



GOVE ENVIRONMENTAL SERVICES, INC.
AGENT

ENVIRONMENTAL IMPACT ASSESSMENT
for
PAWTUCKAWAY RIDGE SUBDIVISION

Raymond Road
Map 69 Lot 17
Nottingham, NH

February 20, 2024

Prepared By

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1.0 Introduction

The following document has been prepared in support of a proposed 16 lot open space subdivision located on Map 69 Lot 17, Raymond Road in Nottingham (the Site) This report is intended to meet the requirements of an Environmental Impact Assessment under Article 10.6 of the Nottingham Subdivision Regulations. The proposed subdivision will utilize approximately 17 acres of the approximately 85-acre lot with the remainder being designated as open space. Figures 1 and 2 depict the location and setting of the development area and the larger property. The following sections detail the natural resources present on the property and the relation to the proposed development. All figures referenced in the text are included in Appendix A. Appendix B includes several photographs of the property.

2.0 Natural Resources Present on the Site

The Site consists of an undeveloped and largely intact forest block situated west of Raymond Road at the southeast end of Pawtuckaway Lake. The Pawtuckaway River forms the northern property boundary, and a large wetland system occupies the southern end of the property. The remainder of the property consists of upland forest and a few smaller areas of wetland. There are no structures or other types of development on the property. The only recognizable disturbance is associated with a number of preexisting trails and minor disturbance from soil investigations. The following sections detail the natural resources present on the property and, when applicable, where they exist.

2.1 Topography and Soils

The Site is a prominent drumlin hill with the highest elevations of approximately 350-feet location roughly in the center of the property. The overall topography of the Site falls from this highpoint on all sides to a low elevation of approximately 204-feet where the Pawtuckaway River exists to the north and larger marsh complex to the south. Grades are relatively steep, particularly on the northern and southern side of the hill. The soil surface is moderately rocky to smooth and generally lacks boulders, ledge, and cliffs that can be found in the area. The exception is the lower part of the slope along the southern marsh. The western end of this slope contains a large area of very steep ledge outcrop.

The Site-Specific Soil Map prepared for the project indicates that moderately well drained Scituate Fine Sandy Loam is the dominant soil type on the Site. Poorly drained Ridgebury soil can be found in the smaller wetland areas and along the Pawtuckaway River together with a single area of poorly drained Rippowam soil in a low lying frequently flooded area. The only very poorly drained soil on the Sote is located in the large southern marsh complex in which soil has been mapped as the Natchaug soil series. The

wetlands occupying these poorly drained and very poorly drained soils are described in more detail in Section 2.3. The areas of steep slope greater than 25% and poorly drained/very poorly drained soils are depicted on the Steep Slopes and Soils figure in Appendix A.

2.2 Uplands

The upland area of the site is dominated by Hemlock -Hardwood-Pine forest type intermixed with Appalachian Oak-Pine forest. These are among the most common type of forest in New Hampshire and is ubiquitous in Nottingham and the area around Pawtuckaway Pond.

2.3 Watersheds & Aquifers

Although the Site is located close to Pawtuckaway Pond it actually lies within the Pawtuckaway River/Lamprey River watershed. Drainage leaves the site in three general directions reaching the Pawtuckaway River either north of the site or east of Raymond Road. No drainage from the site reaches Pawtuckaway Pond.

There is an aquifer area associated with The Pawtuckaway River, but it lies mostly off-site to the east. A small portion of the northeast corner and eastern edge of the Site lie over the aquifer. The watersheds and aquifer area are shown on the Watersheds/Aquifers Figure in Appendix A.

2.4 Wetland Resources

The wetland resources discussed in this section are depicted on the Wetland Overview figure in Appendix A. The most significant wetland resource areas associated with the Site are concentrated along its northern and southern extents. The Pawtuckaway River originates at the Dolloff Dam on Pawtuckaway Pond approximately 700 feet to the west and flows along the northern edge of the property. This waterway is a perennial stream and has a predominantly cobble and gravel substrate in this location. The southern bank of the river is bordered by forested wetland dominated by a mix of Red Maple (*Acer rubrum*), Eastern Hemlock (*Tsuga canadensis*), and Grey Birch (*Betula populifolia*). Some areas of this wetland appear to be regularly flooded while other areas lie atop higher sections of bank with wetland hydrology more closely associated with runoff from the adjacent hillside. The Cowardin classification¹ of this forested wetland is PFO1/4E and the river itself is R3SB3.

¹ Classification of Wetlands and Deepwater Habitats of the United States. USFW Manual FWS/OBS-79/31 (1979)

The southern extent of the property is dominated by an approximately 11-acre portion of a large marsh system which extends off-site to the south. Vegetation is dominated by herbaceous vegetation including cattail (*Typha latifolia*) and numerous other grasses, sedges, and rushes. As a result of ongoing beaver activity, the wetland also contains areas of semi-permanent shallow inundation. The extent of inundation and the particular pattern of wetland types likely changes over time with varying degrees of beaver activity. The classification of this wetland system is PEM1Fb/PABHb.

The remainder of the wetlands on the property are forested and dominated by a mix of red maple and eastern hemlock (PFO1/4E). These are smaller wetlands occupying depressions or drainage paths in the topography. Three of these remaining wetlands are isolated and do not have a vegetated wetland or surface water connection to wetlands on or off-site.

