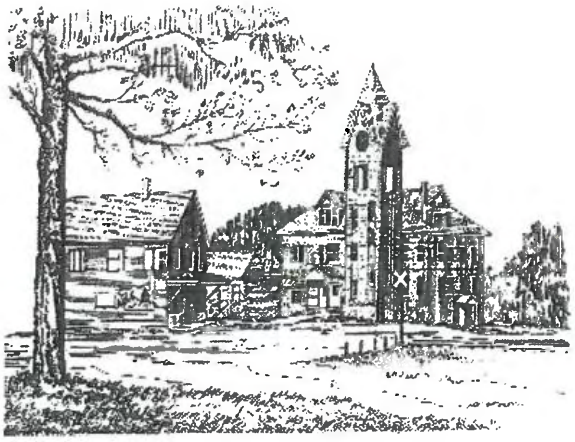

TOWN OF WAKEFIELD, NEW HAMPSHIRE
CONSERVATION COMMISSION

2 HIGH STREET
SANBORNVILLE, NEW HAMPSHIRE 03872
PHONE (603) 522-6205 X308
FAX (603) 522-2295

NATURAL RESOURCES INDEX (INVENTORY)

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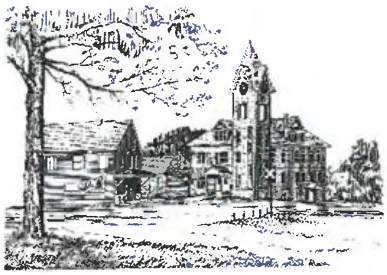

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NATURAL RESOURCES INVENTORY

INTRODUCTION

Wakefield is a town Located in Carroll County, New Hampshire, United States.

At Coordinates: 43°34′06″N 71°01′47″W at an elevation of approximately 680 ft.

The population was 5,078 at the 2010 census. The town includes the villages of Wakefield Corner (the original town center), East Wakefield, North Wakefield, Sanbornville, Union, Woodman and Province Lake. Wakefield Corner, popular with tourists, is a picturesque hilltop village of antique buildings. The state of Maine is on the eastern border of Wakefield. It's bordered on the west by the towns of Brookfield and Middleton. Bordered on the North North West by the towns of Wolfeboro, Ossipee and Effingham and on the south by the Town of Milton in Strafford County.

Geography

According to the United States Census Bureau, the town has a total area of 44.7 square miles (116 km²) or 28,608 acres, of which 39.5 square miles (102 km²) or 25,280 acres is land and 5.3 square miles (14 km²) or 3,392 acres is water, comprising 11.72% of the town. Wakefield is drained by the Pine and Branch rivers. Province Lake is in the northeast corner of the town, Pine River Pond, Belleau Lake, Balch Pond and Sandy Pond in the center, and Lovell Lake, Union Meadows, Lake Ivanhoe, Great East Lake and Horn Pond in the south. Four of these lakes, Province, Balch, Great East, and Horn Pond, span the Maine border. The highest point in Wakefield is the summit of Long Mountain, at 1,110 feet (340 m) above sea level, along the town's western border.

Five named villages are within the town limits: Sanbornville, Wakefield village proper, East Wakefield, North Wakefield and Union. Sanbornville, the primary settlement in the town, lies at the west end of Lovell Lake, next to the lake's outlet. The village is at the intersection of New Hampshire Routes 109 and 153. Route 16 bypasses the village to the west. Wakefield village occupies a hill just north of Sanbornville on Route 153. The village of Union occupies the southernmost corner of the town, at the intersection of Route 153 and Route 16 (at the northern end of the Spaulding Turnpike)

WAKEFIELD CONSERVATION PRIORITIES

Conserve, protect, and acquire forested and rural landscapes that reflect the nature of Wakefield's history and culture.

Develop recreational opportunities (e.g., hiking, skiing and snowshoeing trails) as allowed by conservation easement restrictions, and encourage Wakefield residents to enjoy our natural environment through educational outreach.

Monitor conservation lands to ensure compliance with easement restrictions as appropriate.

Educate the residents of Wakefield regarding the importance of our air, water and land resources by promoting environmental awareness through literature and special programs (e.g., environmental camp, guided nature walks, etc.)

Maintain an up-to-date Natural Resource Index and Inventory of conservation lands in Wakefield.

Develop a forestry management plan for each parcel of town owned conservation property and the Town Forest, with special consideration of the importance of maintaining wildlife corridors and unfragmented blocks.

Mountains and Hills of significance

Long Mountain Elevation 1093 ft
Cooks Hill Elevation 1019 ft
Copp Hill Elevation 901 ft
Davis Hill Elevation 998 ft
Oak Hill Elevation 979 ft
Pray Hill Elevation 1026 ft
Province Mountain Elevation1176 ft
-Located in Newfields Maine on the North East Border

Wetlands, Rivers and Streams

Information that is in italics is taken from the ***Blue Moon Environmental Group Study commissioned by the Moose Mountain Regional Greenways*** **as part of the NH Hampshire Estuaries Project.** (the pages listed are from the Wakefield Users Guide). Please note there is no wetlands #2 as it was combined into wetlands #3 during the study.

Unlike other towns in the region portions of Wakefield are included in four different watersheds. The largest portion of the town, Covering the middle and southern sections is in the Salmon Falls River Watershed which is in the Piscataqua River Basin.
The headwaters of the Salmon Falls River originate in this part of Wakefield. The area around Pine river Pond is in the Pine river Watershed, which is in the Saco River Basin. The portion of the town around Stump Pond and Belleau Lake is in the Little Ossipee River Watershed and the very northern tip of the town near province Lake is in the Ossipee River Watershed. Both the Little Ossipee River Watershed and the Ossipee River Watershed are in the Saco River Basin. **All of the wetlands in Wakefield included in this Study are in the Salmon Falls River Watershed**.

12 wetlands have been identified by Blue Moon Environmental Group. To see further details of the wetlands in the study refer to the Wakefield User's Guide located in the Conservation Commission files in the Zoning/Code Enforcement offices of the Wakefield Town Hall. Also see Maps, **Selected Wetlands and Associated Watersheds Wakefield, NH and Wetlands Selected for GPS Survey.**

1. Branch River union Meadows *** pg 18/54
2. incorporated onto wetland #3
3. Branch River Rte. 153 to Rte. 16 *** pg 19/54
4. Branch River Rte. 153 to Rte. 16 *** pg 21/54
5. Branch river between Rte. 16 and
   The Brookfield/Wakefield Town Line ***pg 21/54
6. Scribner Brook and Copp Brook ***pg 22/54
7. North of Town Between Rte.153, Perkins Hill Rd and Ridge Rd. ***pg 23/54
8. Between Rte. 153 and Rte. 16, just north of Sanbornville ***pg 24/54
9. Northeast of Oak Hill Road and northwest of Rte. 109 ***pg 25/54
10. Located northeast of the village of Sanbornville, Between canal Rd. and
    Rte. 153 ***pg 26/54
11. Located on Milton/Wakefield town line between Willy Rd. & Walsh Rd ***pg 28/54
12. Located in the area between Rte. 153, Rines Rd. and Main St. ***pg 29/54

East Wakefield is on Route 153, containing the land east of Pine River Pond and north to the Effingham town line. North Wakefield lies along Route 16 on the west side of Pine River Pond near the town line with Ossipee.

As of the census of 2010, there were 5,078 people, residing in the town. The population density was 108.1 people per square mile (41.8/km²).

The Town is Zoned Residential, Business - commercial, light industrial and Agricultural. The total land area of the town is 25,280 acres with 970.7acres (3.84%) classified as conservation Areas (private and government agencies) and 10,550.3 acres (41.7%) is held in the Current Use category.

Natural Resources Inventory

The State Law that provides for the establishment of a conservation Commission states that a Commission, "shall keep an index of all open space and natural, aesthetic or ecological areas, including lands owned by the town or city. It shall keep an index of all Marshlands, Swamps, and all other wetlands in a like manner..."

In keeping with its statutory mandate, RSA 36-A:2 (see Appendix D), the Wakefield Conservation Commission has undertaken with the assistance of the Acton Wakefield Watershed Alliance and Moose Mountain Regional Greenways the production of a Natural Resources Index for the town of Wakefield and is identifying those large parcels of land in the town which could be of interest for Conservation acquisition or designation. This project is considered a work in progress. It will be continually reviewed by the Conservation Commission to be revised and updated as both time and circumstances dictate.

This index is commonly referred to as a Natural Resources Inventory (NRI) and usually consists of a series of maps and a narrative. An NRI in never "done", as more information and a more complex analysis of that information can always be added to it. Therefore this project is considered a work in progress. It will be continually reviewed by the Conservation Commission to be revised and updated as both time and circumstances dictate.Information from this study can be used to list important wetlands and the functions and values data can be used to explain why they are important. A town may choose to put more emphasis on one wetland function over another to determine relative importance. For example a town interest in maintaining a rural character may wish t put more emphasis on visual/aesthetic value However, a town concerned about future drinking water resources may choose to put more emphasis on ground water use potential

This document is intended to be used as a land use tool for the planning Board, Board of Selectmen, as well as the Conservation Commission. Copies will also be available to the general

public on the town's website under the Conservation Commission page and by contacting the Conservation Commission for a printed copy.

