dark Surface (A11) | ☐ Loamy Gleyed Matrix (F2) | ☐ Iron-Manganese Masses (F12) (LRR K, L, R) |
| ☐ Thick Dark Surface (A12) | ☒ Depleted Matrix (F3) | ☐ Piedmont Floodplain Soils (F19) (MLRA 149B) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Redox Dark Surface (F6) | ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B) |
| ☐ Sandy Gleyed Matrix (S4) | ☐ Depleted Dark Surface (F7) | ☐ Red Parent Material (F21) |
| ☐ Sandy Redox (S5) | ☐ Redox Depressions (F8) | ☐ Very Shallow Dark Surface (TF12) |
| ☐ Stripped Matrix (S6) | ☐ Marl (F10) (LRR K, L) | ☐ Other (Explain in Remarks) |
| ☐ Dark Surface (S7) | | |

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

Restrictive Layer (if observed):

Type: _____

Depth (inches):

Hydric Soil Present? Yes X No

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Mt Support Road/Lahaye Drive City/County: Lebanon/Grafton Sampling Date: 10/21/22
 Applicant/Owner: City of Lebanon State: NH Sampling Point: I-wet
 Investigator(s): Jennifer Riordan Section, Township, Range: _____
 Landform (hillside, terrace, etc.): roadside swale Local relief (concave, convex, none): concave Slope (%): <2
 Subregion (LRR or MLRA): LRR R Lat: 43.6713 Long: 72.2636 Datum: _____
 Soil Map Unit Name: 336B - Pittstown loam, 3-8% slopes, very stony NWI classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation X, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland I</u>
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks: (Explain alternative procedures here or in a separate report.) Data point is located in a mowed stormwater treatment swale	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ Water-Stained Leaves (B9) _____ High Water Table (A2) _____ Aquatic Fauna (B13) <u>X</u> Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>12</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>10</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION – Use scientific names of plants.

 Sampling Point: I-wet

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>None</u>				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>60.0%</u> (A/B)																
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
			=Total Cover	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = _____</td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species _____	x 2 = _____	FAC species _____	x 3 = _____	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: _____	(A) _____ (B) _____	Prevalence Index = B/A = _____	
Total % Cover of:	Multiply by:																			
OBL species _____	x 1 = _____																			
FACW species _____	x 2 = _____																			
FAC species _____	x 3 = _____																			
FACU species _____	x 4 = _____																			
UPL species _____	x 5 = _____																			
Column Totals: _____	(A) _____ (B) _____																			
Prevalence Index = B/A = _____																				
			=Total Cover																	
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																				
1. <u>None</u>																				
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
			=Total Cover	Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
			=Total Cover																	
Herb Stratum (Plot size: <u>5'</u>)																				
1. <u>Lythrum salicaria</u>	<u>20</u>	<u>Yes</u>	<u>OBL</u>																	
2. <u>Euthamia graminifolia</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>																	
3. <u>Plantago lanceolata</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>																	
4. <u>Scirpus cyperinus</u>	<u>10</u>	<u>Yes</u>	<u>OBL</u>																	
5. <u>Juncus sp.</u>	<u>10</u>	<u>Yes</u>																		
6. <u>Juncus effusus</u>	<u>3</u>	<u>No</u>	<u>OBL</u>																	
7. _____																				
8. _____																				
9. _____																				
10. _____																				
11. _____																				
12. _____																				
			<u>63</u> =Total Cover	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																
			=Total Cover																	
Woody Vine Stratum (Plot size: <u>30'</u>)																				
1. <u>None</u>																				
2. _____																				
3. _____																				
4. _____																				
			=Total Cover																	

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

SOIL Sampling Point: I-wet

Sampling Point: I-wet

[illegible]

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
☐ Histosol (A1)	☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
☐ Histic Epipedon (A2)	☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)	☐ Coast Prairie Redox (A16) (LRR K, L, R)	
☐ Black Histic (A3)	☐ High Chroma Sands (S11) (LRR K, L)	☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
☐ Hydrogen Sulfide (A4)	☐ Loamy Mucky Mineral (F1) (LRR K, L)	☐ Polyvalue Below Surface (S8) (LRR K, L)	
☐ Stratified Layers (A5)	☐ Loamy Gleyed Matrix (F2)	☐ Thin Dark Surface (S9) (LRR K, L)	
☐ Depleted Below Dark Surface (A11)	☐ Depleted Matrix (F3)	☐ Iron-Manganese Masses (F12) (LRR K, L, R)	
☐ Thick Dark Surface (A12)	☒ Redox Dark Surface (F6)	☐ Piedmont Floodplain Soils (F19) (MLRA 149B)	
☐ Sandy Mucky Mineral (S1)	☐ Depleted Dark Surface (F7)	☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
☐ Sandy Gleyed Matrix (S4)	☐ Redox Depressions (F8)	☐ Red Parent Material (F21)	
☐ Sandy Redox (S5)	☐ Marl (F10) (LRR K, L)	☐ Very Shallow Dark Surface (TF12)	
☐ Stripped Matrix (S6)		☐ Other (Explain in Remarks)	
☐ Dark Surface (S7)			

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

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <u> X </u> No _____
---	---

Remarks:
This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

Memo

NH Natural Heritage Bureau NHB DataCheck Results Letter

Please note: portions of this document are confidential.

Maps and NHB record pages are confidential and should be redacted from public documents.

To: Jennifer Riordan, GM2 Associates, Inc.
197 Loudon Road, Suite 310
Concord, NH 03301

From: NHB Review, NH Natural Heritage Bureau

Date: 10/4/2022 (valid until 10/04/2023)

Re: Review by NH Natural Heritage Bureau

Permits: NHDES - Alteration of Terrain Permit, NHDES - Wetland Standard Dredge & Fill - Major, USACE - General Permit, USEPA - Stormwater Pollution Prevention

NHB ID: NHB22-3089

Town: Lebanon

Location: Mt. Support Road & Lahaye Drive
Intersection

Description: The project involves improvements to the intersection of Mt. Support Road and Lahaye Drive in Lebanon. Work may include the design and reconstruction of the roadway, drainage infrastructure, pedestrian and biking accommodations including a 1,200+/-foot long, 10-foot wide paved multi-use path along Mt. Support Road, utility relocation coordination, and traffic signal and signage design.

As requested, I have searched our database for records of rare species and exemplary natural communities, with the following results.

Comments NHB: In 2021 NHB reviewed a project at this location for a multi-use path. Please explain if any construction has occurred at this site to date. Appalachian barren-strawberry was identified at the project location and at that time it was possible to avoid the occurrence. Please continue to coordinate with NHB to avoid impacts to this species.
F&G: No comments at this time.

Plant species	State ¹	Federal	Notes
Appalachian barren-strawberry (<i>Geum fragarioides</i>)	T	--	Occurs in sandplains, disturbed openings, mesic forests, dry forests, and thin woods. Threats include development, logging activities, recreational activities, trail development, and exotic species invasions.

¹Codes: "E" = Endangered, "T" = Threatened, "SC" = Special Concern, "--" = an exemplary natural community, or a rare species tracked by NH Natural Heritage that has not yet been added to the official state list. An asterisk (*) indicates that the most recent report for that occurrence was more than 20 years ago.

Department of Natural and Cultural Resources
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DNCR/NHB
172 Pembroke Rd.
Concord, NH 03301

Memo

NH Natural Heritage Bureau NHB DataCheck Results Letter

Please note: portions of this document are confidential.

Maps and NHB record pages are confidential and should be redacted from public documents.

Disclaimer: A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

IMPORTANT: NHFG Consultation

If this NHB Datacheck letter DOES NOT include ANY wildlife species records, then, based on the information submitted, no further consultation with the NH Fish and Game Department pursuant to Fis 1004 is required.

If this NHB Datacheck letter includes a record for a threatened (T) or endangered (E) wildlife species, consultation with the New Hampshire Fish and Game Department under Fis 1004 may be required. To review the Fis 1000 rules (effective February 3, 2022), please go to <https://wildlife.state.nh.us/wildlife/environmental-review.html>. All requests for consultation and submittals should be sent via email to NHFGreview@wildlife.nh.gov or can be sent by mail, and **must include the NHB Datacheck results letter number and “Fis 1004 consultation request” in the subject line.**

If the NHB DataCheck response letter does not include a threatened or endangered wildlife species but includes other wildlife species (e.g., Species of Special Concern), consultation under Fis 1004 is not required; however, some species are protected under other state laws or rules, so coordination with NH Fish & Game is highly recommended or may be required for certain permits. While some permitting processes are exempt from required consultation under Fis 1004 (e.g., *statutory permit by notification, permit by rule, permit by notification, routine roadway registration, docking structure registration, or conditional authorization by rule*), coordination with NH Fish & Game may still be required under the rules governing those specific permitting processes, and it is recommended you contact the applicable permitting agency. For projects not requiring consultation under Fis 1004, but where additional coordination with NH Fish and Game is requested, please email: Kim Tuttle kim.tuttle@wildlife.nh.gov with a copy to NHFGreview@wildlife.nh.gov, and include the NHB Datacheck results letter number and “review request” in the email subject line.

Contact NH Fish & Game at (603) 271-0467 with questions.

Jennifer Riordan

From: DNCR: NHB Review <nhbreview@dn-cr.nh.gov>
Sent: Thursday, September 14, 2023 8:30 AM
To: Jennifer Riordan
Subject: [WARNING-EXT] RE: NHB22-3089 - Lahaye Dr. at Mt. Support Road, Lebanon

Hi Jenn,

Thank you for following up on this proposed project **NHB22-3089**, Lahaye Drive at Mt. Support Road in Lebanon.

NHB recommends the following:

- Fence off **Appalachian barren-strawberry** (*Geum fragarioides*) occurrences to avoid incidental impacts to rare plants that are adjacent to, but outside the impact areas. This should be done prior to initiation of work, and please provide NHB with photos of fenced off areas.
- The use of silt socks rather than silt fences as sediment controls, as silt socks do not require digging to install.
- In areas where this additional clearing is proposed for the relocation of aerial utility lines, please complete this portion of work during frozen ground conditions, if possible, to minimize impacts to the rare species habitat in that area.
- If it is not possible to complete the proposed tree and brush cutting in the *G. fragarioides* habitat during frozen conditions, use of timber matting is encouraged to avoid rutting, and accidental take of rare plant species.

If the above recommendations can be followed, there is evidence that minimization has occurred to the extent that transplanting is not warranted.

Please let me know if this is possible, or if you have any questions.

Thank you,

Ashley Litwinenko
Environmental Reviewer
Natural Heritage Bureau (NHB)
Division of Forests & Lands - DNCR
172 Pembroke Rd., Concord, NH 03301
Phone: 603-271-2834
[Datacheck Tool](#)
[NHB Botany Information](#)

From: Jennifer Riordan <JRiordan@GM2INC.COM>
Sent: Wednesday, September 13, 2023 2:15 PM
To: DNCR: NHB Review <nhbreview@dn-cr.nh.gov>
Subject: NHB22-3089 - Lahaye Dr. at Mt. Support Road, Lebanon

EXTERNAL: Do not open attachments or click on links unless you recognize and trust the sender.