2.5 Vernal Pools

The field work for this project was conducted in the summer of 2023, therefore a formal breeding season vernal pool survey was not able to be completed. The large beaver influence marsh is not likely to support significant vernal pool breeding habitat on account of its unreliable hydrology and likely large population of predatory frogs. Most of the other wetland areas on site lack the physical topography to maintain a pool. There are three exceptions where conditions appear suitable for vernal pool breeding, two located along The Pawtuckaway River and one isolated area located about midway up the southern slope of the Site. These are indicated on the Wetland Overview figure as Potential Vernal Pools.

2.6 Wildlife Habitat

Assessment of the wildlife habitat on the Site begin with a request to the New Hampshire Natural Heritage Bureau that they review their files for known occurrences of rare threatened and endangered species on or associated with the site. Their report has been included in Appendix B and has been redacted of specific location information at their request. The report indicates occurrence of American Eel and Blanding's Turtle in the vicinity of the site. American Eel is a fish species which occurs in the Pawtuckaway River, and its habitat is clearly limited to the river itself. Records of Blanding's Turtle occur in a number of areas around the site, some up to a mile away. These records are often generated when people encounter the species in the developed landscape such as along roads or in residential yards. The records closest to the Site suggest Blanding's Turtles utilize the large southern marsh area and Pawtuckaway River. This is consistent with the species core habitat which consists of densely vegetated wetlands with shallow water and slow-moving streams. The species can also be expected to utilize other types of wetlands for movement and even uplands for nesting.

The most recent NH Fish & Game Wildlife Action Plan (WAP) map, included in Appendix A, indicates the Site contains both Highest Ranked Habitat in the Region (green areas) and Highest Ranked Habitat in NH (magenta areas). Highest Ranked Habitat in NH is associated with the Pawtuckaway River and large marsh area on the northern and southern sides of the Site while the central portion of the Site is mapped as Highest Ranked Habitat in the Region. The cooccurrence analysis used rank habitat for this map considers numerous factors so it is not usually easy to identify a single trait that qualifies any particular area as highest ranked. The site itself is a relatively undisturbed forest but the surrounding area is punctuated with roads and residential development which would detract from its habitat value as a large Forrest block. There are two characteristics that likely elevate the habitat value indicated on the WAP map: 1) the fact that it is undeveloped land located near Pawtuckaway State Park, and 2) the southern marsh area and Pawtuckaway River which serve as important wildlife corridors.

3.0 Relation to the Proposed Subdivision

The primary natural resources identified on the property are related to wetlands and wildlife habitat. The steep slopes are also a prominent consideration for the natural resource primarily by way of the potential hazards they present. Finally, the proximity of the aquifer and other nearby water and wildlife resources is notable. The protection of these natural resources is fundamental to the proposed design of the project as an open space subdivision. This will preserve 68 acres, or nearly 80% of the 85.3-acre property and has several advantages that are specific to the resources on this Site.

3.1 Wetlands

Avoidance of wetland impacts was a paramount concern during the planning of the project, which has been designed to avoid wetland and wetland buffer impacts. Since the principal wetland resources are located at the northern and southern extremes of the property, the proposed lots have been located in the center. This arrangement provides maximum separation between the lots and sensitive wetlands. At the closest point in the vicinity of Lot 3 the proposed lots are more than 200-feet from the Pawtuckaway River but are mostly much further than that. Similarly, the proposed lots are more than 300-feet from the large marsh system to the south.

More significant than this separation alone is that connectivity is also maintained. The proposed open space extends around the western side of the proposed lots, incorporating wetland in that area in an uninterrupted block with the wetlands to the north and south. Preservation of wetland resource areas undisturbed along with intact and interconnected buffers provides the maximum protection of wetland functions and values.

3.2 Vernal Pools

As described in Section 2.5 no vernal pools have been confirmed on the property but do potentially occur in three areas as shown on the Wetlands Overview figure. In the context of development, vernal pools are most often impacted by loss or segmentation of the supporting *terrestrial habitat* surrounding the pool. This supporting terrestrial habitat can extend for many hundreds of feet in an undisturbed setting, but the first 100-foot or *vernal pool envelope* is considered the most critical zone. All three potential vernal pools on this Site lie within the proposed open space with completely intact buffers 100 feet in width or greater. Furthermore, continuity is maintained between adjacent uplands and wetlands more broadly. These factors would provide strong protection to this area should they be vernal pools.