*Union Meadow (wetland 1)- **Wetland 1** is located east if Rte. 153 and south of Marsh Rd. It lies with in the Salmon Falls River watershed and is approximately 283 acres in size. The watershed for Wetland 1 is approximately 19,548 acres and is predominantly forested. Union Meadows Pond is part of Wetland 3.In addition, the wetland is recognized by the New Hampshire Natural Heritage Inventory as an exemplary natural community for having unique or outstanding ecological features. (p.18/54)*

*Branch River Wetland (3,2,3,4,5)- **Wetland 3** includes Wetland 2 and is located east of Rte. 153, between the intersection of Rte. 16 and the 664 acres and is predominantly forested. It lies within the Salmon Falls River Watershed. Wetland 3 is located along the Branch River and has a large watershed of approximately 17,937 acres. Wetland 3 is located upstream of wetland 1 and down stream of Wetland 4 and Wetland 5. (p19/54 – p20/54)*

*Branch River Wetland (3,2,3,4,5)- **Wetland 4** is contiguous with Branch River between Rte. 153 and Rte. 16. It lies win the Salmon Falls Watershed and is approximately 54 acres is size. The Watershed for wetland 4is approximately 17,291 acres and is predominantly forested. T Branch river flows though wetland 4 connecting it to Wetland 5 upstream and Wetland 3 down stream. (p21/54)*

*Branch River Wetland (3,2,3,4,5)- **Wetland 5** is located along the Branch river between Route 16 and the Brookfield/Wakefield town line.*
It lies within the Salmon Falls River Watershed and is approximately 202 acres in size. (p21/54-p22-54)

Scribner Brook and Copp Brook *Wetland* (6)- **Wetland 6** Is located off Rte. 153 and borders Great East Lake just south of Ridge Road. It lies within the Salmon Falls Rivers Watershed and is approximately 175 acres in size. The watershed for Wetland 6 is approximately 2,664 acres and is predominantly forested. Both Scribner Brook and Copp Brook flow through Wetland 6.
(p22/54-23/54)

Head Waters of the Salmon Falls River *Wetland* (7)- **Wetland 7** is located in the northern part of the town, sandwiched between Rte. 153, Perkins Hill Rd and Ridge Rd. It is in the Salmon Falls River Watershed and is approximately 40 acres in size. It has a watershed size of approximately 446 acres. The outlet of Wetland 7 flows into Great East Lake, From which the Salmon Falls River has its beginnings. Therefore, Wetland 7 is located at the very headwaters of the Salmon Falls river. (p23/54-24/54)

Horse Brook Wetland (8)- **Wetland 8** is located between Rte. 153 and Rte. 16, just north of Sanbornville (AKA Toad hollow) It lies within the Salmon Falls Rivers Watershed and is approximately 24 acres in size. The watershed for Wetland 8 is approximately 380 acres and is predominantly forested.

Horse Brook Flows through Wetland 8 into Lovell Lake. There are no Aquifers associated with Wetland 8. (p24/54-24/54

Farnham Brook Wetland (9)- **Wetland 9** is located northeast of Oak Hill Rd. and Northwest of Rte. 109. It lies within the Salmon Falls Rivers Watershed and is approximately 43 acres in size. The watershed for Wetland 8 is approximately 679 acres and is predominantly forested. Wetland 9 is located just upstream of the Milton/Wakefield town line and is in the watershed of Milton Wetland 11. (p25/54-26/54)

Copp Brook Wetland (10)- **Wetland 10** is located northeast of the village of Sanbornville, Between Canal Rd. and Rte. 153. Wetland 10 (AKA Tuttles Swamp) is approximately 116 acres in size and is located in the Salmon Falls River Watershed. It has a large watershed of about 2161 acres.
It lies at the very headwaters of the Salmon Falls River. Copp Brook is one of the several perennial watercourses that flow through Wetland 10. The outlet of wetland 10 empties into Great East Lake. The Wetlands of Wetland 10 is largely forested. (p26/54-27/54)

Miler Brook Wetland (11)- **Wetland 11** is located on the Milton/Wakefield town line between Willy Rd and Walsh Rd. Wetland 11 also lies within the Town of Milton and was selected by Milton for Study as well. Wakefield Wetland 11 is the same as Milton Wetland 13. It lies within the Salmon Falls Rivers Watershed and is approximately 63 acres in size. The watershed for Wetland 8 is approximately 880 acres and is predominantly forested. (p28/54)

Branch River Wetland (12)- **Wetland** 12 is located from the Dam of Lovell Lake at Rte. 153 Rines Rd. and Main St. It lies within the Salmon Falls Rivers Watershed and is approximately 24 acres in size. The watershed for Wetland 8 is approximately 3,302 acres and is predominantly forested with some residential areas, including Sanbornville which abuts the wetland. (p29/54)

Wakefield's Local Watershed
Including those not covered in the Blue Moon Environmental Group Study

Wakefield is located in two major watersheds: the Salmon Falls and Piscataqua River watershed and the Saco River watershed (refer to Figure 1 for local USGS 8 and 10-digit watersheds). The sub-watersheds of the Salmon Falls and Piscataqua River watersheds are Alton Bay, Headwaters-Great East Lake, Jones Brook-Branch River, Milton Pond, and Upper Branch River-Lovell Lake. The sub-watersheds of the Saco River watershed are Branch Brook, Pine River, and Shapleigh Pond, South River. The Headwaters-Great East Lake, Upper Branch River-Lovell Lake and Shapleigh Pond sub-watersheds comprise seventy-three (63) percent of the total area of the local watershed.

Table 1. Calculations of contributing land area at the local watershed and sub-watershed levels.

HUC 8 Watershed	HUC 10 Watershed	HUC 12 Watershed	Watershed Area (acres)	% Area of Local Watershed
Saco River	Ossipee River	**South River**	1,049	3.6
	Pine River	**Pine River**	4,490	15.6
	Little Ossipee River	**Branch Brook**	138	0.5
	Little Ossipee River	**Shapleigh Pond**	4,849	16.9
Salmon Falls-Piscataqua Rivers	Salmon Falls River	**Headwaters-Great East Lake**	9,264	32.3
	Salmon Falls River	**Upper Branch River-Lovell Lake**	6,799	23.7
	Salmon Falls River	**Milton Pond**	647	2.3
	Salmon Falls River	**Jones Brook-Branch River**	1,482	5.2
Total Area			**28,718**	

Note: Land Area and Stratified Drift Aquifer statistics are derived for the HUC 12 Watersheds. Data presented is derived from GRANIT. HUC refers to the USGS "hydrologic unit classification" system for watersheds.

The major surface water drainage systems are aligned roughly north to south along NH Route 16, NH Route 153 and Belleau Lake, and east to west along the axes of Lovell Lake, Pine River Pond and Balch Pond and the tributaries to Great East Lake (Copp Brook and Scribner Brook).
Active watershed groups in Wakefield include: Pine River Pond, great East Lake Improvement Association, Belleau Lake Property Owners Association, Balch lake Association, Lovell Lake Watershed Association, Ivanhoe Lake, Acton Wakefield Watershed Alliance (AWWA), GMCG/Saco River Corridor Commission.

Surface Water Resources

Surface water resources are abundant including rivers, brooks, headwater tributaries, wetland complexes, lakes and ponds (refer to the *Wakefield Water Resources Inventory Map* and Table 1). Belleau Lake, Pine River Pond and Stump Pond to the north drain to the Saco River watershed, while all other surface waters contribute to the Salmon Falls

and Piscataqua Rivers watershed, part of New Hampshire's Coastal Watershed. As shown in Table 1, Headwaters-Great East Lake and Upper Branch River-Lowell Lake sub-watersheds are the largest contributing drainage areas, comprising fifty-six (56) percent of the total area of the local watershed.

At present, Wakefield has not identified any surface water resources as future public water supplies. As indicated below in Table 2, many of Wakefield's lakes and ponds have high water quality and productivity.

Table 2. List of physical characteristics of major surface water bodies.