Attached are updated plans and impact information for the Lahaye Drive & Mt. Support Road intersection improvement project in Lebanon. We are planning to submit the NHDES Wetlands Permit application soon. The project was last discussed with NHB at a pre-application meeting on 6/1/2023.

The project impacts are similar to what we discussed at the pre-application meeting, except that additional clearing is now proposed for the relocation of the aerial utility lines near the roundabout. This is called out on the attached plans. No grubbing is proposed, so we don't anticipate a loss of *G. fragarioides* habitat, however impacts could result from disturbance during the clearing activities. Would marking out the plant locations prior to construction be an acceptable way to minimize impacts?

Please let me know if you need any further information on the project, or if a quick meeting would be helpful.

Thanks,

Jenn



JENNIFER RIORDAN, CWS, CPESC

Senior Environmental Scientist

P 603.856.7854

C 603.724.4950

Lahaye Drive at Mt. Support Road
Intersection Improvements
Lebanon, NH



Photo 1.
View east along
Lahaye Drive from
intersection.
Wetland A impact
area is shown in left
side of photo.
Wetland B impact
area is shown in right
side of photo



Photo 2.
Wetland A impact
area, northeast
intersection quadrant



Photo 3.
Wetland B impact
area on south side of
Lahaye Drive, view
southwest



Photo 4.
Wetland B impact
area on south side of
Lahaye Drive, view
east



Photo 5.
Wetland D impact
area (proposed tree
clearing) on west
side of Mt. Support
Road, north of
intersection



Photo 6.
Wetland D1
(roadside swale) on
west side of Mt.
Support Road, north
of intersection



Photo 7.
Wetland E, located in
northwest
intersection quadrant



Photo 8.
Wetland F impact
area in southwest
intersection quadrant

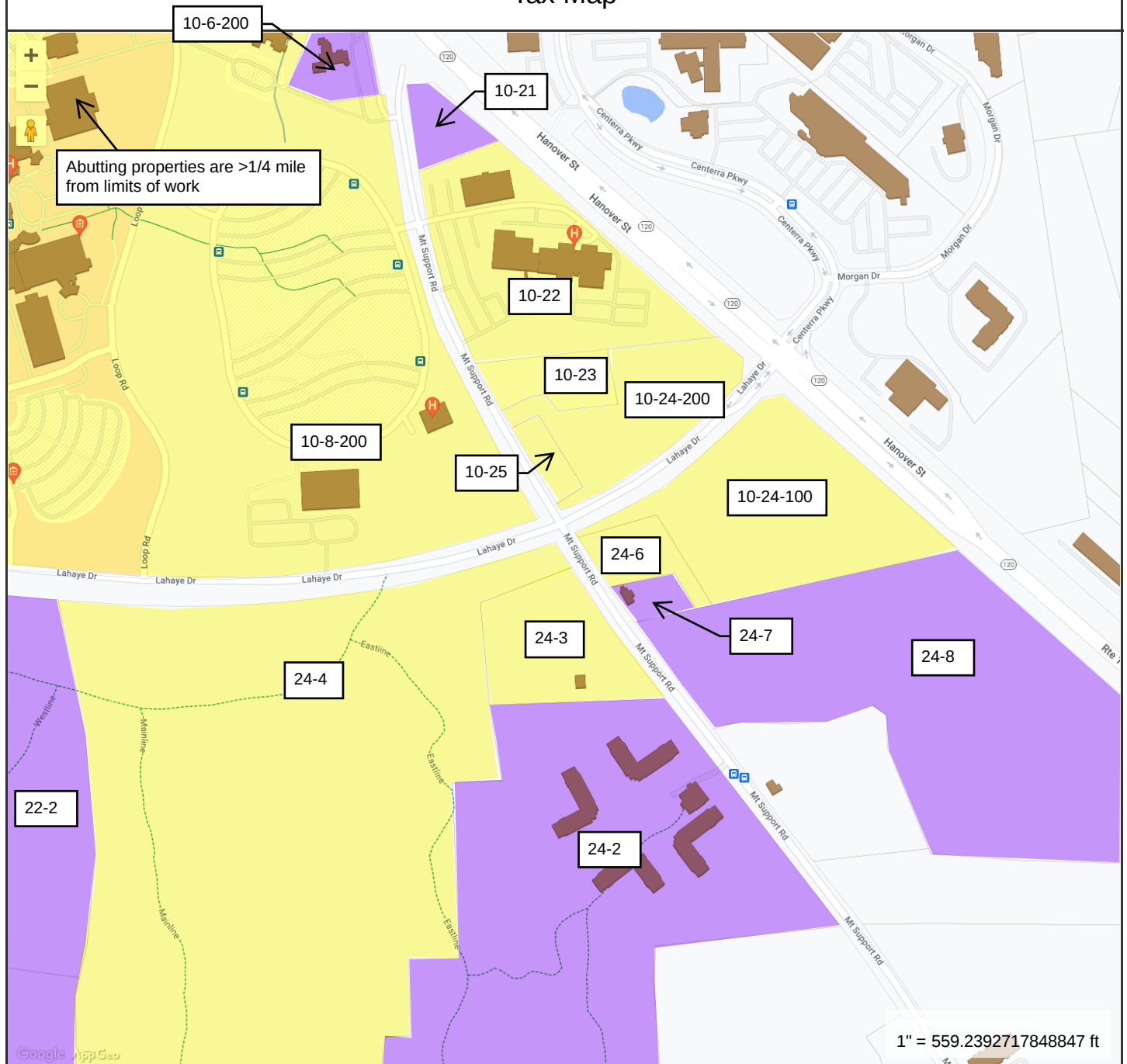


Photo 9.
Wetland F and *Geum
fragarioides* impact
area in SW
intersection
quadrant.



Photo 10.
Wetland I
(stormwater
treatment swale),
south of intersection
on west side of Mt.
Support Road

Tax Map



- = Project Property
- = Abutting Property



**MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT**

City of Lebanon, NH makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 08/11/2023
Data updated 11/18/2018

Print map scale is approximate.
Critical layout or measurement
activities should not be done using
this resource.

List of Abutting Properties

Map-Lot	Property Address	Owner Name and Mailing Address
10-21	460 Mount Support Road	Mary Hitchcock Memorial Hospital One Medical Center Dr Lebanon, NH 03756
10-6-200	461 Mount Support Road	Davids House Inc. 461 Mount Support Rd Lebanon, NH 03766
24-2	401 Mount Support Road	Dartmouth College Trustees PO Box 5188 Hanover, NH 03755
24-7	420 Mount Support Road	Upper Valley Supportive 226 Holiday Dr, Suite 20 White River Jct, VT 05001
24-8	0 Mount Support Road	Dartmouth College Trustees PO Box 5188 Hanover, NH 03755
22-2	127 Lahaye Drive	Dartmouth College Trustees PO Box 5188 Hanover, NH 03755

ABUTTER NOTIFICATION OF WETLANDS PERMIT APPLICATION

Via Certified Mail

September 21, 2023

**Re: NHDES Wetlands Permit Application
Lahaye Drive at Mt. Support Road Intersection Improvements
Lebanon, NH**

Dear Sir or Madam:

This letter is to inform you that a Wetlands Permit Application will be submitted to the NH Department of Environmental Services (NHDES) Wetlands Bureau for proposed improvements to the intersection of Lahaye Drive and Mt. Support Road in Lebanon. The project involves replacing the traffic signal with a two-lane roundabout to improve traffic conditions for vehicles, bikes, and pedestrians. Work will also include drainage infrastructure improvements and reconstruction/extension of the paved multi-use path along Mt. Support Road. Under state law RSA 482-A:3 I (d)(1), I am required to notify you via certified mail about this wetland permit application which proposes work abutting your property.

Once the permit application is submitted to NHDES, a copy of the permit application, including the plans associated with the project proposal, will be available for public review at the Town Clerk's Office in Lebanon. A copy of the permit application, including the plans associated with the project proposal, can also be reviewed at the NHDES headquarters in Concord by scheduling a file review by emailing filereview@des.nh.gov or calling (603) 271-2919.

If you have questions, you may contact my agent at the contact information provided below.

Sincerely,

City of Lebanon
Department of Public Works
193 Dartmouth College Highway
Lebanon, NH 03766

Agent's Contact Information:

Jennifer Riordan
GM2 Associates, Inc.
197 Loudon Road, Suite 310
Concord, NH 03301
603-856-7854
jriordan@gm2inc.com

7022 3330 0002 1799 3409

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☐ Adult Signature Restricted Delivery	\$0.00
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Street and Apt.	
City, State, ZIP+4	
Upper Valley Supportive 226 Holiday Dr, Suite 20 White River Jct, VT 05001	
PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions	

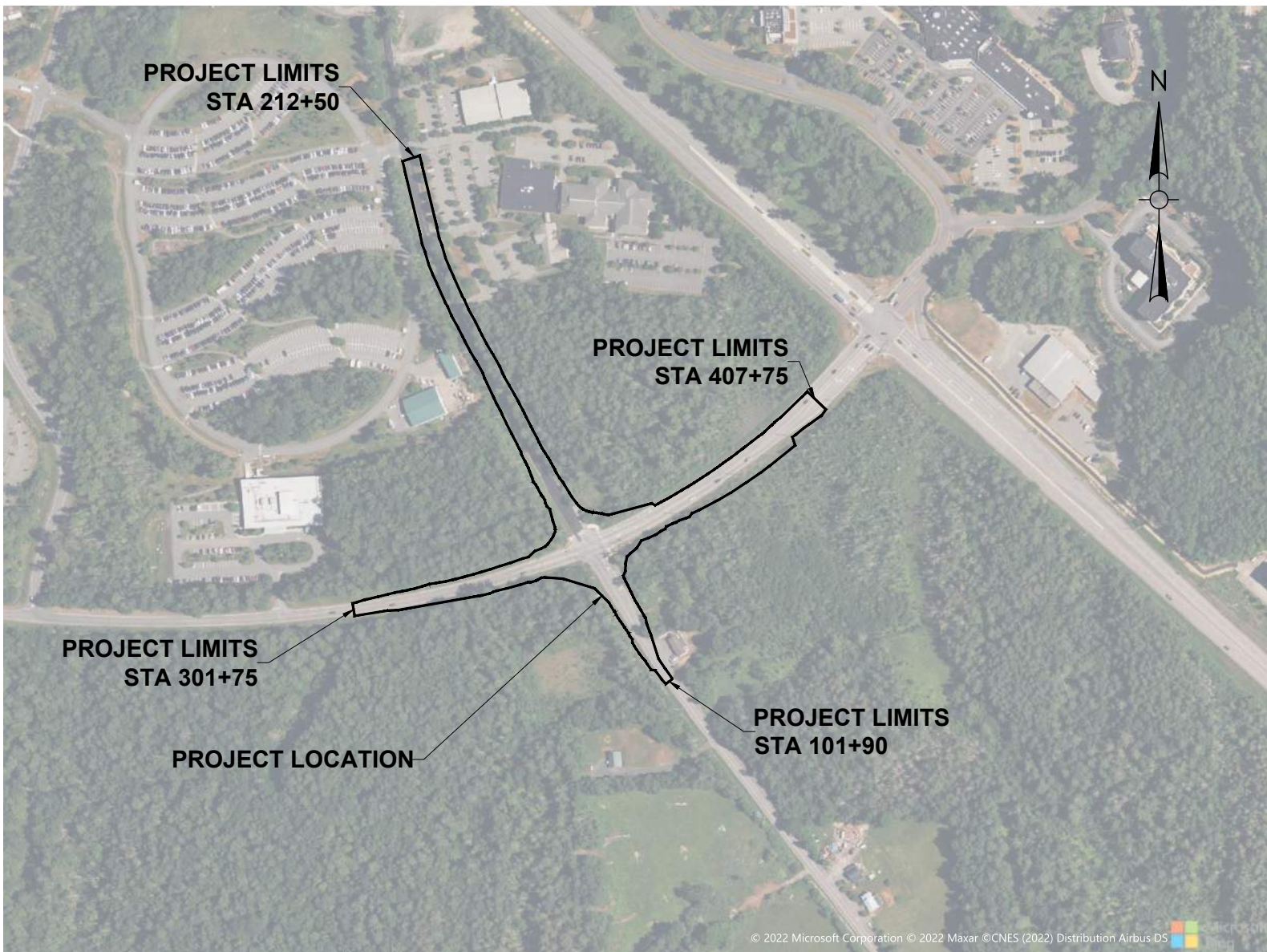
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☐ Certified Mail Restricted Delivery	\$0.00
☐ Adult Signature Required	\$0.00
☐ Adult Signature Restricted Delivery	\$0.00
Postage	\$0.66
Total Postage and Fees	\$8.56
Sent To	
Street and Apt. N	
City, State, ZIP+4	
Davids House Inc. 461 Mount Support Rd Lebanon, NH 03766	
PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions	