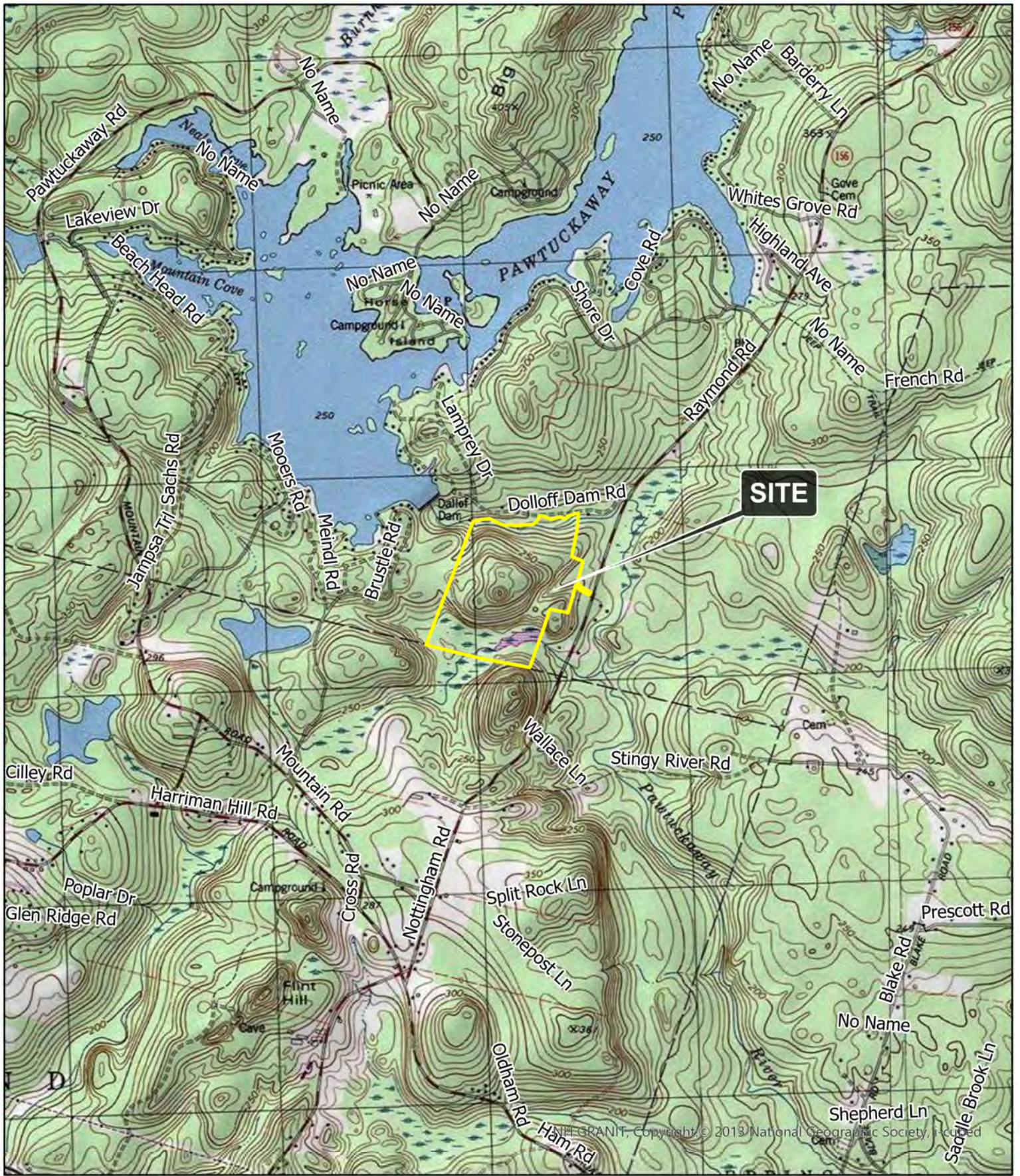
3.3 Wildlife Habitat

The wildlife habitat value of the property will be preserved in the same way wetlands and vernal pools are being protected. The establishment and ultimate development of 16 residential lots will of course result in some loss of upland forest habitat. The project avoids significant wildlife impact, however, by preserving the core wildlife corridors on the north and south sides of the Site as well as a wide north-south connection between them. In addition to maintaining connectivity, the large buffers between the primary resource areas and the proposed lots will minimize potential proximity impacts to wildlife habitat. These protective measures will also extend to the sensitive species listed by the NH Natural Heritage Bureau.

3.4 Steep Slopes

To a large extent, the protection of steep slopes relates to the protection of water resources which can be impacted by runoff and erosion from disturbance or development of steep slopes. Protection of steep slopes can also be viewed as a means of minimizing overall development footprint since wider grading profiles are often needed to build in these areas. This problem is most acute at wetland crossings (of which the project has none) but also applies to overall clearing of naturally vegetated areas. Some steep grades must be navigated to gain access from Raymond Road, but these have been minimized by the proposed road alignment. The proposed lots utilize the relatively gentler area surrounding the highpoint of the Site. The lots do contain limited areas of steep grades which should be manageable for construction of a single-family home. The extensive steep slopes above the primary wetland resources to the north and have been located in the proposed open space and will not be disturbed.