Surface Water Body	Area in Wakefield (acres)	Major Watershed	Mean Depth (meters)	Maximum Depth (meters)	Water Quality	Trophic Status*
Balch Pond			---	---	Moderately productive	---
Belleau Lake			---	---	Borderline pristin	---
Great East Lake	1060	Piscataqua River/Coastal	10.9	31.0	pristine	Oligotrophic
Horn Pond	120	Piscataqua River/Coastal	3.9	9.1	borderline pristine	Oligotrophic
Ivanhoe Pond	68.4	Piscataqua River/Coastal	3.6	6.1	pristine	Oligotrophic
Lovell Lake	554	Piscataqua River/Coastal	4.0	12.5	pristine	Oligotrophic
Pine River Pond	570	Saco River	3.7	16.8	Moderately productive	Mesotrophic
Province Lake	951	Saco River	2.8	4.9	borderline pristine	Oligotrophic
Sand Pond	21.3	Saco River	1.4	3.3		Oligotrophic
Stump Pond	290	Saco River	3.2	13.4		Mesotrophic
Union Meadows	97.5	Piscataqua River/Coastal	0.9	4.6	Moderately productive	Mesotrophic

--- Data Not Found

**Trophic Status: the rate at which organic matter is supplied.*

**Mesotrophic: water bodies containing moderate quantities of nutrients and are moderately productive in terms of aquatic animal and plant life.*

**Oligotrophic: water bodies lacking in plant nutrients and having a large amount of dissolved oxygen throughout.*

***NOTE:** Monitoring data collected by: New Hampshire Volunteer Lake Assessment Program (VLAP), with the Department of Environmental Services, on Pine River Pond and Little Round Pond; New Hampshire Lakes Lay Monitoring Program (LLMP), with the University of New Hampshire (UNH) Cooperative Extension, on Lovell Lake and Great East Lake; and Weed Watchers on Pine Lake and Great East Lake.*

Ground Water Resources

Wakefield's ground water resources consist primarily of stratified drift aquifers and bedrock aquifers as shown on the *Wakefield Water Resources Inventory Map*. The stratified drift aquifers cover an area of approximately 5,711 acres and are located within the major drainage systems. As shown in Table 2, stratified drift aquifers represent nearly twenty (20) percent of the land area of the local watershed. Sixty-two (62) percent of stratified drift aquifers are located in the Pine River and Shapleigh Pond sub-watersheds alone and comprise seventy-five (75) percent of their total land area. Due to their concentration of stratified drift aquifers, the Pine River and Shapleigh Pond sub-

watersheds are of critical importance for Wakefield's groundwater resources and should be recognized as priority watersheds for water resources planning and management.

Table 3. Calculations of stratified drift aquifer acreage at the sub-watershed level.

Local Sub-watersheds	Stratified Drift Aquifer (acres)	% Area of Local Watershed
South River	189	18.0
Pine River	1,476	32.9
Branch Brook	---	---
Shapleigh Pond	2,053	42.1
Headwaters-Great East Lake	828	8.9
Upper Branch River-Lovell Lake	879	12.9
Milton Pond	---	---
Jones Brook-Branch River	285	19.2
Total Area	**5,711**	**19.9**

Based on the New Hampshire well database, the majority of public water wells are located in bedrock aquifers. The database reports variable yield from 3 to 150 gallons per minute for bedrock wells (26 active) and 34 to 60 gallons per minute for stratified drift wells (three active).

Water Supply Wells

Wakefield relies solely on groundwater resources for their public water supply. The Sanbornville Water Precinct supplies public drinking water to a limited area in Wakefield; the system is operating at capacity, with an average daily flow of 163,800 gallons per day as measured in 1990. (Wakefield Capital Improvements Program, 1992-1997)

Based on the New Hampshire well database, Wakefield has approximately forty-two (42) public water supply wells. Most of these wells are located in bedrock aquifers or stratified drift aquifers (three gravel packed wells). Thirty-three (33) active public water supply wells serve the following users: four community residential wells (serving approximately 390 persons), fourteen campgrounds, fourteen businesses and one school. Nine inactive water supply wells serve eight businesses and one church.

Sewage Disposal

The Town operates a sanitary sewer system which services much of Sanbornville. Treatment of sanitary sewage occurs at two septage lagoons located just off Route 16 about one mile south of the Sanbornville intersection. Due to state permit restrictions on groundwater discharge the lagoons cannot accept industrial waste. At present the lagoons are operating at approximately half their capacity. [from the Wakefield Capital Improvements Program 1992-1997]

Floodplains

Two-thousand and sixty-two (2,062) acres of land are classified as floodplain. Floodplains are most extensive in the following local drainage areas (listed from south to north): east and north shores of Union Meadows Lake; shoreland areas of Pike Brook in Sanborn Village; shoreland areas of Horse Brook, Copp Brook and Scribner Brook; tributaries west of Sand Pond; and tributaries north and west and shoreland areas of Belleau Lake (refer to the *Wakefield Water Resources Inventory Map* for the distribution of floodplains).

Ecological Resources

The Land Conservation Plan for New Hampshire's Coastal Watersheds (August 2006) identifies two core focus areas in Wakefield – the Davis and Oak Hill site and the Union Meadows site.

Davis and Oak Hill consists of 1,340 acres of core focus area and 8,180 acres of supporting natural landscape. The site contains the following: a high yield aquifer and favorable gravel well sites; 209 acres of farmland of statewide importance and 231 acres of prime farmland; a 2,630 acre aggregated forest block; high quality streams; important wildlife habitat for several species of birds and turtle; and marsh, peatland and pine pitch barren.

Union Meadows consists of 990 acres of core focus area and 8,180 acres of supporting natural landscape. The site contains the following: a high yield aquifer and favorable gravel well sites; 238 acres of farmland of statewide importance and 291 acres of prime farmland; a 6,230 acre aggregated forest block; high quality streams; important wildlife habitat for several species of birds and turtle; and marsh, peatland and pine pitch barren.

List of Water Bodies in and around Wakefield, NH

HUC 8 Watershed	HUC 10 Watershed	HUC 12 Watershed	Watershed Area (acres)	% Area of Local Watershed
Saco River	Ossipee River	**South River**	1,049	3.6
	Pine River	**Pine River**	4,490	15.6
	Little Ossipee River	**Branch Brook**	138	0.5
	Little Ossipee River	**Shapleigh Pond**	4,849	16.9
Salmon Falls-Piscataqua Rivers	Salmon Falls River	**Headwaters-Great East Lake**	9,264	32.3
	Salmon Falls	**Upper Branch River-Lovell Lake**	6,799	23.7
	Salmon Falls	**Milton Pond**	647	2.3
	Salmon Falls River	**Jones Brook-Branch River**	1,482	5.2
Total Area			**28,718**	

Surface Water Body	Area in Wakefield (acres)	Major Watershed	Mean Depth (meters)	Maximum Depth (meters)	Water Quality	Trophic Status*
Balch Pond	None		---	---	Moderately productive	---
Belleau Lake	284	Saco River	---	---	Borderline pristin	---
Great East Lake	1060	Piscataqua River/Coastal	10.9	31	pristine	Oligotrophic
Horn Pond	120	Piscataqua River/Coastal	3.9	9.1	borderline pristine	Oligotrophic
Ivanhoe Pond	68.4	Piscataqua River/Coastal	3.6	6.1	pristine	Oligotrophic
Lovell Lake	554	Piscataqua River/Coastal	4	12.5	pristine	Oligotrophic
Pine River Pond	570	Saco River	3.7	16.8	Moderately productive	Mesotrophic
Province Lake	951	Saco River	2.8	4.9	borderline pristine	Oligotrophic
Sand Pond	21.3	Saco River	1.4	3.3		Oligotrophic
Stump Pond	290	Saco River	3.2	13.4		Mesotrophic
Union Meadows	97.5	Piscataqua River/Coastal	0.9	4.6	Moderately productive	Mesotrophic

LAKES, PONDS, SWAMPS and BOGS IN WAKEFIELD, NH

Lake/Pond Name	a.k.a.	Size in Acers	Surface Elevation	Notes	Coordinates
Belleau Lake		284	600	Flows into Stump Pond/Balch pond-to Saco Watershed	043-39'-10.62"N / 070-59'-40.81"W
	note:	This lake has an area of 187 acres in a 5.82 square mile watershed in Wakefield, NH.			
		Belleau Lake is an artificial lake which used to be a river. It is infested with invasive milfoil.			
Balch Pond	Balch Lake is a 704 acre artificial lake [1] on the border of Maine and New Hampshire				043-36'-43.80"N / 070-57'-51.19"W
	The surface area of Balch Pond/Lake is 1.1 square miles and **extends into New Hampshire** where it is known as **Stump Pond.**				
Stump Pond		352	570	Saco Watershed	043-37'-26.21"N / 070-59'-07.67"W
Great East Lake	NH Portion only	885	573.26	1060 Total Acres - Salmon Falls Watershed	043-34'-51.69"N / 070-59'-07.56"W
Horn Pond	NH Portion Only	120	554.23	(198 Total Acres) Fed form Great East Lake Via Canal Salmon Falls Watershed	043-33'-42.69"N / 070-57'-32.58"W
Lake Ivanhoe	Ivanhoe Pond **or** Little round Pond	124	596	No Inlet or outlet on the map	043-036'-04.24"N / 070-59'-27.37"W
Lovell Lake	Lovewell's Pond	538	572.13	headwaters for Branch River to Salmon Falls Watershed	043-32'-31.85"N / 071-00'-35.33"W
Pine River Pond		594	582.35	Flows into Pine River into Ossipee Lake to Saco watershed	043-37'-38.64"N / 071-01'-37.25"
Province Lake		1014	488	Flows into Saco watershed	043-41'-27.52"N / 070-59'-51.69"W
Sandy Pond	Sand Pond	24.7	600	Flows into Stump Pond Saco Watershed	043-37'-45.95"N / 070-59'-07.32"W
Woodman Pond		???	600	Flows into Stump Pond Saco Watershed	043-38'-13.05"N / 070-58'-58.67"W
Union Meadow	Cates Pond	310	496.38	Branch River flows thru here to Salmon Falls watershed	043-30'-22.07"N / 071-01'-25.29"W