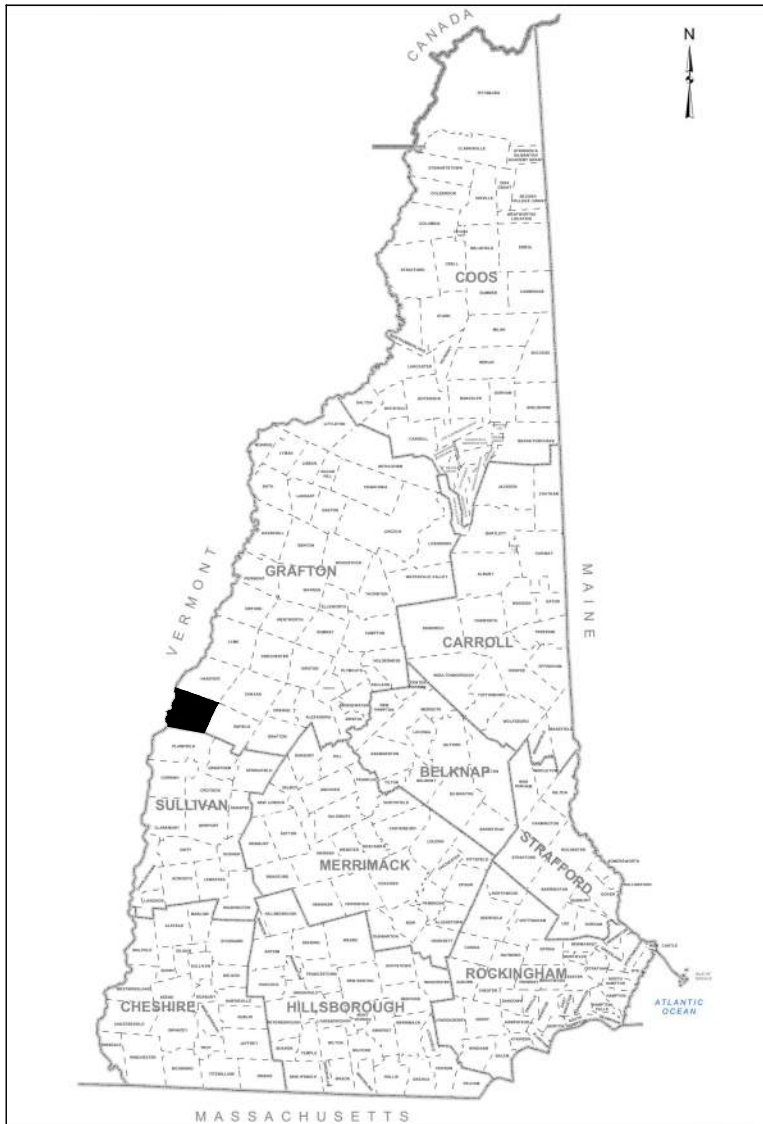
CITY OF LEBANON, NEW HAMPSHIRE

LAHAYE DRIVE AT MOUNT SUPPORT ROAD INTERSECTION IMPROVEMENTS - PERMITTING PLANS

CITY OF LEBANON DPW: 193 DARTMOUTH COLLEGE HIGHWAY, LEBANON, NH 03766



LOCATION MAP
NOT TO SCALE



VICINITY MAP
NOT TO SCALE



CITY SEAL

TIMOTHY MCNAMARA - MAYOR
NIK COATES - DEPUTY CITY MANAGER - PUBLIC WORKS
JAY CAIRELLI - ACTING PUBLIC WORKS DIRECTOR
BRIAN VINCENT, PE - CITY ENGINEER
ROD FINLEY, PE - CITY ENGINEER

INDEX	
SHEET NO.	SHEET TITLE
1	COVER SHEET & INDEX
2	KEY PLAN
3	GENERAL NOTES, LEGEND, & ABBREVIATIONS
4	DRAINAGE AND EROSION CONTROL DETAILS
5 - 10	PERMITTING PLANS



WETLAND DELINEATION: JENNIFER RIORDAN, GM2 ASSOCIATES, INC. (CWS #269)
SURVEYOR: MITCHELL CUMMINGS, GM2 ASSOCIATES, INC. (PLS #01011)
DESIGN ENGINEER: JEFFREY SANTACRUCE, WESTON & SAMPSON (NH PE #10650)

Issued Date:

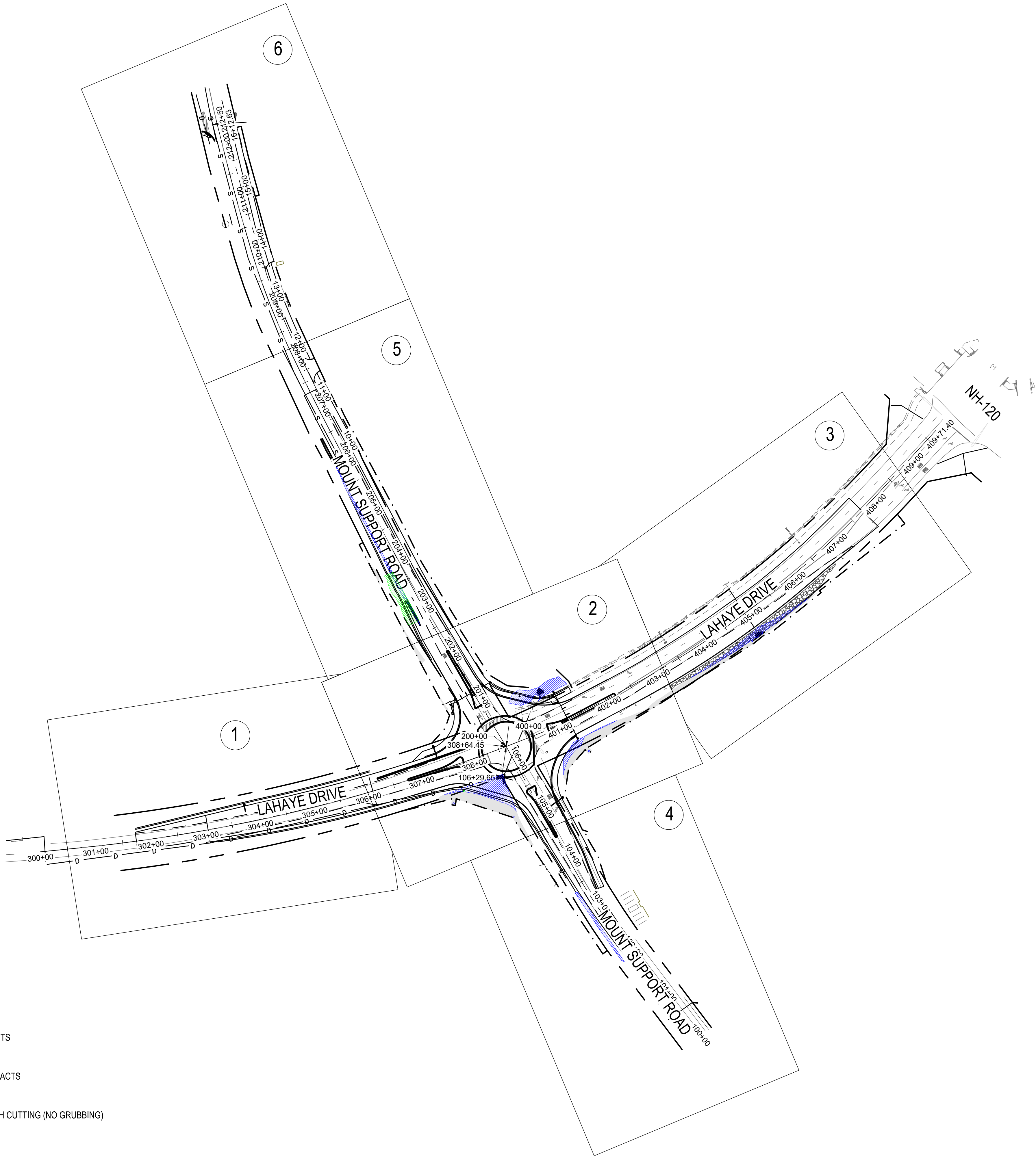
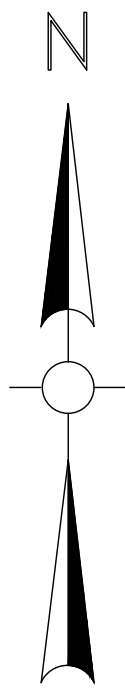
September 2023

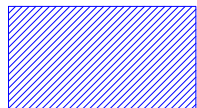
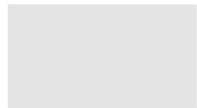


Know what's below.
Call before you dig.