Appendix A
Figures



SITE



1:24,000

USGS Locus Map

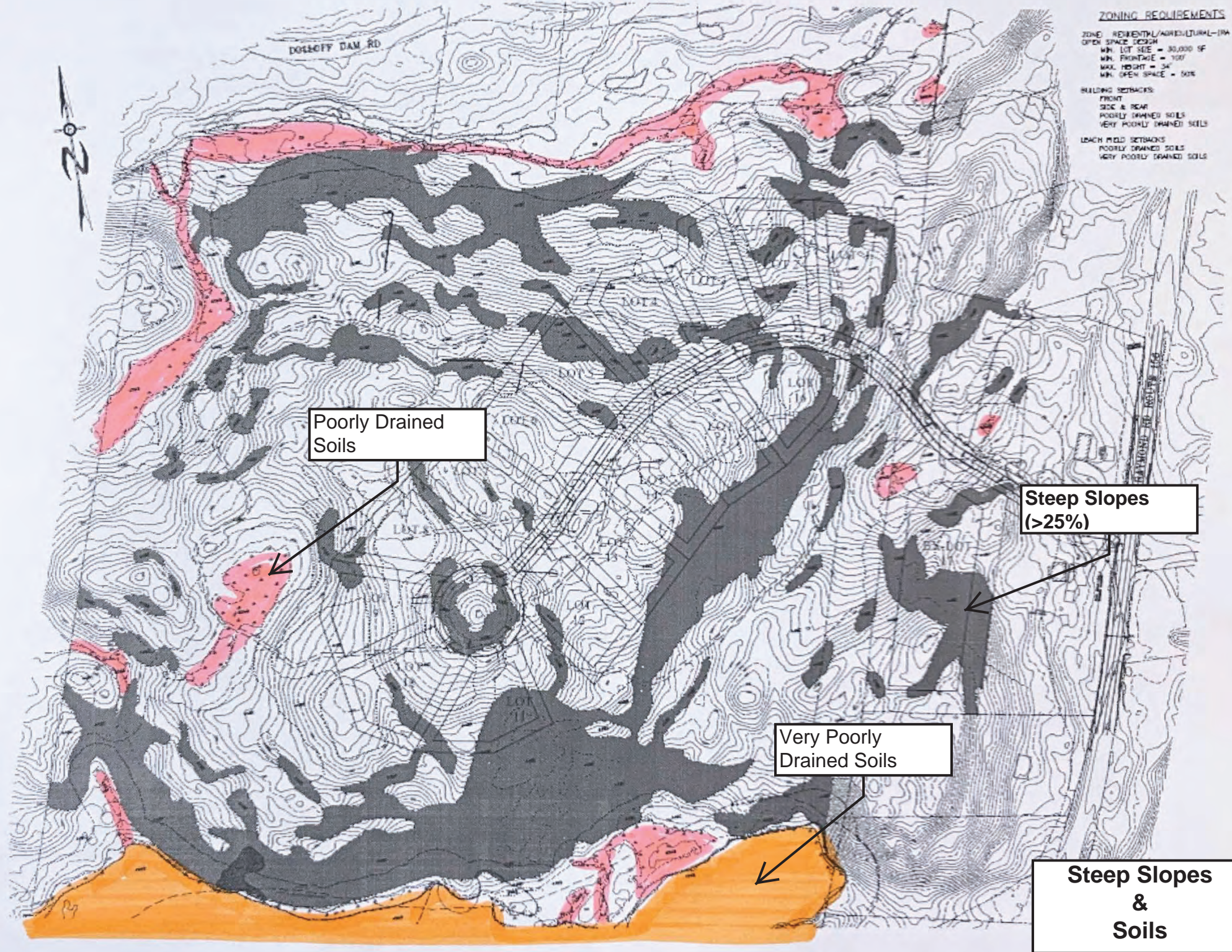
Pawtuckaway Ridge Subdivision
 Raymond Road
 Nottingham, NH

ZONING REQUIREMENTS

ZONE: RESIDENTIAL/AGRICULTURAL-1RA
OPEN SPACE DESIGN
MIN. LOT SIZE = 30,000 SF
MIN. FRONTAGE = 100'
MAX. HEIGHT = 34'
MIN. OPEN SPACE = 50%