LAKES, PONDS, S. AMPS and BOGS IN WAKEFIELD, NH

River & Streams			
Branch River From Lovell Lake	551	Thru Union Meadows into Salmon Falls Watershed	043-33'-09.36"N / 071-01'- 32.27"W
Salmon Falls River	589	Begins at the Dam of Horn Pond	043-33'-10.30"N / 070-57'-14.03"W
Pine River	597	Flows North into Ossipee Lake Saco Watershed	043-38'-48.54"N / 071-02'- 51.06"W
Brook (no name)	576	Flows into Pine River Pond from head waters in Wolfeboro/Brookfield	043-38'-06-96"N / 017-03'-04.30"W
Scribner Brook	834	Flows into great East Lake	043-36'-32.96"N / 071-01'-43.81"W
Copp Brook East Wakefield	592	Flows into Great East Lake	043-35'-48.66"N / 071-00'-04.50"W
Hanson Brook is in Brookfield	573	Flows into Pike Brook	043-32'-42.53"N / 071-02'-36.76"W
Pike Brook	580	Flows into Branch River	043-32'-43.28"N / 071-02'-21.83"W
Locke Brook	692	Head Waters of Copp Brook	043.35'-08.93"N / 071-03'-00.21"W
Copp Brook Sanbornville	592	Flows into Great East Lake	043-34'-3053"N / 017-001'-48.78"W
Horse brook head waters	615		043-33'-53.53"N / 071-01'-51.28"W
Horse brook flows into Lovell Lake	587	Flows into Lovell Lake	043-33'-23.53"N / 071-01'-19.00"W
Farnham Brook	562	Flows into Salmon Falls River	043-32'-23.76"N / 071-57'-46.64"W
Swamps			
No Name Pond and Bog	898	Head Waters of Scribner Brook	043-36'-08.28"N / 071-02'-01.12"W
Tuttles Swamp/bog	594	Head Waters of Copp Brook Sanbornville	043-34'-08.32"N / 071-01'-03.49"W
No Name Swamp/Bog	614	Horse brook head waters	043-33'-53.11"N / 071-01-50.72"W
Beaver Ponds			
Beaver Pond	676	Headwaters of Farnham Brook	043-32'-54.28"N / 070-58'-29.08"W
Off Witchtrot and Oakhill roads	774	Flows into Lovell Lake	043-33'-37.98"N / 071-00'-00.92"W
Off Old Stage Road where it ends at private Gate			

Documented Rare Species and Exemplary Natural Communities in New Hampshire's Coastal Watersheds

This list comes from the August 2006 book:
the Land Conservation Plan for NH's Coastal Watersheds
Appendix C:
Documented Rare Species and Exemplary Natural Communities
in New Hampshire's Coastal Watersheds

Taxonomic Name, Common Name, Global Rank, Rarity Rank,

G= Global Rarity (scale1-5) S=State Rarity (scale1-5)

ANIMALS:
Alasmidonta varicosa, Brook Floater, G3, S1, E
Ammodramus henslowii, Henslow's Sparrow, G4, S1
Ammodramus nelsoni Nelson's Sharp-tailed Sparrow 2 G5 S3
Ammodramus savannarum Grasshopper Sparrow 2 G5 S1 T
Ardea herodias Great Blue Heron (Rookery) G5, S4 --
Bartramia longicauda Upland Sandpiper 4 G5 S1 E
Clemmys guttata Spotted Turtle G5 S3
Coluber constrictor constrictor Northern Black Racer T5 S3 --
Corvus ossifragus Fish Crow G5 S3 --
Dendroica cerulea Cerulean Warbler G4 S3 --
Emydoidea blandingii Blanding's Turtle G4 S3 --
Enneacanthus obesus Banded Sunfish G5 S3 --
Eremophila alpestris Horned Lark G5 S3 --
Erynnis lucilius Columbine Duskywing G4 S1 --
Esox americanus americanus Redfin Pickerel T5 S4 --
Etheostoma fusiforme Swamp Darter G5 S3 --
Gavia immer Common Loon G5 S3 T
Glyptemys insculpta Wood Turtle G4 S3 --
Haliaeetus leucocephalus Bald Eagle G5 S1 E
Ixobrychus exilis Least Bittern G5 S1 --
Notropis bifrenatus Bridled Shiner G3 S3 --
Nycticorax nycticorax Black-crowned Night-heron G5 SH --
Opheodrys vernalis Smooth Green Snake G5 S3 --
Pandion haliaetus Osprey G5 S2 T
Podilymbus podiceps Pied-billed Grebe G5 S1 E
Pooecetes gramineus Vesper Sparrow G5 S2 --
Progne subis Purple Martin G5 S1 E
Rallus limicola Virginia Rail G5 S4 --
Sterna hirundo Common Tern G5 S1 E
Sterna paradisaea Arctic Tern G5 S1 T
Sylvilagus transitionalis New England Cottontail G4 S3 --
Vermivora chrysoptera Golden-winged Warbler G4 S2 --
Williamsonia lintneri Ringed Bog Haunter G3 S1 E

PLANTS:
Acalypha virginica Three-seeded Mercury G5 S1 E
Acer nigrum Black Maple G5 S2 T
Fern-leaved False Foxglove 1 T4 S2 T
Carex siccata Hay Sedge 1 G5 S1 E
Chenopodium rubrum Coast-blite Goosefoot 2 G5 S1 E
Cirsium horridulum Yellow Thistle 2 G5 S1 E

Crassula aquatica Pygmy Weed 1 G5 S1 E
Polygonum prolificum Prolific Knotweed 4 T4 S1 E
Polygonum tenue Slender Knotweed 1 G5 S1 E
Potamogeton nodosus Knotty Pondweed 5 G5 S1 E
Prunus americana American Plum 1 G5 S1 E
Ranunculus fascicularis Early Buttercup 2 G5 S1 E
Rhododendron maximum Giant Rhododendron 1 G5 S2 T
Waldsteinia fragarioides Barren Strawberry 1 G5 S1 E

NATURAL COMMUNITIES:

Alder - dogwood - arrowwood alluvial thicket 1 S4
Appalachian oak - pine rocky ridge 4 S3
Black gum - red maple basin swamp 9 S1
Dry Appalachian oak - hickory forest 5 S3
Hemlock - beech - oak - pine forest 3 S5
Hemlock - cinnamon fern forest 2 S4
Hemlock - white pine forest 1 S4
Inland Atlantic white cedar swamp 1 S1
Mesic Appalachian oak - hickory forest 4 S2
Northern hardwood - black ash - conifer swamp 1 S2
Red maple - black ash - swamp saxifrage swamp 7 S2
Red maple - lake sedge swamp 1 S3
Red maple - sensitive fern swamp 7 S2
Red oak - black birch wooded talus 1 S3
Red oak - ironwood - Pennsylvania sedge woodland 4 S2
Red oak - pine rocky ridge 1 S3
Rich Appalachian oak rocky woods 5 S1
Rich mesic forest 3 S3
Rich red oak rocky woods 1 S2
Semi-rich Appalachian oak - sugar maple forest 3 S2
Semi-rich mesic sugar maple forest S3
Swamp white oak basin swamp 3 S1
Swamp white oak floodplain forest 2 S1