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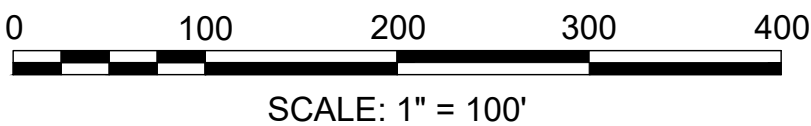


-  WETLAND IMPACTS
-  RARE PLANT IMPACTS
-  TREE AND BRUSH CUTTING (NO GRUBBING)

SHEET TITLE	DRAWING NUMBER					
SHEET REFERENCE:	①	②	③	④	⑤	⑥
PERMITTING PLAN	5	6	7	8	9	10

WETLAND AND RARE PLANT IMPACTS BY SHEET						
SHEET	①	②	③	④	⑤	⑥
WETLAND IMPACTS (SF)	0.0	5218.1	1416.5	645.9	1025.5	0.0
RARE PLANT IMPACTS (SF)	0.0	6.6	0.0	0.0	1830.1	0.0
TREE AND BRUSH CUTTING IN WETLANDS (NO GRUBBING) (SF)	0.0	6233.4	1775.6	86.2	263.8	0.0

TOTAL WETLAND IMPACTS = 8306.0 SF
TOTAL RARE PLANT IMPACTS = 1836.7 SF (PLUS SPOT AREAS/INDIVIDUAL PLANTS)
TOTAL TREE AND BRUSH CUTTING IN WETLANDS (NO GRUBBING) = 8359.0 SF



Project:

LAHAYE DRIVE AT MOUNT SUPPORT ROAD INTERSECTION IMPROVEMENTS

Weston & Sampson
Weston & Sampson Engineers, Inc.
150 Dow Street, Tower 4, Suite 350
Manchester, NH 03101
978.532.1900 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

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Scale: AS SHOWN

Date: September 2023

Drawn By: OOA

Reviewed By: CMG

Approved By: JWS

W&S Project No.: ENG21-1276

W&S File No.:

Drawing Title:

KEY PLAN

Sheet Number:

2

GENERAL NOTES:

1. THE EXISTING CONDITIONS SHOWN ON THIS BASE MAP ARE THE RESULT OF AN ACTUAL ON-THE-GROUND SURVEY BY THIS OFFICE USING LEICA TS-12 3" ROBOTIC TOTAL STATIONS AND TRIMBLE R12 GNSS/GPS RECEIVERS COMPLETED BETWEEN DEC. 15, 2021 AND JAN. 28, 2022. THE SITE WAS COVERED WITH BETWEEN 0" AND 16" OF SNOW AT THE TIME OF THE SURVEY. SUPPLEMENTAL ADDITIONAL SURVEY WAS PERFORMED IN AUGUST OF 2022, EXPANDING THE COVERAGE OF THE BASE PLAN.
2. PRIMARY CONTROL TRAVERSE ERROR OF CLOSURE BETTER THAN 1:15,000. HORIZONTAL AND VERTICAL DATUM BASED ON NH STATE PLANE COORDINATE SYSTEM, NAD83(2011), NAVD 88 ESTABLISHED BY NETWORK CORRECTED RTK GPS.
3. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. THE CONTRACTOR SHALL DIG TEST PITS WITH THE LOCATIONS BEING APPROVED BY THE ENGINEER PRIOR TO COMMENCEMENT OF WORK TO EXACTLY LOCATE EXISTING UTILITIES.
4. THE PRIVATE ABUTTING BOUNDARY LINES ARE SHOWN AS APPROXIMATE AND WERE DERIVED FROM PUBLIC GIS DATA. NO BOUNDARY SURVEY OF ABUTTING PARCELS OR ASSOCIATED LAND RECORD RESEARCH WAS COMPLETED AS PART OF THIS SURVEY.
5. THE EXISTING ROW LINES SHOWN ON THE BASEPLAN WERE ASCERTAINED BY GM2 ON THE DATE OF THIS SURVEY. UNWRITTEN RIGHTS IN LAND, THOUGH THEY MAY EXIST, ARE NOT SHOWN ON THIS SURVEY.
6. MT. SUPPORT ROAD WAS LAID OUT FOUR RODS WIDE BY THE SELECTMEN OF LEBANON ON AUGUST 24, 1841. THIS LAYOUT IS RECORDED IN NH HIGHWAY DEPARTMENT BOOK 1, PAGE 516. NO RECORD REALIGNMENTS OR WIDENINGS WERE DISCOVERED BY GM2.
7. LAHAYE DRIVE WAS ACQUIRED BY THE CITY OF LEBANON ON OCTOBER 9, 1991 BY DEED RECORDED IN THE GRAFTON COUNTY REGISTRY OF DEEDS AS B: 1934 P: 200.
8. WETLANDS WERE DELINEATED BY JENNIFER RIORDAN (CWS #269) OF GM2 ASSOCIATES, INC. ON NOVEMBER 24, 2021, DECEMBER 17, 2021, AND AUGUST 1, 2022 IN ACCORDANCE WITH THE US ARMY CORPS OF ENGINEERS (ACOE) 1987 METHODOLOGY AND THE ACOE NORTHCENTRAL AND NORTHEAST REGIONAL SUPPLEMENT (2012).
9. THE RARE PLANT IDENTIFIED WITHIN THE PROJECT LIMITS IS APPALACHIAN BARREN-STRAWBERRY (GEUM FRAGARIOIDES), WHICH IS STATE-LISTED AS THREATENED. THE APPROXIMATE EXTENTS OF THE SPECIES WERE FLAGGED ON DECEMBER 17, 2021, MAY 3, 2022, AND AUGUST 1, 2022.
10. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.
11. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY OWNER. ANY ALTERATIONS SHALL BE INCIDENTAL TO THE PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR THE TEMPORARY SUPPORT OF ALL UTILITIES TO REMAIN IN PLACE AND SHALL DESCRIBE IN WRITING, TO THE SATISFACTION OF THE ENGINEER, HIS METHOD OF TEMPORARY SUPPORT.
12. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
13. THE TERM "PROPOSED (PROP)" INDICATES WORK TO BE CONSTRUCTED USING NEW MATERIALS OR, WHERE APPLICABLE, RE-USING EXISTING MATERIALS IDENTIFIED AS "REMOVE AND RESET (R&R)".
14. ALL EXCESS MATERIAL FROM ROADWAY RECONSTRUCTION OR THE EXCAVATION PROCESS SHALL BE REUSED ON SITE OR REMOVED FROM THE SITE AND DISPOSED OF IN A LEGAL AND PROPER MANNER.
15. THE CONTRACTOR SHALL CALL DIGSAFE AT 1-888-344-7233 AT LEAST 72 HOURS, SATURDAYS, AND HOLIDAYS EXCLUDED, PRIOR TO EXCAVATING AT ANY LOCATION. A COPY OF THE DIGSAFE PROJECT REFERENCE NUMBER(S) SHALL BE GIVEN TO THE TOWN PRIOR TO EXCAVATION.
16. THE CONTRACTOR SHALL VERIFY BY TEST PIT, THE LOCATION OF EXISTING UTILITIES WHICH MAY CONFLICT WITH THE PROPOSED DRAINAGE DESIGN. ANY FIELD ADJUSTMENTS REQUIRED WILL BE MADE AS APPROVED OR DIRECTED BY THE ENGINEER. ONLY AFTER THE CONTRACTOR VERIFIES ELEVATIONS FOR THE CONSTRUCTABILITY OF THE DRAINAGE SYSTEM, THE STRUCTURES SHALL BE ORDERED.
17. IF DEEMED NECESSARY DUE TO THE WORK, THE CONTRACTOR SHALL COORDINATE WITH THE CITY OF LEBANON HIGHWAY DEPARTMENT, THE LEBANON POLICE DEPARTMENT, THE LEBANON FIRE DEPARTMENT, AND THE ENGINEER FOR APPROVAL OF SHUTTING DOWN ANY EXISTING WATER MAINS AND SHALL ALSO OBTAIN APPROVAL FOR DISRUPTING ANY EXISTING SEWER FLOWS.
18. THE CONTRACTOR SHALL BE AWARE THAT ONLY CITY PERSONNEL ARE ALLOWED TO OPERATE WATER GATES AND HYDRANTS. ANY REQUESTS TO OPERATE THE GATES SHALL BE COORDINATED THROUGH THE ENGINEER.
19. THE CONTRACTOR SHALL COORDINATE ANY WORK FOR THE PROJECT WITH ALL ADJACENT/CONCURRENT PROJECTS AND CONTRACTORS.
20. THE CONTRACTOR SHALL INSTALL PRIOR TO COMMENCEMENT OF WORK, MAINTAIN, AND REMOVE AT THE END OF THE PROJECT INLET SEDIMENT CONTROL BAGS IN ALL CATCH BASINS, WITHIN OR ADJACENT TO THE PROJECT LIMITS. THE CONTRACTOR SHALL ALSO MAINTAIN COMPOST FILTER TUBES AS SHOWN ON THE PLANS THROUGHOUT THE DURATION OF THE PROJECT AND REMOVE AT THE END.
21. ANY GRASS AREAS DISTURBED BY THE WORK SHALL BE RESTORED WITH TURF ESTABLISHMENT.
22. ANY LANDSCAPED AREAS DISTURBED BY THE WORK SHALL BE RESTORED TO EXISTING CONDITIONS WITH EXISTING OR NEW GROUND COVER MATERIALS AS DIRECTED BY THE ENGINEER. ANY PLANTS, SHRUBS, OR FLOWERS DISTURBED BY THE WORK SHALL BE RESET TO EXISTING CONDITIONS OR REPLACED WITH NEW PLANTS, SHRUBS, OR FLOWERS AS DIRECTED BY THE ENGINEER. ALL WORK TO RESTORE LANDSCAPE AREAS, NEW GROUND COVER MATERIALS, NEW PLANTS, NEW SHRUBS, OR NEW FLOWERS REQUIRED BY THE ENGINEER SHALL BE INCIDENTAL TO THE PROJECT.
23. CONTRACTOR TO COORDINATE WITH UTILITY POLE OWNERS IN AREAS WHERE UNDERGROUND UTILITY WORK IS WITHIN CLOSE PROXIMITY AND POSSIBLE UTILITY POLE SHORING IS REQUIRED WHILE INSTALLING PROPOSED UTILITIES.
24. RAISE AND ADJUST FRAMES AND GRATES, FRAMES AND COVERS AND GATE BOXES PRIOR TO PAVEMENT OVERLAY, IF REQUIRED.
25. CONTRACTOR IS RESPONSIBLE FOR REPLACING ANY PROPERTY PINS, PIPES, OR MONUMENTS THAT ARE DAMAGED OR DESTROYED DURING CONSTRUCTION, TO THEIR LOCATION JUST PRIOR TO CONSTRUCTION. THIS COST IS CONSIDERED INCIDENTAL TO THE CONTRACT.
26. THE CONTRACTOR SHALL NOT STORE ANY APPARATUS, MATERIALS, SUPPLIES, OR EQUIPMENT ON DRAINAGE STRUCTURES OR WITHIN 100 FEET OF WETLANDS.