BUILDING SETBACKS:
FRONT:
SIDE & REAR:
POORLY DRAINED SOILS
VERY POORLY DRAINED SOILS

LEACH FIELD SETBACKS:
POORLY DRAINED SOILS
VERY POORLY DRAINED SOILS

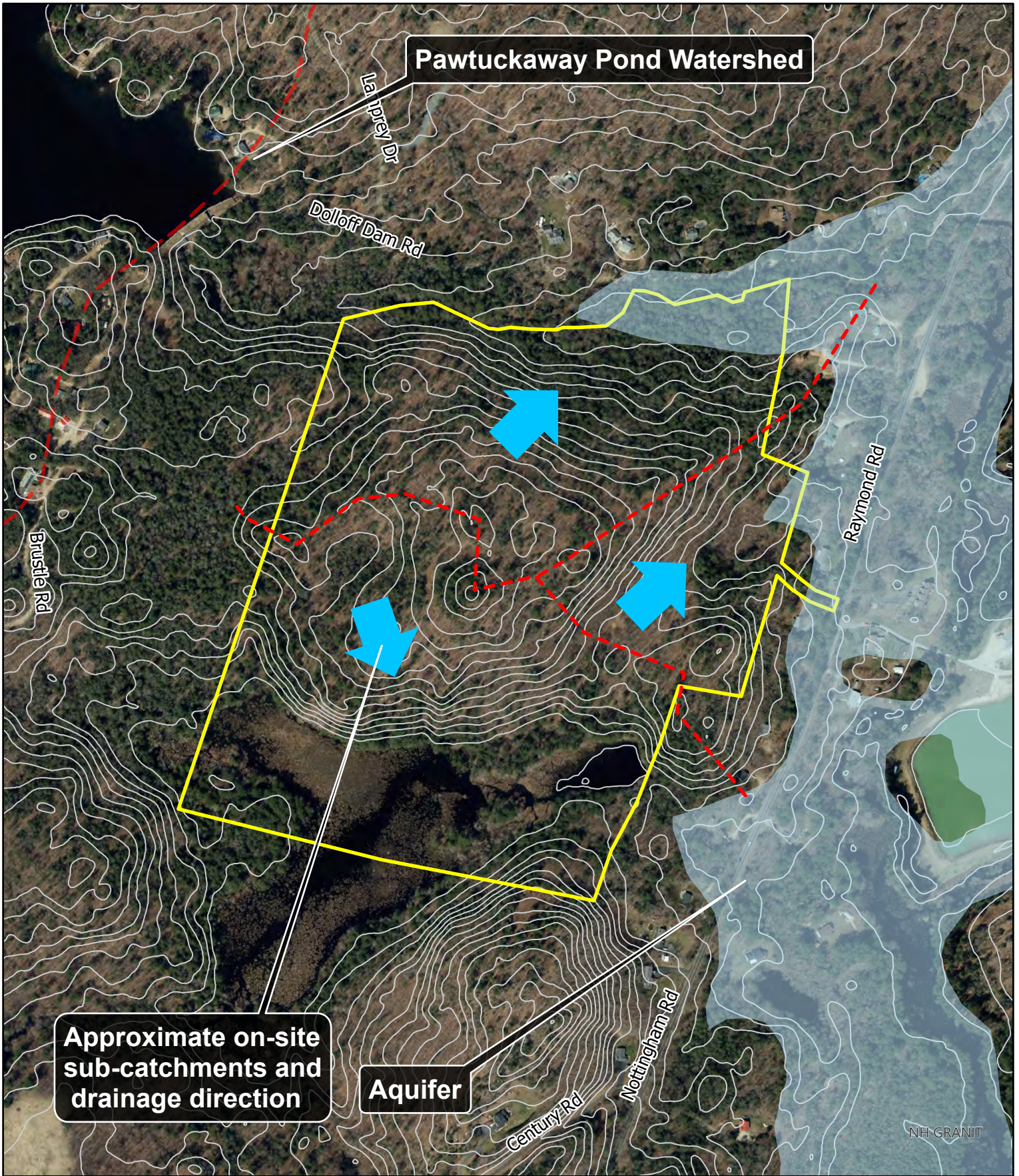


Poorly Drained Soils

Steep Slopes (>25%)