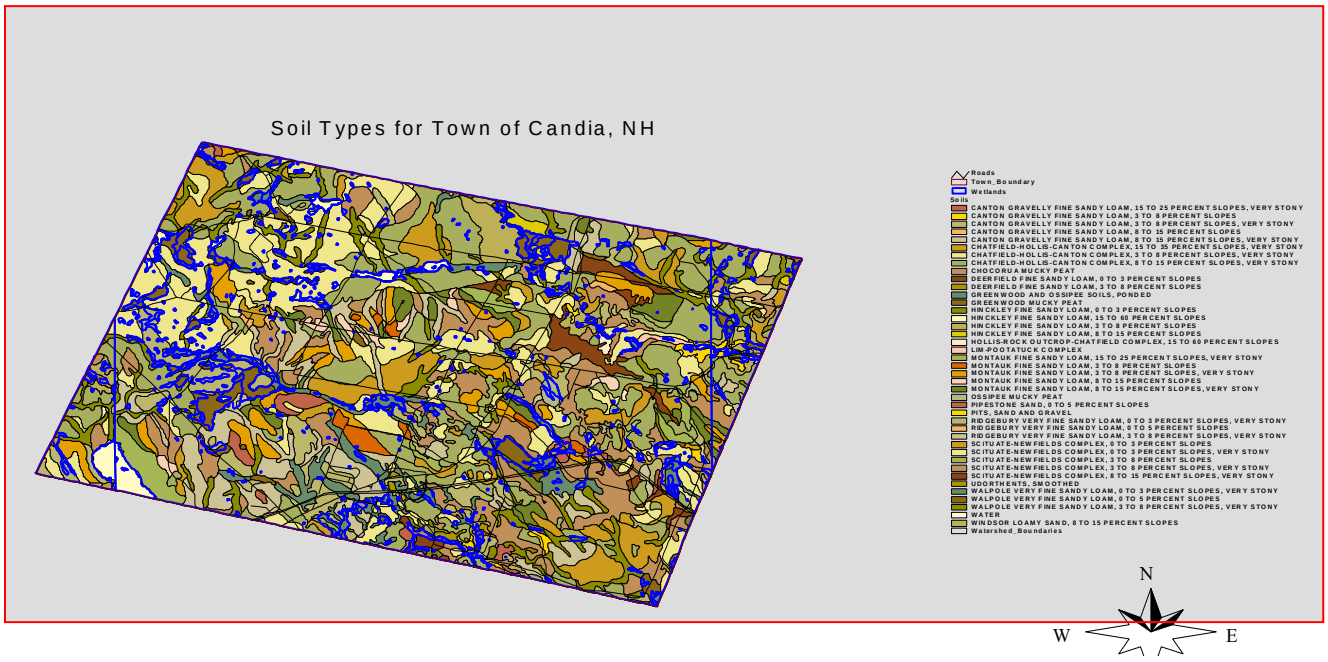
NATURAL COMMUNITY SYSTEMS

Appalachian oak rocky ridge system 2 --
Emergent marsh - shrub swamp system 1 --
Kettle hole bog system 1 S2
Low-gradient silty-sandy riverbank system 1 --
Medium level fen system 3 S3
Poor level fen/bog system 4 S3
Rich Appalachian oak rocky woods system 2 --
Sand plain basin marsh system 1 S2
Sandy pond shore system 1 S2

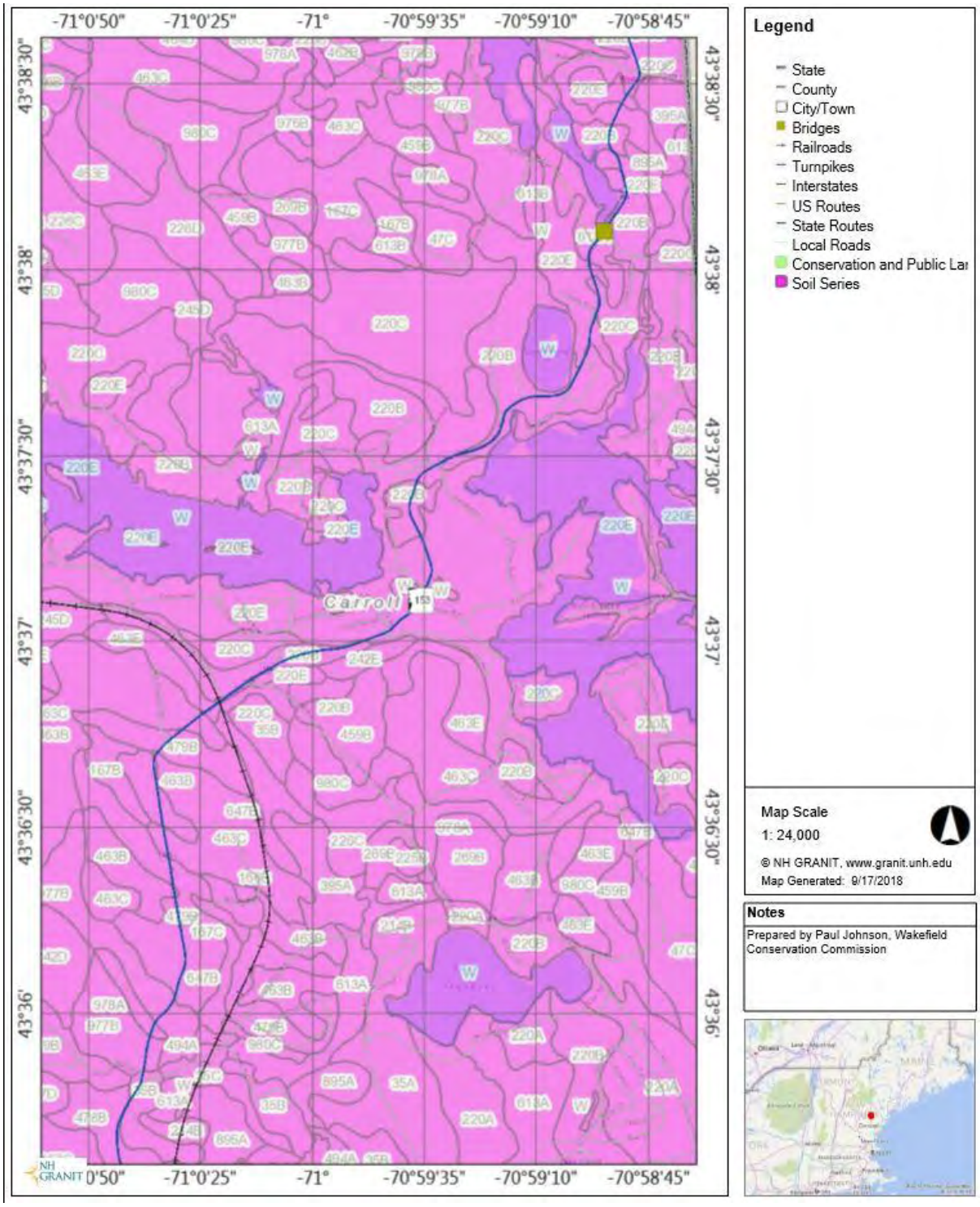
Soils

Soil is greatly underappreciated, but it serves as the basis of almost all plant growth, and thus of all life on earth. Soil is a complex mixture of weathered minerals, partially decomposed organic matter, and a host of living organisms. There are some 20,000 soil types in the U.S., varying due to parent material, time, topography, climate, and the type of organisms present. New Hampshire uses 999 codes to identify each soil type (NRCS, 2011b). For example, the code 111 is used for the soil type "Gloucester, very stony," and the code 140 is used for "Chatfield (well drained)-Hollis (well drained)-Canton complex." Following the code there may be letters denoting slope and texture of the soil. A detailed explanation of the soil types in Carroll County, NH can be found in Carroll Co Soils Report (USDA: SCS & NHAES, 1977).

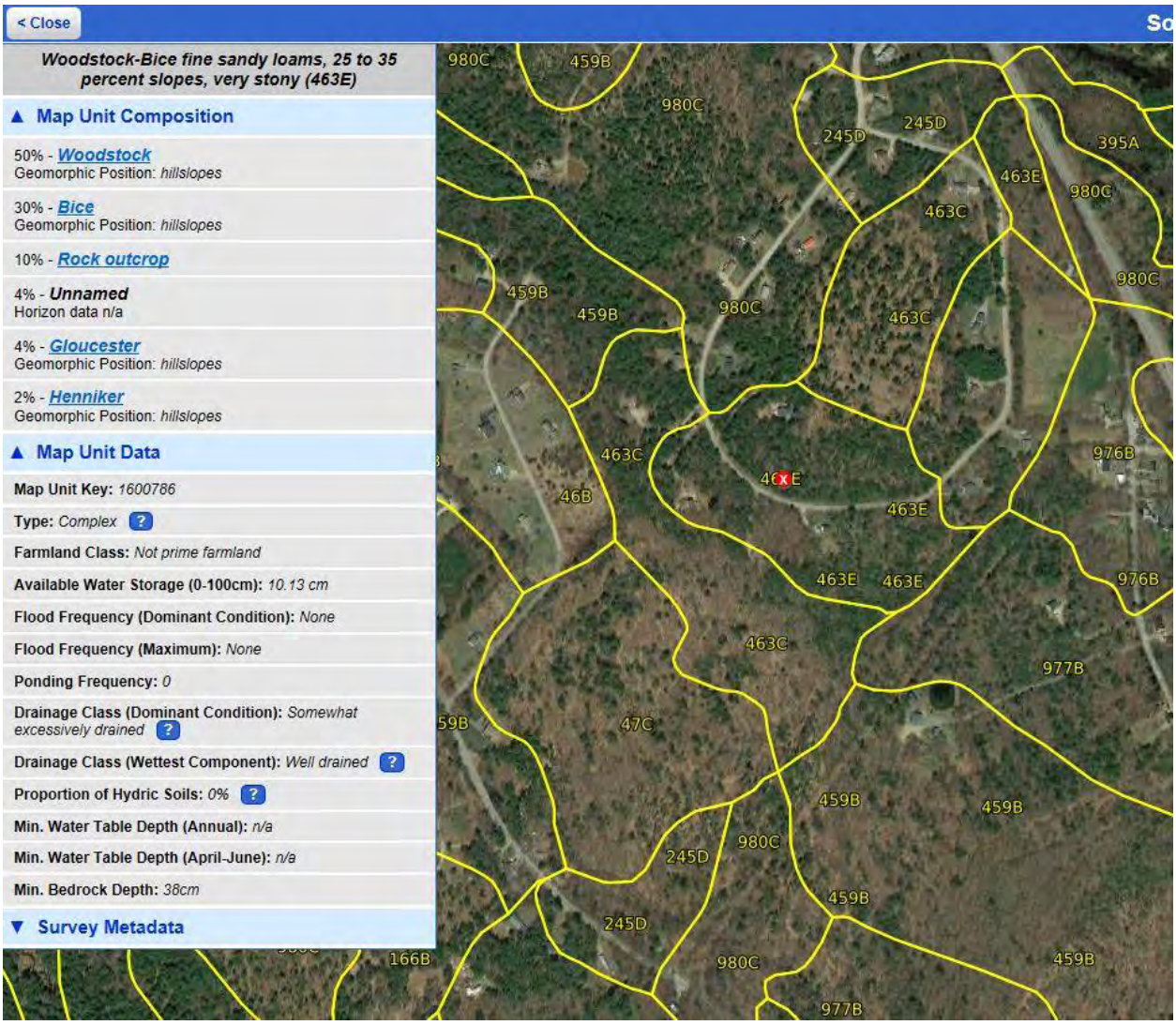
Soil types tend to form mosaic in any given area. For example, the map below shows the soil types found in Candia, NH (NR775 Senior Project, Fall 2005). While the color codes used here are very attractive, they are hard to interpret.