LEGEND		
DESCRIPTION	EXISTING	PROPOSED
SANITARY SEWER		
WATER MAIN		
TEMPORARY WATER		
STORM DRAIN		
GAS		
ELECTRIC		
TELEPHONE		
OVERHEAD WIRE		
SANITARY SEWER MANHOLE		
STORM DRAIN MANHOLE		
ELECTRICAL MANHOLE		
TELEPHONE MANHOLE		
AIR RELEASE VALVE MANHOLE		
CATCH BASIN		
CATCH BASIN (CURB INLET)		
HYDRANT		
GATE VALVE		
CHECK VALVE		
CURB STOP		
BUTTERFLY VALVE		
BALL VALVE		
REDUCER		
CAP OR PLUG		
GAS GATE VALVE		
UTILITY POLE		
GUY POLE		
LIGHT POST		
EDGE OF PAVEMENT		
EDGE OF UNPAVED ROAD		
CURB		
SIDEWALK		
STONE WALL		
RETAINING WALL		
FENCE		
INDIVIDUAL DECIDUOUS TREE		
INDIVIDUAL EVERGREEN TREE		
TREE LINE		
ROCK/BOULDER		
SURVEY MARKER		
PROPERTY LINE		
EASEMENT LINE		
RIGHT OF WAY LINE		
LIMIT OF WORK		
SPOT ELEVATIONS		
CONTOUR LINES		
DEPRESSION CONTOUR LINES		
HOUSE NUMBER		
WETLAND		
WETLAND FLAGS		
RIP RAP		
SURFACE MOUNTED DELINEATOR		
GUARD POST		
BOLLARD		
SIGN		
BENCH MARK		
AUGER		
PERCOLATION TEST		
TEST PIT		
BORING		
PROBE		
GROUNDWATER MONITORING WELL		
GAS MONITORING WELL		
GAS VENT		
COMPOST SOCK FOR PERIMETER BERM		
LIMIT OF WORK - CUT SLOPE		
LIMIT OF WORK - FILL SLOPE		
DRAINAGE DITCH / SWALE		

NOTE: SOME ITEMS SHOWN IN THE LEGEND MAY NOT BE PRESENT IN THESE PLANS

ABBREVIATIONS	
GENERAL	
AADT	ANNUAL AVERAGE DAILY TRAFFIC
ABAN	ABANDON
ADJ	ADJUST
APPROX.	APPROXIMATE
A.C.	ASPHALT CONCRETE
ACCM PIPE	ASPHALT COATED CORRUGATED METAL PIPE
BIT.	BITUMINOUS
BC	BOTTOM OF CURB
BD.	BOUND
BL	BASELINE
BLDG	BUILDING
BM	BENCHMARK
BO	BY OTHERS
BOS	BOTTOM OF SLOPE
BR.	BRIDGE
CB	CATCH BASIN
CBCI	CATCH BASIN WITH CURB INLET
CC	CEMENT CONCRETE
CCM	CEMENT CONCRETE MASONRY
CEM	CEMENT
CI	CURB INLET
CIP	CAST IRON PIPE
CLF	CHAIN LINK FENCE
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CSP	CORRUGATED STEEL PIPE
CO.	COUNTY
CONC	CONCRETE
CONT	CONTINUOUS
CONST	CONSTRUCTION
CR GR	CROWN GRADE
DHV	DESIGN HOURLY VOLUME
DI	DROP INLET
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DW	STEADY DON'T WALK - PORTLAND ORANGE
DWY	DRIVEWAY
ELEV (or EL.)	ELEVATION
EMB	EMBANKMENT
EOP	EDGE OF PAVEMENT
EXIST (or EX)	EXISTING
EXC	EXCAVATION
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
FDN.	FOUNDATION
FLDSTN	FIELDSTONE
GAR	GARAGE
GD	GROUND
GG	GAS GATE
GI	GUTTER INLET
GIP	GALVANIZED IRON PIPE
GRAN	GRANITE
GRAV	GRAVEL
GRD	GUARD
HDW	HEADWALL
HMA	HOT MIX ASPHALT
HOR	HORIZONTAL
HYD	HYDRANT
INV	INVERT
JCT	JUNCTION
L	LENGTH OF CURVE
LB	LEACH BASIN
LP	LIGHT POLE
LT	LEFT
MAX	MAXIMUM
MB	MAILBOX
MH	MANHOLE
MIN	MINIMUM
NIC	NOT IN CONTRACT
NO.	NUMBER
OHW	ORDINARY HIGH WATER
OW	OVERHEAD WIRES
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PCR	PEDESTRIAN CURB RAMP

ABBREVIATIONS	
GENERAL	
P.G.L.	PROFILE GRADE LINE
PI	POINT OF INTERSECTION
POC	POINT ON CURVE
POT	POINT ON TANGENT
PRC	POINT OF REVERSE CURVATURE
PROJ	PROJECT
PROP	PROPOSED
PSB	PLANTABLE SOIL BORROW
PT	POINT OF TANGENCY
PVC	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
PVMT	PAVEMENT
PWW	PAVED WATER WAY
R	RADIUS OF CURVATURE
R&D	REMOVE AND DISPOSE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RDWY	ROADWAY
REM	REMOVE
RET	RETAIN
RET WALL	RETAINING WALL
ROW	RIGHT OF WAY
RR	RAILROAD
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
RT	RIGHT
SB	STONE BOUND
SHLD	SHOULDER
SMH	SEWER MANHOLE
ST	STREET
STA	STATION
SSD	STOPPING SIGHT DISTANCE
SHLO	STATE HIGHWAY LAYOUT LINE
SW	SIDEWALK
T	TANGENT DISTANCE OF CURVE/TRUCK %
TAN	TANGENT
TEMP	TEMPORARY
TC	TOP OF CURB
TOS	TOP OF SLOPE
TYP	TYPICAL
UP	UTILITY POLE
VAR	VARIES
VERT	VERTICAL
VC	VERTICAL CURVE
WG	WATER GATE
WIP	WROUGHT IRON PIPE
WM	WATER METER/WATER MAIN
XSEC	CROSS SECTION

CONSTRUCTION SEQUENCING:

1. IT IS ANTICIPATED THAT ONCE THE WETLAND PERMIT IS ISSUED, THE UTILITY COMPANIES WILL WORK WITH THE CITY TO RELOCATE THE OVERHEAD UTILITY POLES AS SHOWN ON THE PLAN. THIS WILL REQUIRE CUTTING OF TREES WITHIN THE WETLAND TO ALLOW SPACE FOR OVERHEAD WIRES. IF TREE CUTTING WITHIN THE WETLAND CAN NOT BE COMPLETED DURING FROZEN CONDITIONS, THE UTILITY CONTRACTOR WILL NEED TO USE TIMBER MATTING TO AVOID RUTTING AND REDUCE DISTURBANCE OF THE RARE PLANT.
2. CONTRACTOR TO MOBILIZE TO THE SITE AND SET UP SURVEY CONTROL AND ALL PERIMETER EROSION CONTROL METHODS AND PROTECTIONS FOR RARE PLANTS.
3. CONTRACTOR TO CLEAR AND GRUB AREAS ALONG THE ROADWAY USING CAUTION NOT TO IMPACT AREAS OUTSIDE PERIMETER CONTROLS.
4. CONTRACTOR TO CONSTRUCT SHOULDER WIDENING AREAS ALONG LAHAYE DRIVE AND MOUNT SUPPORT ROAD AND INSTALL NEW SWALES AND DRAINAGE STRUCTURES. AT THIS TIME CONTRACTOR WILL INSTALL ADDITION EROSION CONTROL AND SEDIMENT CONTROL MEASURES WITHIN SWALES AND AT NEW CATCH BASINS TO LIMIT THE TRANSMISSION OF SEDIMENT.
5. CONTRACTOR WILL PERFORM A RECLAIM OF THE ENTIRE ROADWAY WITHIN THE PROJECT LIMITS AND THEN BINDER PAVE THE AREA.
6. CONTRACTOR WILL INSTALL CENTER ISLAND AND TRUCK APRON WITHIN THE ROUNDABOUT AND ALL CURBING.
7. CONTRACTOR TO FINAL PAVE ROADWAY AND INSTALL PAVEMENT MARKINGS.
8. CONTRACTOR TO FINALIZE ALL SLOPES AND MAKE COMPLETE ALL LANDSCAPING AND SLOPE TURF ESTABLISHMENT. ONCE ALL SLOPES ARE STABILIZED AND TURF IS ESTABLISHED THE CONTRACTOR WILL REMOVE PERIMETER CONTROLS. IT SHOULD BE NOTED THAT AT A MINIMUM THE CONTRACTOR WILL PERFORM INSPECTIONS OF EROSION CONTROLS ON A WEEKLY OR BASIS OR AFTER ANY STORM EVENT THAT RESULTS IN 1 OR MORE INCHES OF RAINFALL.