Very Poorly Drained Soils

Steep Slopes & Soils



Pawtuckaway Pond Watershed

Approximate on-site sub-catchments and drainage direction

Aquifer



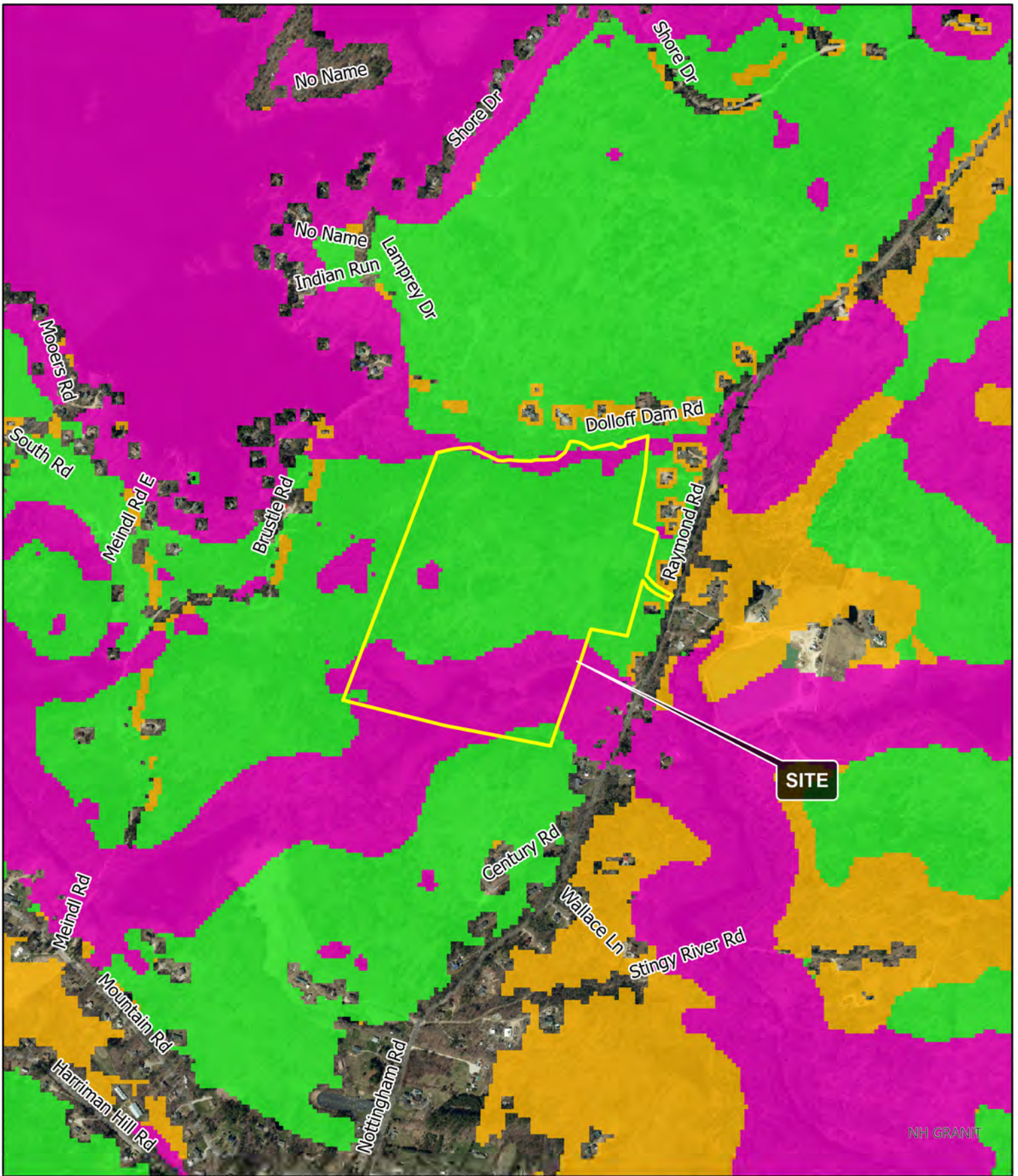
1:6,000

Watersheds/Aquifers

Pawtuckaway Ridge Subdivision
 Raymond Road
 Nottingham, NH



Gove Environmental Services, Inc.
 8 Continental Drive, Bldg 2 Unit H, Exeter NH 03833 603.778.0644



NH GRANIT

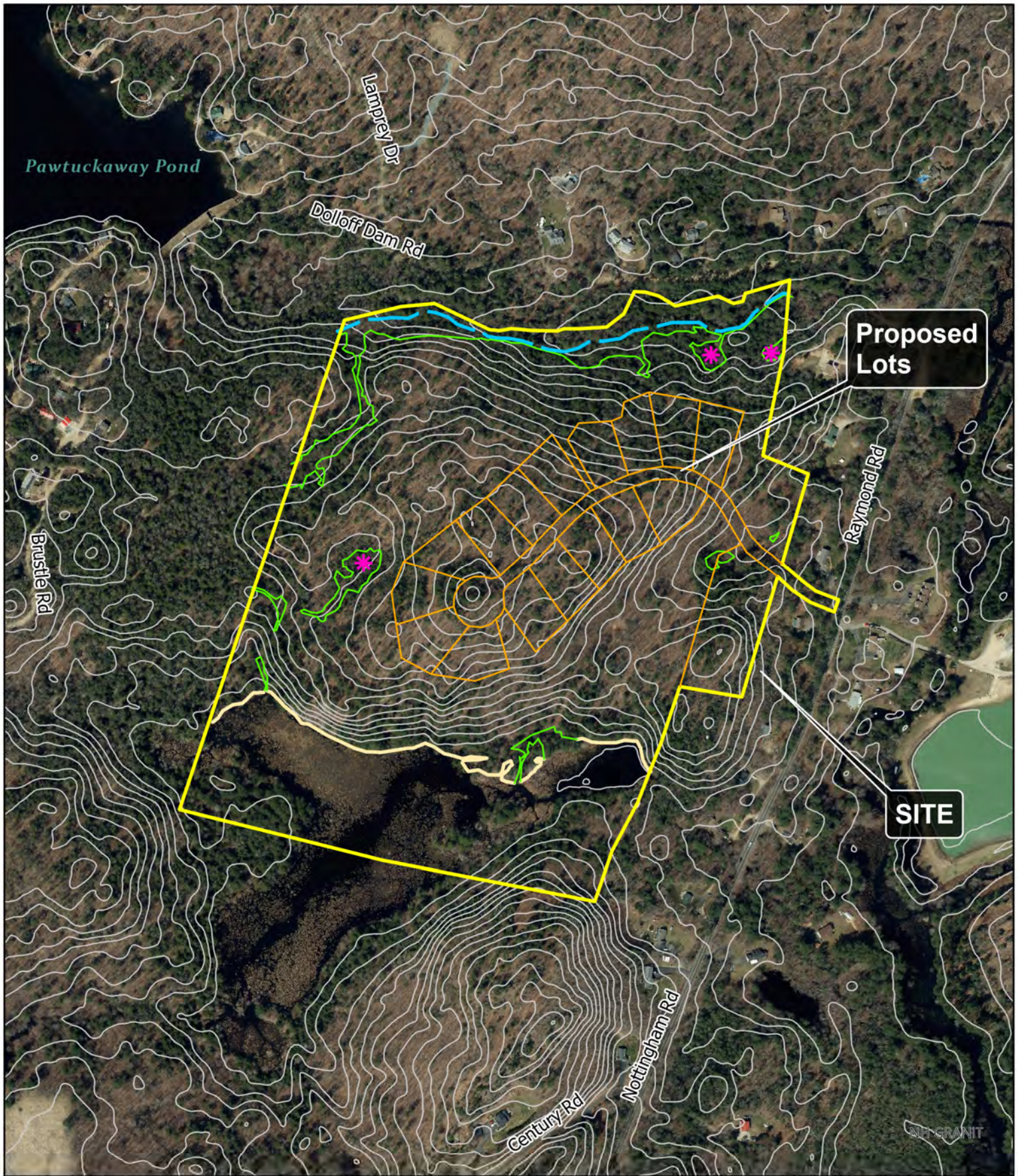


1:12,000

Highest Ranked Wildlife Habitat

- Not Top Ranked
- Highest Ranked Habitat in NH
- Highest Ranked Habitat in Region
- Supporting Landscape

Wildlife Action Plan
Highest Ranked Habitat
Pawtuckaway Ridge Subdivision
Raymond Road
Nottingham, NH



1 Inch = 500 Feet

Wetland Type

- Marsh Complex PEM1Fb/PABHb
- Forested PFO1/4E
- River R3SB3
- * Potential Vernal Pool