The codes mentioned above provide a less dramatic, but more useful description of the soil types found in an given area. The soils map below was prepared by the Wakefield Conservation Commission using these codes, but to be useful would require at least nine maps to cover the area. Inclusion of that number of maps is not reasonable for the purposes of this NRI, but those interested in soil types at a specific location in Wakefield can generate their own maps using software found at either GraniteView (https://granitview.unh.edu /html5viewer/ Index.html?viewer= granit_view) or the NRCS Web Soils Survey (https://websoilsurvey.sc.egov.usda.gov/).



However, the easiest way to examine soil types interactively is through an application developed by UC Davis which can be located at https://casoilresource.lawr.ucdavis.edu/gmap/. After scanning to the part of the country you want to examine, zoom in to the desired portion of the soils mosaic and click. A complete description of the soil type and characteristics will pop up as shown below.



This app is also available free for your smart phone, with the added benefit of opening at your current location. Just search for *The Soils Map App.*

This is by far the easiest way to get the specific information you want on a detailed scale. The Natural Resources Conservation Service (NRCS, 2011a) recognizes different levels of mapping intensity and the purposes each serves.

> *Recognition of these different levels of mapping intensities is helpful for communicating about soil survey maps although the levels cannot be sharply separated from each other. The mapping orders are intended to aid in the identification of the operational procedures and level of precision used to conduct the soil survey.*
>
> ***Order 1*** *soil surveys are made for very intensive land uses requiring very detailed information about soils. The information can be used in planning subdivisions, intensive agricultural uses, and other uses that require a detailed and very precise knowledge of*

the soils and their variability. Typical map units in an Order 1 survey are but not limited to: consociations; some complexes; and miscellaneous areas. The base map scale is generally 1:15,840 or larger.

Order 2 *soil surveys are made for intensive land uses that require detailed information about soil resources for making predictions of suitability for use and treatment needs. Information can be used for community planning, agriculture, highway construction, and other similar uses that require precise knowledge of the soils and their variability. The base map scale generally ranges from 1:12,000 to 1:31,680; however, historically in New Hampshire, the scale used for Order 2 mapping has been 1:15,840, 1:20,000 or 1:24,000.*

Order 3 *soil surveys are made for extensive land uses that do not require precise knowledge of small areas or detailed soils information. Information can be used for forest management, recreational uses, wildlife habitat suitability, and other similar extensive land uses. The base map scale generally ra*nges from 1:24,000 to 1:250,000, however, in New Hampshire, the base map is typically 1:24,000

Considering the importance of soil for agricultural productivity, maintenance of wildlife habitat, and even residential and industrial development, preserving soil is essential for maintenance of our natural resources.

References Cited:

Natural Resources Conservation Service, USDA. 2011a. NH State-Wide Numerical Soil Legend Issue #10, January 2011. Available online. Accessed: October 29, 2018.

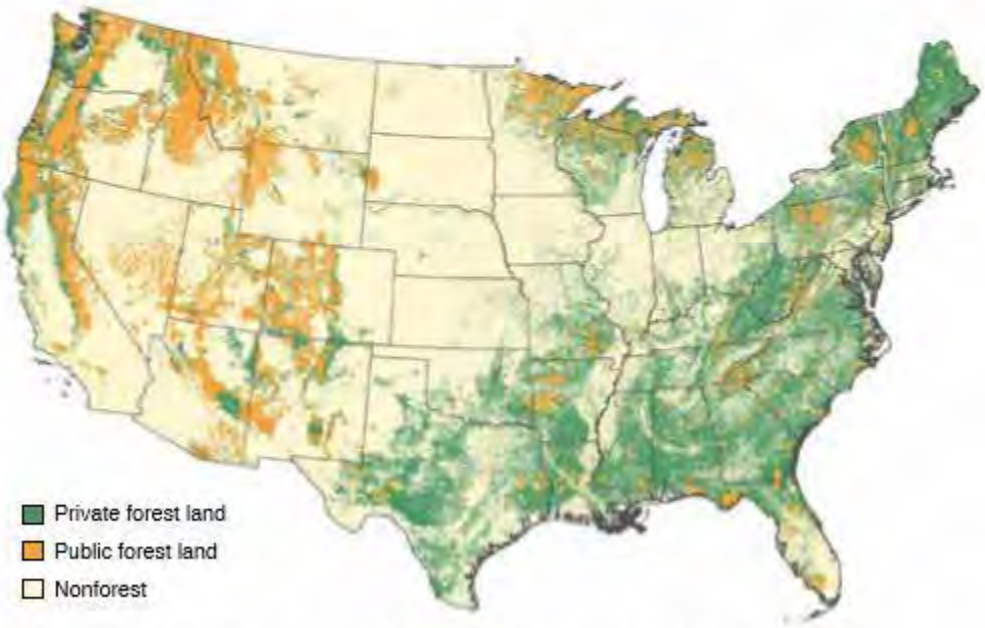
Natural Resources Conservation Service, USDA. 2011b. NH State-Wide Numerical Soil Legend Issue #10, January 2011. Available online. Accessed: October 29, 2018.

USDA: Soil Conservation Service & NH Ag Experiment Station, 1977. Carroll Co Soil Report. Available online. Accessed: October 29, 2018.

Forests

Forests produce a variety of natural resources, including wood products, clean water, and wildlife habitat, including game species. About 441 M acres of the land area of the U.S. is forested. Ownership is broken down into three categories by the U. S. Forest Service as shown in the figure below (USFS 2013).

- Private owners of woods or forest are "Family and Individual" owners, "Corporate" owners, and "Other Private" owners who own 1 or more acres of woods or forest land.
- Public woods or public forest owners are Federal, State, and local government agencies (such as the U.S. Forest Service and State forest departments).



Ownership of woods and forest in the conterminous United States, 2013.

Forested land in the contiguous United States can be classified into six broad categories: Northern Forests, Central Forests, Southern Forests, Bottomland Forests, West Coast Forests, and Western Interior Forests. Two of these types occur in New England:

Northern forests are mixed hardwoods and softwood forests. Deciduous hardwoods include maple, beech, and birch. Softwoods include eastern white pine, hemlock, spruce, and fir. Northern forests in the east tend to be zoned, with hardwoods at the lower elevations, softwoods

at the higher elevations, and occasionally alpine tundra on the mountain peaks. Northern forests feature moderate temperatures, but cold winters, and they have moderate precipitation amounts. Fire is rare, with a mean fire return interval greater than 300 years.

Central Forests are found across the Eastern and mid-central U.S. Central Forests are dominated by oak-hickory. They are characterized by moderate precipitation, mild winters and hot summers, with occasional summer drought. Wildfire occurs occasional, with a mean fire return interval of about 100 years. Prior to European settlement, fire would have been more commonplace. Surface fires were probably more frequent in pre-settlement times.

Forests provide essential habitat for a wide variety of plants, fungi, birds, wildlife and insects. In addition to their commercial value, they provide a refuge for rare and threatened species, recreational opportunities for hunting, hiking, skiing, snowmobiling, etc. Unfortunately, fragmentation of forested land caused by commercial and residential development limit many of these benefits. Unfragmented blocks of forested land … those that are not interrupted by development, contain few houses, and not bisected by maintained roads … become important for conserving these benefits. Unfragmented blocks can include many types of habitat including forests, meadows, lakes, rivers and streams, wetlands and agricultural lands. This habitat diversity increases the diversity of plant and wildlife species that are supported, including rare and threatened species.

A map of unfragmented lands in Wakefield is provided in the Maps section.