LAHAYE DRIVE AT
MOUNT SUPPORT
ROAD INTERSECTION
IMPROVEMENTS



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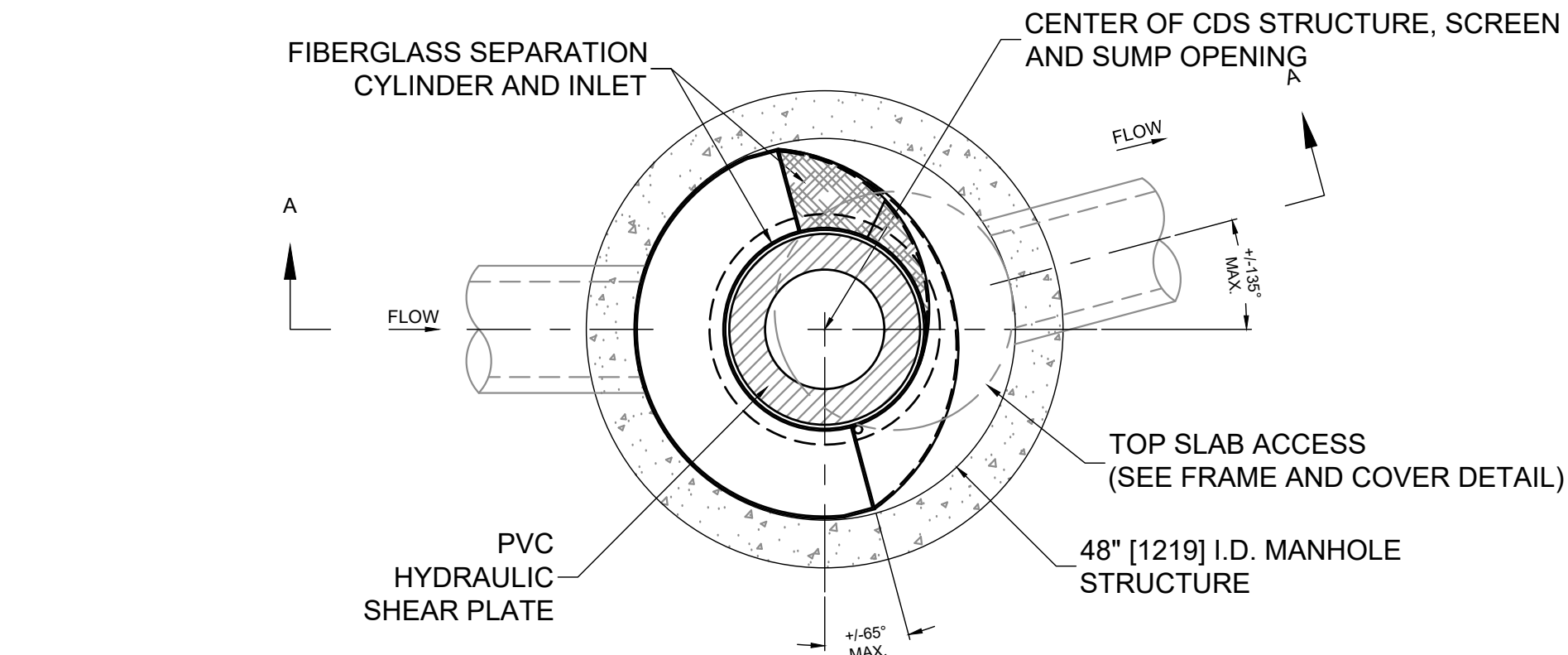
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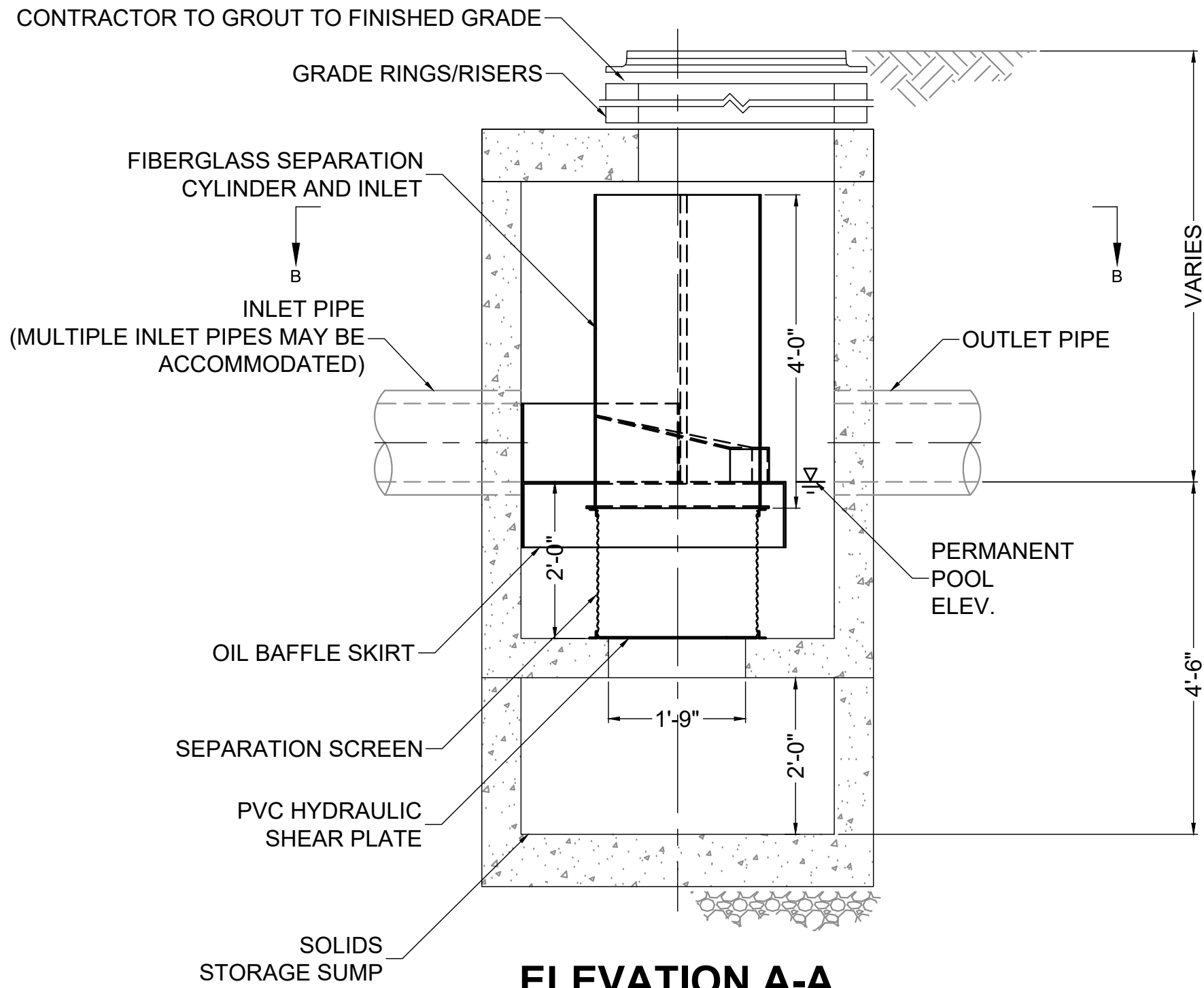
GENERAL NOTES
LEGEND &
ABBREVIATIONS

Sheet Number:

3



PLAN VIEW B-B
N.T.S.

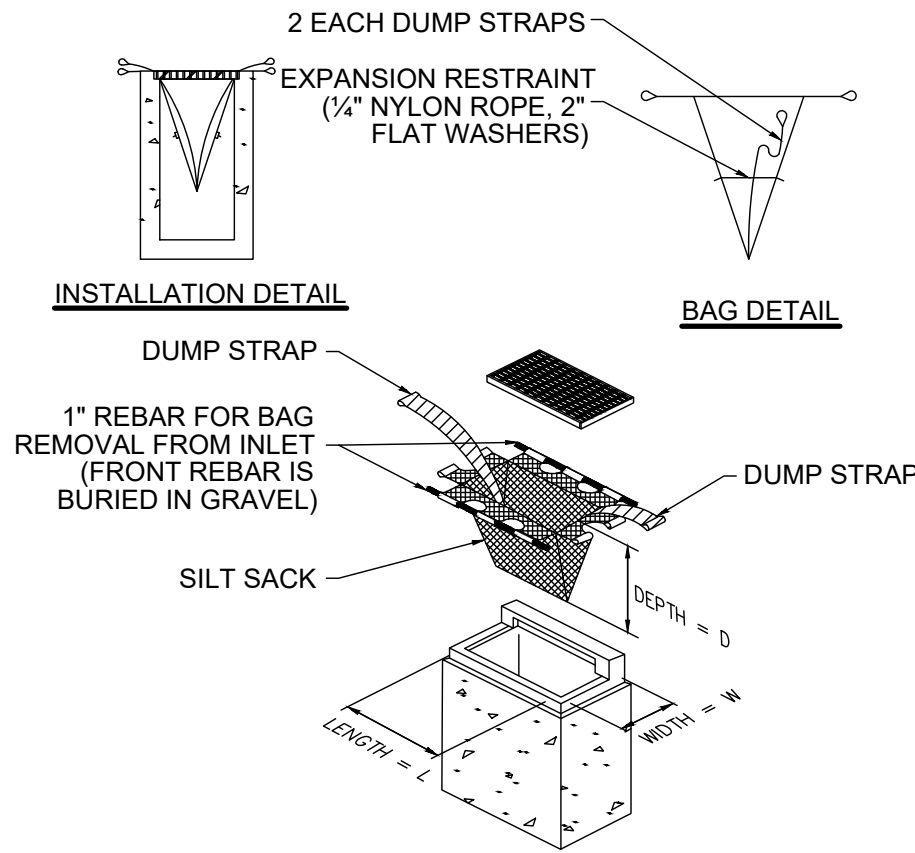


ELEVATION A-A
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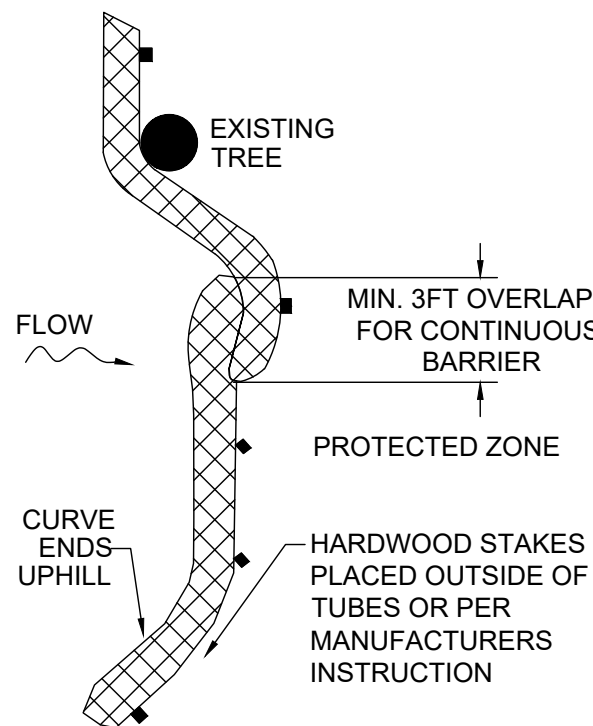
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STRUCTURE ID				MH 130
WATER QUALITY FLOW RATE (CFS OR L/s)				0.47 CFS
PEAK FLOW RATE (CFS OR L/s)				*
RETURN PERIOD OF PEAK FLOW (YRS)				*
SCREEN APERTURE (2400 OR 4700)				*
PIPE DATA:	I.E.	MATERIAL	DIAMETER	
INLET PIPE 1	766.47	RCP	12 IN	
INLET PIPE 2	766.73	RCP	15 IN	
OUTLET PIPE	766.45	RCP	15 IN	
RM ELEVATION			770.71	
ANTI-FLOTATION BALLAST		WIDTH	HEIGHT	
		*	*	
NOTES/SPECIAL REQUIREMENTS:				
* PER ENGINEER OF RECORD				

SITE SPECIFIC DATA REQUIREMENTS				
STRUCTURE ID			MH 18	
WATER QUALITY FLOW RATE (CFS OR L/s)			0.18 CFS	
PEAK FLOW RATE (CFS OR L/s)			*	
RETURN PERIOD OF PEAK FLOW (YRS)			*	
SCREEN APERTURE (2400 OR 4700)			*	
PIPE DATA:	I.E.	MATERIAL	DIAMETER	
INLET PIPE 1	766.50	RCP	12 IN	
INLET PIPE 2	766.46	RCP	15 IN	
OUTLET PIPE	766.38	RCP	15 IN	
RIM ELEVATION			770.48	
ANTI-FLOTATION BALLAST		WIDTH	HEIGHT	
		*	*	
NOTES/SPECIAL REQUIREMENTS:				
* PER ENGINEER OF RECORD				

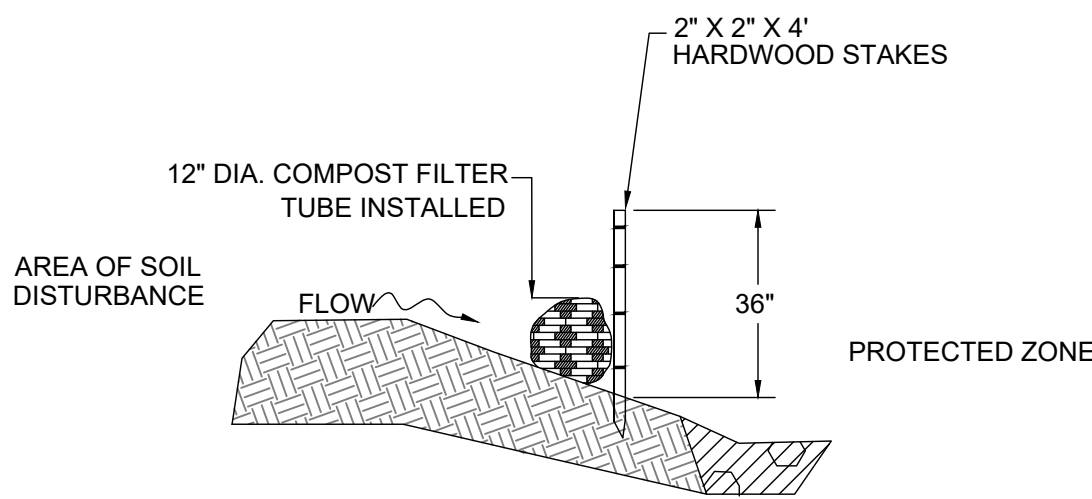
HYDRODYNAMIC SEPARATOR UNITS
N.T.S.