Wetland Overview

Pawtuckaway Ridge Subdivision
 Raymond Road
 Nottingham, NH



Gove Environmental Services, Inc.
 8 Continental Drive, Bldg 2 11011 Exeter NH 03833 603.778.0611

Notes: Aerial Photo-GRANIT GIS 2022, contours-10 foot interval LiDAR

Appendix B

Photos



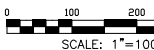
70 PORTS
THIRD FL.
STRATHAM
PHONE: 603-883-1111
FAX: 603-883-1112



LOCATION MAP
1" = 1000'

OPEN SPACE REQUIREMENTS

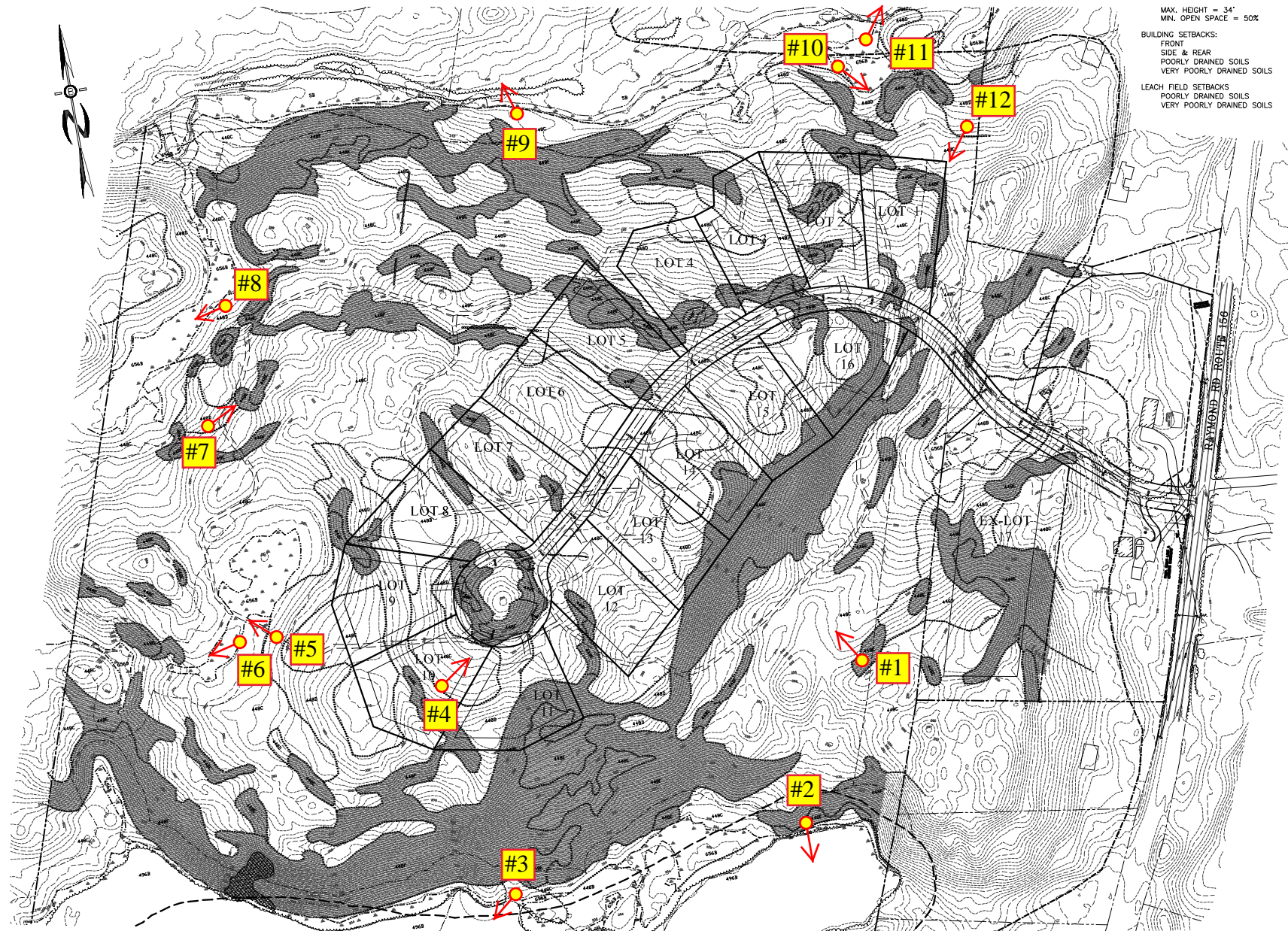
TOTAL LOT AREA = 85.3 AC.
REQ'D OPEN SPACE = 50%
85.3 x .5 = 42.6 AC.
PROVIDED = 68.0 AC.
REQ'D BUILDABLE AREA = 50%
42.6 x .5 = 21.3 AC.
PROVIDED = 68.0 AC.
-16.3 WETLANDS
-13.7 STEEP SLOPES
PROVIDED = 38.0 AC.