References Cited

U. S. Forest Service (2013). Who Owns America's Trees, Woods, and Forests? URL: [https://www.fs.fed.us/nrs/pubs/inf/nrs_inf_31_15-NWOS-whoowns.pdf]. Accessed, December 12, 2018.

APPENDIX A

Conservation Lands

	Property Name	Address/Location	Tax Map	Tax Map Lot #	Boundary Survey drawing	Date Conserved	Deed in File	Deed Info	Approx. Size (acres)	Owner	Easement Holder	Executory Grantee	Primary Grantee	COMMENTS
1	Gage Hill Farm	Gage Hill Rd	Y	147-006	YES	1/30/2004	w-y e-y	BK 2258 PG 313	108.33	Wakefield	SPNHF			
2	Barbour/Goransson	Union Meadows, Harmony Drive	Y	242-001	YES	6/28/2006; 4/15/2012	w-n e-y	BK 2544 PG 0030; BK 2620 PG 063	128	Goransson	SELT	Wakefield		Recording of conservation restriction assessment (Application copy in our file)
3	Spencer Smith Gage Hill Farm Hayfield, Orchard, & Barn	Gage Hill Rd	Y	147-001 147-007	YES	12/31/2007	w-n e-y	BK 2683 PG 0992	26.87	Nancy Spencer-Smith	SELT and Wakefield	Wakefield	Wakefield	
4	Laurion	Union Meadows, Harmony Drive	Y	236-001	NO	12/31/07 Sold to the town	w-y	BK 2683 PG 965	21	Town of Wakefield	Town of Wakefield			
5	McLaughlin	Union Meadows	Y	240-002	YES	12/31/2007 Sold to the town	w-y	BK 2683 PG 988	32	Town of Wakefield	Town of Wakefield			No reference on town tax map of 5 acre outparcel reserved for picnic/parking
6	Remick aka Tucker farm	Witchtrot Road See Chpts 2K & 3B on recorded easement regarding access	Y	167-028 167-030	YES	12/31/2007	w-n e-y	BK 2683 PG 968	117	Daryl Remick	SELT	Wakefield	Wakefield	Land open to the public but can be posted against hunting and wheeled vehicles
7	Lavender	Rte109 Wentworth Rd Wakefield/Brookfield	Y	182-010	YES	3/28/2008	w-y e-y	BK 2701 PG 0505	102.3 w/21+/- in Wakefield	Tom & Dulcie Lavender	SELT & Town of Wakefield	Lavender		Land overlays stratified drift aquifer, the towns source water protection area
8	Berg	Witchtrot Road Wakefield		150-010 151-002 160-001 160-003 161-001	NO NO YES NO NO	3/4/2011	w-n e-y	BK 2917 PG 0199	212	Berg	NRCS, WRP, USA			Contact NRCS/USDA in Durham for boundary survey plan
9	Herberich	Brackett Farm Witchtrot Rd at Brackett Rd	Y	178-004 178-001	YES	11/16/1990 12/15/1989	w-n e-y	BK 1432 PG 478-489 BK 1400 PG 211	133.5	Elizabeth Herberich	SPNHF			11/16/1990 conservation easement deed appendix A page 11 "except therefore a 7.63 acre parcel
10	Siemon #6 (aka Hutchens Farm Field)	Rt 109 at Lovell Lake	Y	208-004	YES	12/23/1996	w-n e-y	BK1683 PG 793	8.4 property cd or 7.6 per appendix A of deed	Siemon Revocable Trust	Wakefield			

11	Siemon in Memory of Frank Leonard 78 to 80 acres +/- 36 in Wakefield balance in Milton	Lovell Lake Road (Rt 109)	Y	207-036	NO	12/8/1999	NO	BK 1840 PG 817	80	78 total acres 36 in Wakefield bal in Milton	Carl Siemon Family Charitable Trust Dec 1999 it has a Conservation Action Plan under Forestry Management plan			NOT IN Conservation SEE Forestry Management Plan
12	Pinewood Crossing "Conservation Area"	Pinewood Crossing Lot 64 KNOWN AS "Conservation Area." Nothing built on this lot	Y	197-064	YES	11/18/2008	NO	BK 2749 PG 956 Quit Claim deed only	0.964	Pinewood Crossing Association	no easement in file			Grantor for conservation area appears to be Marjen Construction **********Owner Pinewood Crossing Assoc.
13	Weed Beach LLC Lot 3	Vange Way Belleau Lake See subdivision plan. Land Tech 8/2/2001 revised 5/2/2002; plan BK 201 PGs 65& 66 at CCRD	Y	031-003	YES	3/13/2006	w-y	BK 2511 PG 501 BK 2283 PG 0145	3.4	Weed Beach LLC		Town of Wakefield		Conservation restriction guarantee Wakefield Conservation Commission See deed bk 2283 pg0145
14	Watertown Village aka Belleau Lake Property Owners Association	LOT 16	Y	023-016	YES	3/27/2007	NO	BK 2615 PG 152	153.94	Belleau Lake Property Owners Association	Covenant in form of Conservation restriction on parcels 1,2,3&5 prohibits construction			Recorded deed in the file with conservation restriction
15	N.H.Fish & Game Webber Harding 121.96 Acres	Marsh Road to Union Meadows	Y	222-010 223-018 226-001 226-002 223-015	YES	4/30/2013	w-y e-n	BK 3075 PG 792	121.96	NH Fish & Game Department	NH Fish and Game Department	LCHIP		
16	Jones Brook LLP Section # 01A	Witchtrot Road and Canal Road	Y	152-004	YES	8/13/2004	w-y e-y	BK 2328 PG 0128	12.8 complete lot conserved	Jones Brook LLP	Wakefield		See plan BK 208 PGs 86 & 87	
17	Jones Brook LLP Section # 01B	Witchtrot Road and Canal Road	Y	152-001	YES	8/13/2004	w-y e-y	BK 2328 PG0128	2.64 conserved	SZIRBIK, ADAM T.	Wakefield		See plan BK 208 PGs 86 & 87	
18	Jones Brook LLP Section # 01C	Witchtrot Road and Canal Road	Y	159-012	YES	8/13/2004	w-y e-y	BK 2328 PG 0128	1.6 conserved	HAAG, DAVID L & GISELA L	Wakefield		See plan BK 208 PGs 86 & 87	

19	Jones Brook LLP Lot # 2 Individual house lots with rear portion of each in conservation see tax cards for owners shown on Jones Brook LLP plan in file	Witchtrot Road and Canal Road Seebreak down of the individual lots in file titled Jones Brook LLP Section #2	Y	159-015 thru 159-018; 152-021 & 022; 153-041 thru 153-047	YES	8/13/2004	w-y e-y	BK 2328 PG 0128	23.07 conserved	Varous lot owners see tax cards in flder	Wakefield		See plan BK 208 PGs 86 & 87	Land located on east side of Witchtrot & south east side of Canal Rd
20	Jappe	Lovell Lake Road	Y	205-005	YES	6/17/2008	w-y e-y	SCRD BK 3654 PG 274	1.1 (Wakefield portion)	SELT	SPNHF			
21	Siemon #4	Oak Hill Road & Pond Road	Y	188-003 188-011 193-006	YES	12/29/1993	w-n e-y	BK 1558 PG 1002	135	Siemon Family Charitable Trust	SPNHF	Siemon Family Charitable Trust	Siemon Family Charitable Trust	
22	Saunders Area	Wakefield Road	Y	149-010	YES	12/21/2018		BK 1769 PG 858	15.44	Nancy Spencer-Smith	SELT			
23	Reilly Lot	Wakefield Road	Y	149-006	YES	12/21/2018		BK 3259 PG 295	2.07	Nancy Spencer-Smith	SELT			
24	Drown Area	Province Lake Rd & Canal Rd	Y	137-009	YES	12/21/2018		BK 2354 PG 615	9.3	Nancy Spencer-Smith	SELT			
25	Garvin Lot	Province Lake Rd & Canal Rd	Y	137-008	YES	12/21/2018		BK 1683 PG 348	18.75	Nancy Spencer-Smith	SELT			
26	Main Lot	Wakefield Rd & Province Lake Rd	Y	145-001 148-048 150-007	YES	12/21/2018		BK251 PG 588	180.08	Nancy Spencer-Smith	SELT			
27	Branch River Conservation Area	Rt. 153 and Whipperwill Rd	Y	214-009					17.67	MMRG	MMRG			