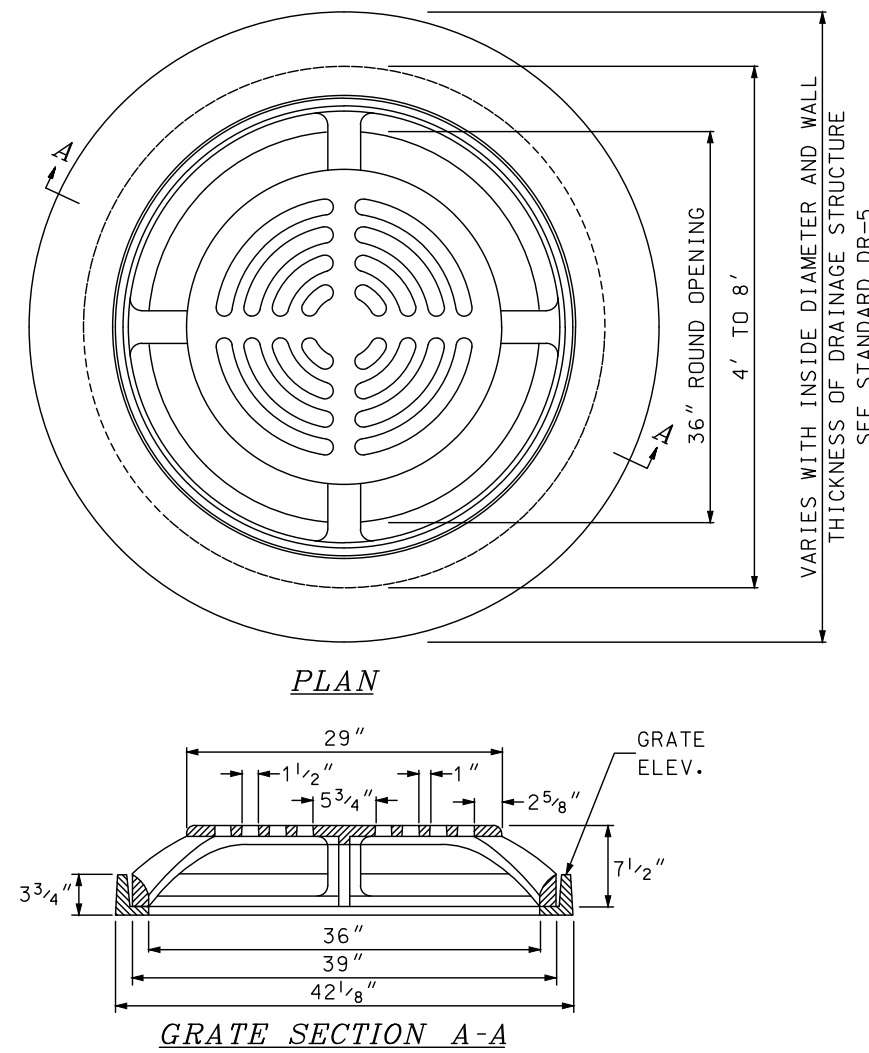
CATCHBASIN SILTSACK INLET PROTECTION
SEDIMENT CONTROL MEASURE
N.T.S.



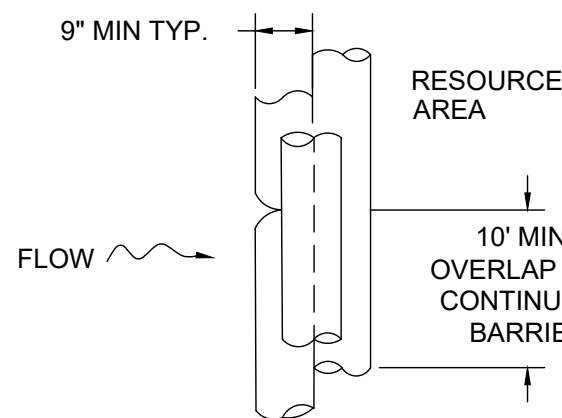
PLAN VIEW



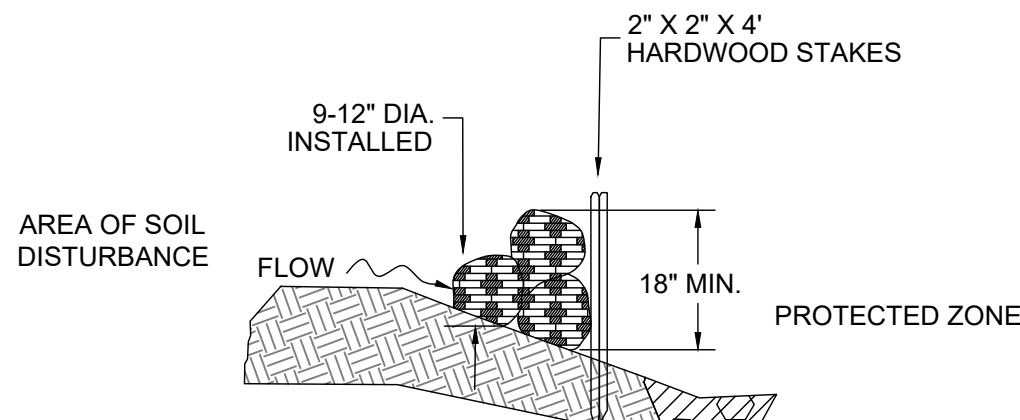
COMPOST FILTER TUBE
N.T.S.



TYPE G "BEEHIVE" GRATES
N.T.S.



PLAN VIEW



COMPOST FILTER TUBE BERM
N.T.S.

- NOTES:
1. PLACE TUBE ALONG CONTOURS AND PERPENDICULAR TO FLOW
 2. PLACE AS CLOSE TO LIMIT OF SOIL DISTURBANCE AS POSSIBLE
 3. ADJUST LOCATION AS REQUIRED FOR OPTIMUM EFFECTIVENESS DO NOT INSTALL IN WATERWAYS
 4. PLACE STAKES AS NEEDED TO SECURE TUBES IN PLACE

SEDIMENT BARRIERS
N.T.S.

Project:

LAHAYE DRIVE AT MOUNT SUPPORT ROAD INTERSECTION IMPROVEMENTS

Weston & Sampson

Weston & Sampson Engineers, Inc.
150 Dow Street, Tower 4, Suite 350
Manchester, NH 03101
978.532.1900 800.SAMPSON
www.westonandsampson.com

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Scale: AS SHOWN

Date: September 2023

Drawn By: CMG

Reviewed By: JWS

Approved By: JWS

W&S Project No.: ENG21-1276

W&S File No.:

Drawing Title:

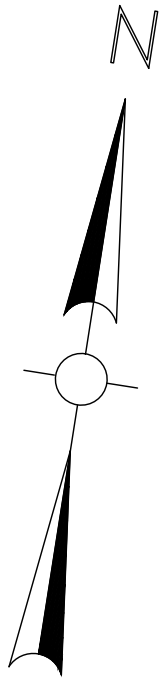
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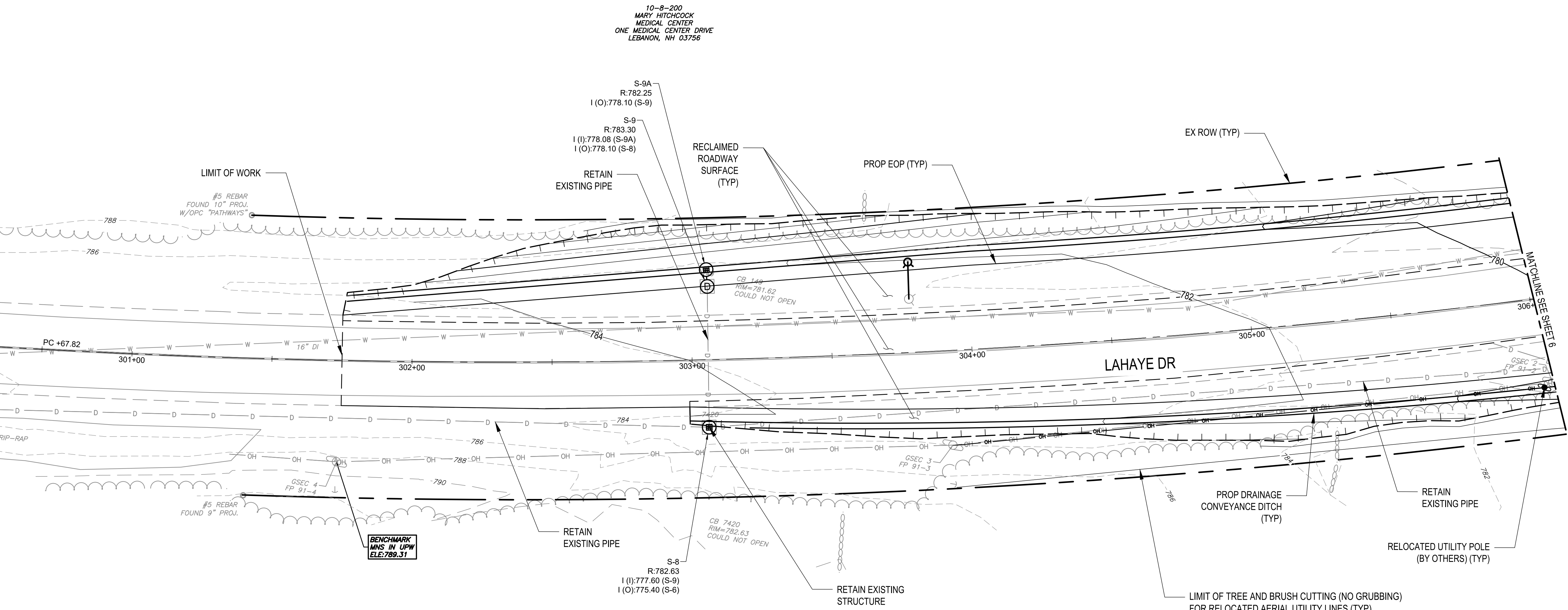
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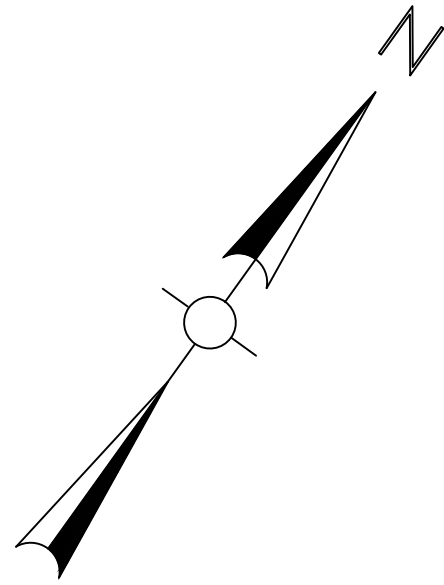
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NOTES:
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10-24-200
DARTMOUTH COLLEGE
TRUSTEES
PO BOX 5188
HANOVER, NH 03755