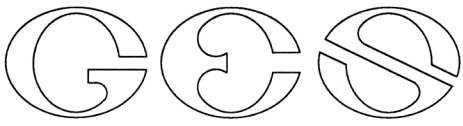
MAX. HEIGHT = 34'
MIN. OPEN SPACE = 50%

BUILDING SETBACKS:
FRONT 35'
SIDE & REAR 25'
POORLY DRAINED SOILS 50'
VERY POORLY DRAINED SOILS 75'

LEACH FIELD SETBACKS:
POORLY DRAINED SOILS 75'
VERY POORLY DRAINED SOILS 75'



REVISED LOTS	
REVISIONS:	
SUBDIVISION F	
FOR: RESIDENTIAL DEVELOPMENT RAYMOND RD - ROUTE 160 NOTTINGHAM, NH	
DATE:	DEC 2023
PROJECT NO.:	N/A 1100
SCALE:	SHEET



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Photo Log
Raymond Road Nottingham
Taken 2/16/2024



Photo #1: Looking northwest at upland.



Photo #2: Looking south at large emergent wetland complex system.

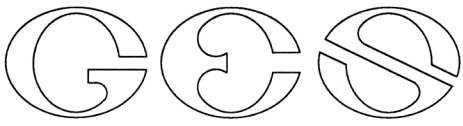


Photo #3: Looking southwest at same wetland complex system.



Photo #4: Looking northeast at rolling upland.

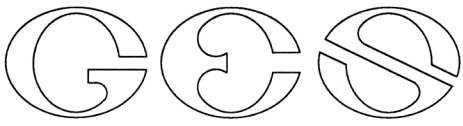
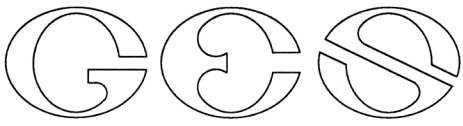


Photo #5: wetland below potential vernal pool in western part of site.



Photo #6: Looking west at same wetland.



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Photo #7: Looking northeast at upland.



Photo #8: Looking west at wetland system.

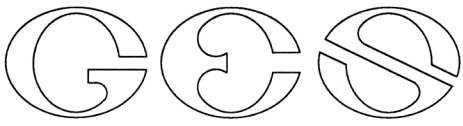
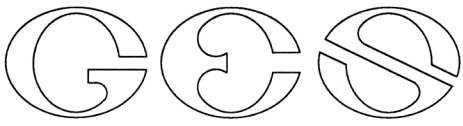


Photo #9: Looking north at Pawtuckaway River.



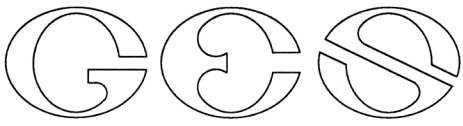
Photo #10: Looking southeast at potential vernal pool.



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Photo #11: Looking northeast at outlet from same potential vernal pool.



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Photo #12: Looking southwest at surrounding upland.

Appendix C
Natural Heritage Bureau Report

NHB DataCheck Results Letter

NH Natural Heritage Bureau

Please note: maps and NHB record pages are **confidential** and shall be redacted from public documents.

To: Brenden Walden, Gove Environmental Services, Inc.
8 Continental Drive Bldg 2 Unit H
Exeter, NH 03833
info@gesinc.biz

From: NHB Review
NH Natural Heritage Bureau
Main Contact: Ashley Litwinenko - nhbreview@dncr.nh.gov

cc: NHFG Review

Date: 06/13/2023 (valid until 06/13/2024)

Re: DataCheck Review by NH Natural Heritage Bureau and NH Fish & Game

Permits: NHDES - Alteration of Terrain Permit, NHDES - Shoreland Standard Permit, NHDES - Wetland Standard Dredge & Fill - Minor, USACE - General Permit

NHB ID: NHB23-1782

Town: Nottingham

Location: Raymond Rd

Project Description: The applicant is proposing a residential development of the property.

Next Steps for Applicant:

NHB's database has been searched for records of rare species and exemplary natural communities. Please carefully read the comments and consultation requirements below.

NHB Comments: No comments at this time.

NHFG Comments: Please refer to NHFG consultation requirements below.

NHB Consultation

If this NHB DataCheck letter includes records of rare plants and/or natural communities/systems, please contact NHB and provide any requested supplementary materials by emailing nhbreview@dncr.nh.gov.

If this NHB DataCheck letter DOES NOT include any records of rare plants and/or natural communities/systems, no further consultation with NHB is required.

NH Fish and Game Department Consultation

If this NHB DataCheck letter DOES NOT include ANY wildlife species records, then, based on the

NHB DataCheck Results Letter

NH Natural Heritage Bureau

Please note: maps and NHB record pages are **confidential** and shall be redacted from public documents.

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 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.**

NHB DataCheck Results Letter

NH Natural Heritage Bureau

Please note: maps and NHB record pages are **confidential** and shall be redacted from public documents.

NHB Database Records:

The following record(s) have been documented in the vicinity of the proposed project.

Please see the map and detailed information about the record(s) on the following pages.

Vertebrate species	State¹	Federal	Notes
American Eel (<i>Anguilla rostrata</i>)	SC	--	Contact the NH Fish & Game Dept (see above).
Blanding's Turtle (<i>Emydoidea blandingii</i>)	E	--	Contact the NH Fish & Game Dept (see below).

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 20 or more years ago.

For all animal reviews, refer to 'IMPORTANT: NHFG Consultation' section above.

Disclaimer: NHB's database can only tell you of known occurrences that have been reported to NHFG/NHB.

Known occurrences are based on information gathered by qualified biologists or members of the public, reported to our offices, and verified by NHB/NHFG.

However, many areas have never been surveyed, or have only been surveyed for certain species.

NHB recommends surveys to determine what species/natural communities are present onsite.