WETLAND A
(PSS1E)

WETLAND AREA TO BE IMPACTED BY
LAHAYE DRIVE PATH PROJECT
(COVERED UNDER NHDES WETLANDS
PERMIT #2021-02369)

RARE PLANT

PLANT

36IN RCP
INV:757.44

760

762

764

766

768

770

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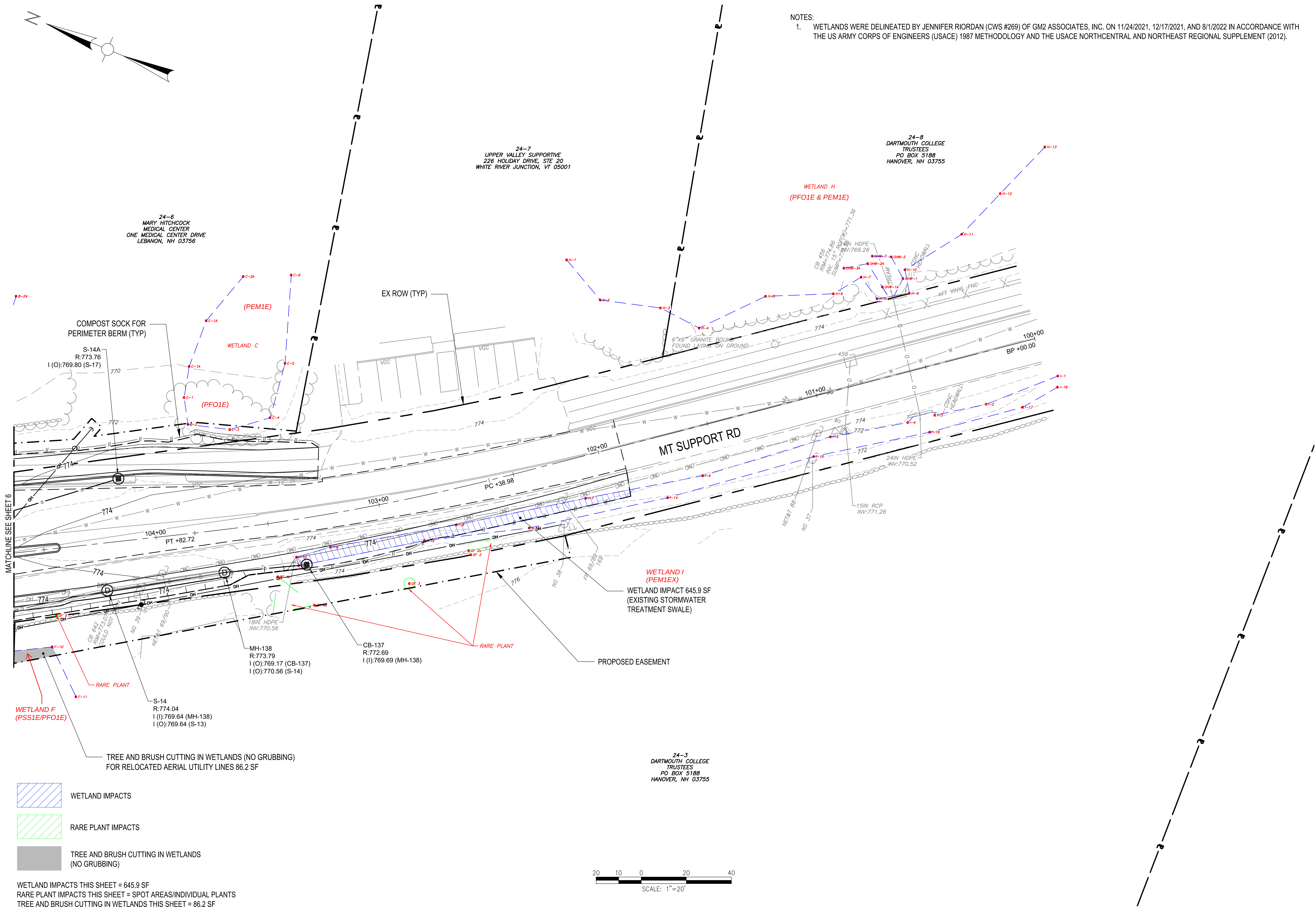
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Project:

LAHAYE DRIVE AT MOUNT SUPPORT ROAD INTERSECTION IMPROVEMENTS



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Reviewed By: JWS

Approved By: JWS

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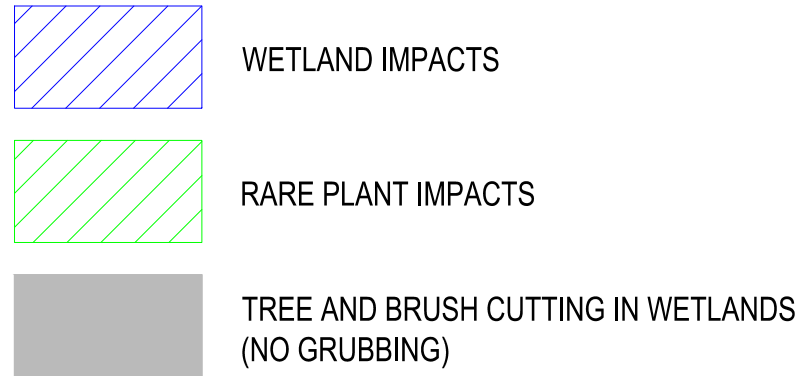
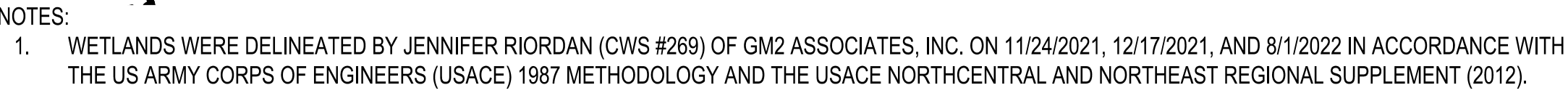
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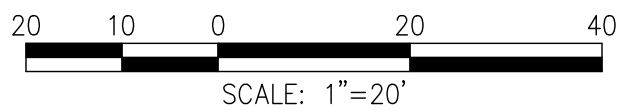
PERMITTING PLAN 4

Sheet Number:

8



WETLAND IMPACTS THIS SHEET = 1025.5 SF
RARE PLANT IMPACTS THIS SHEET = 1830.1 SF PLUS SPOT AREAS/INDIVIDUAL PLANTS
TREE AND BRUSH CUTTING IN WETLANDS THIS SHEET = 263.8 SF



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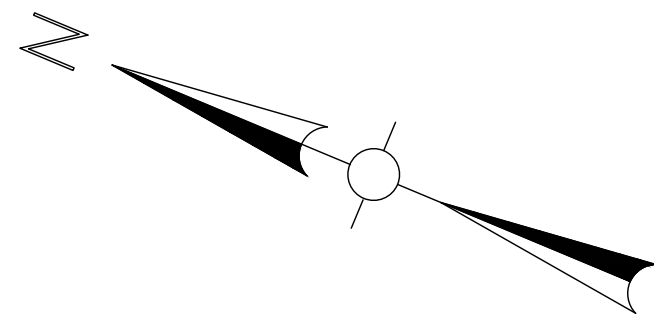
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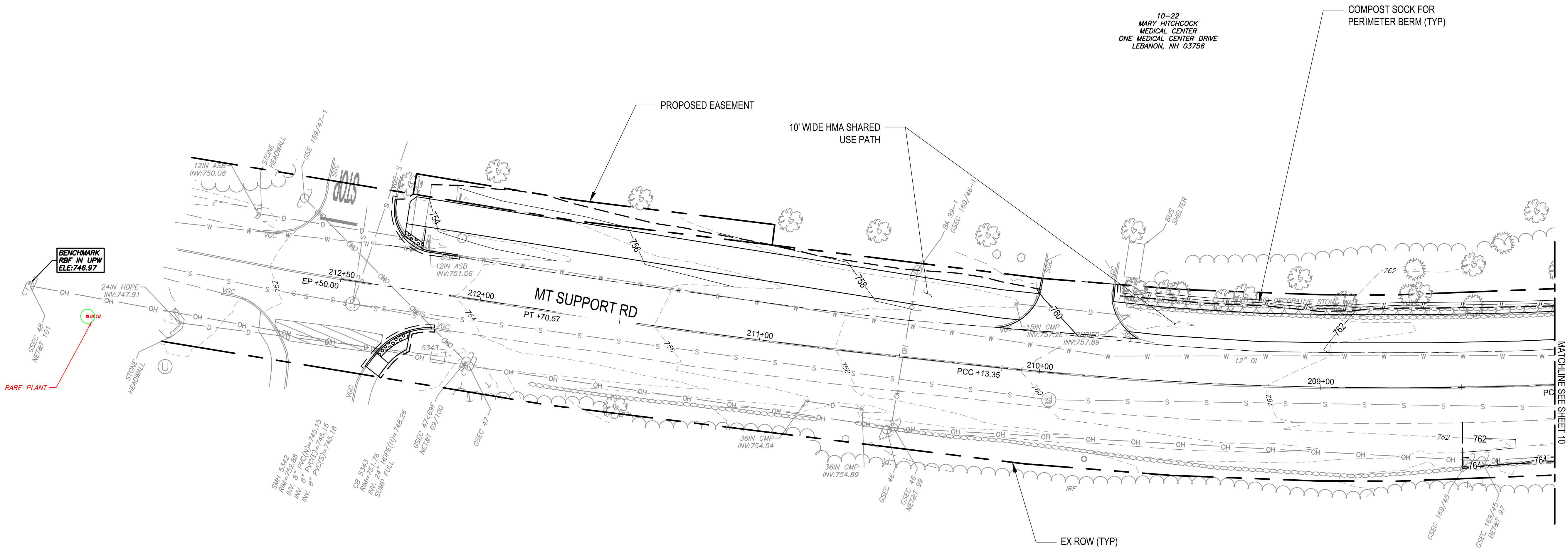
PERMITTING PLAN 5

Sheet Number:

9

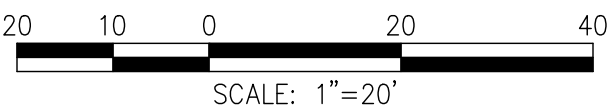


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- WETLAND IMPACTS
- RARE PLANT IMPACTS
- TREE AND BRUSH CUTTING IN WETLANDS (NO GRUBBING)

NO WETLAND IMPACTS, RARE PLANT IMPACTS, OR TREE AND BRUSH CUTTING IN WETLANDS ON THIS SHEET



10-8-200
MARY HITCHCOCK
MEDICAL CENTER
ONE MEDICAL CENTER DRIVE
LEBANON, NH 03756

Project:
**LAHAYE DRIVE AT
MOUNT SUPPORT
ROAD INTERSECTION
IMPROVEMENTS**

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Sheet Number:

10

Rev: 1.0 Date: 11/20/21