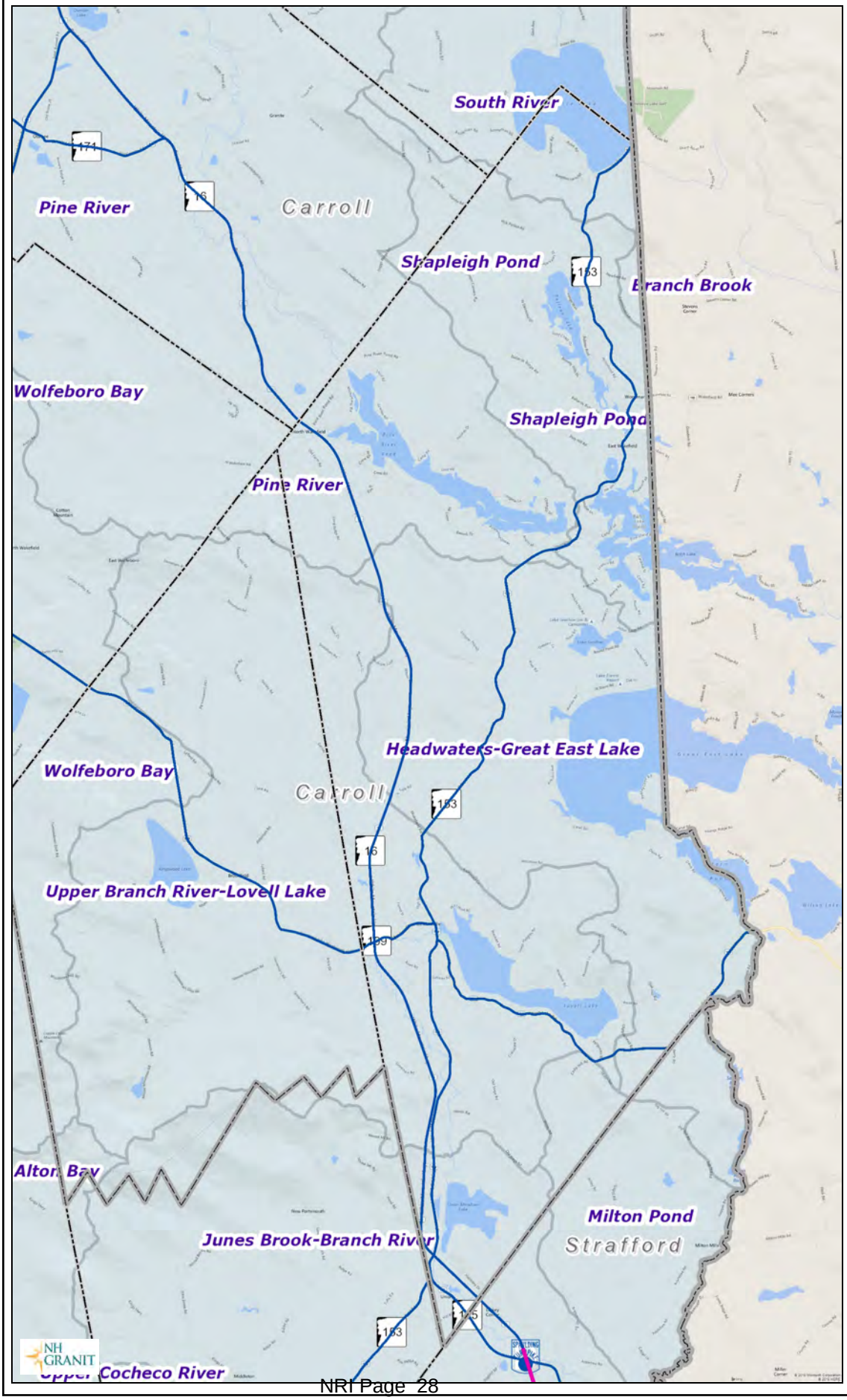
Total Acers	**1655.584**	**As of 12/21/2018**

MMRG = Moose Mountain Regional Greenways
SELT= South East Land Trust (Includes Strafford River Conservancy)
WRP = Wetlands Reserve Program
LCHIP = Land and Community Heritage Investment Program
NE Forestry Foundation
USA = US Department of Agriculture
DRED = NH Department of Resources & Economic development
NRCS = Natural Resources Conservation Service
SPNHF = Soc for Protection of NH Forests
NH F&G = New Hampshire Fish & Game Department
w = Warrantee Deed; e = Easement Deed

APPENDIX B

MAPS

12-digit Watersheds



Legend

- State
- County
- City/Town
- Turnpikes
- Interstates
- US Routes
- State Routes

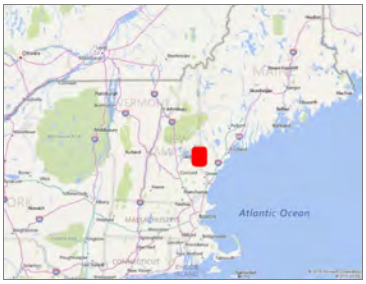
Map Scale

1: 103,907

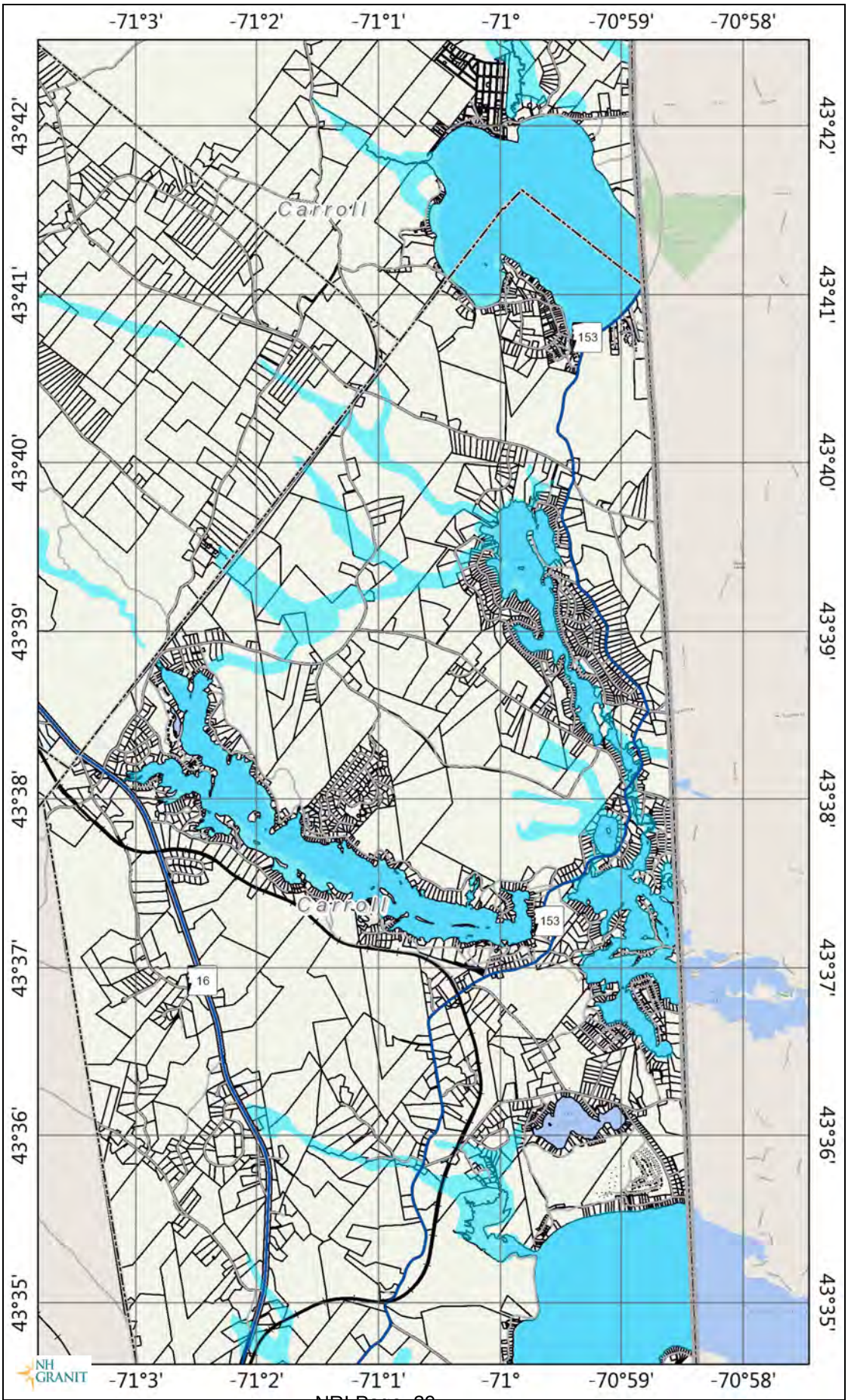
Map Generated: 9/20/2018

Notes

Wakefield Conservation Commission



Floodplains - North



Legend

- Polygons
- State
- County
- City/Town
- Railroads
- Turnpikes
- Interstates
- US Routes
- State Routes
- Local Roads

Flood Hazard - Areas

- 1 pct. Annual Chance Flood Hazard
- Floodway
- 0.2 pct. Annual Chance Flood Haza
- Area of Undetermined Flood Hazar
- Area Protected by Levee

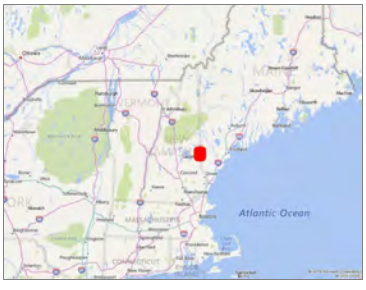
Map Scale

1: 62,500

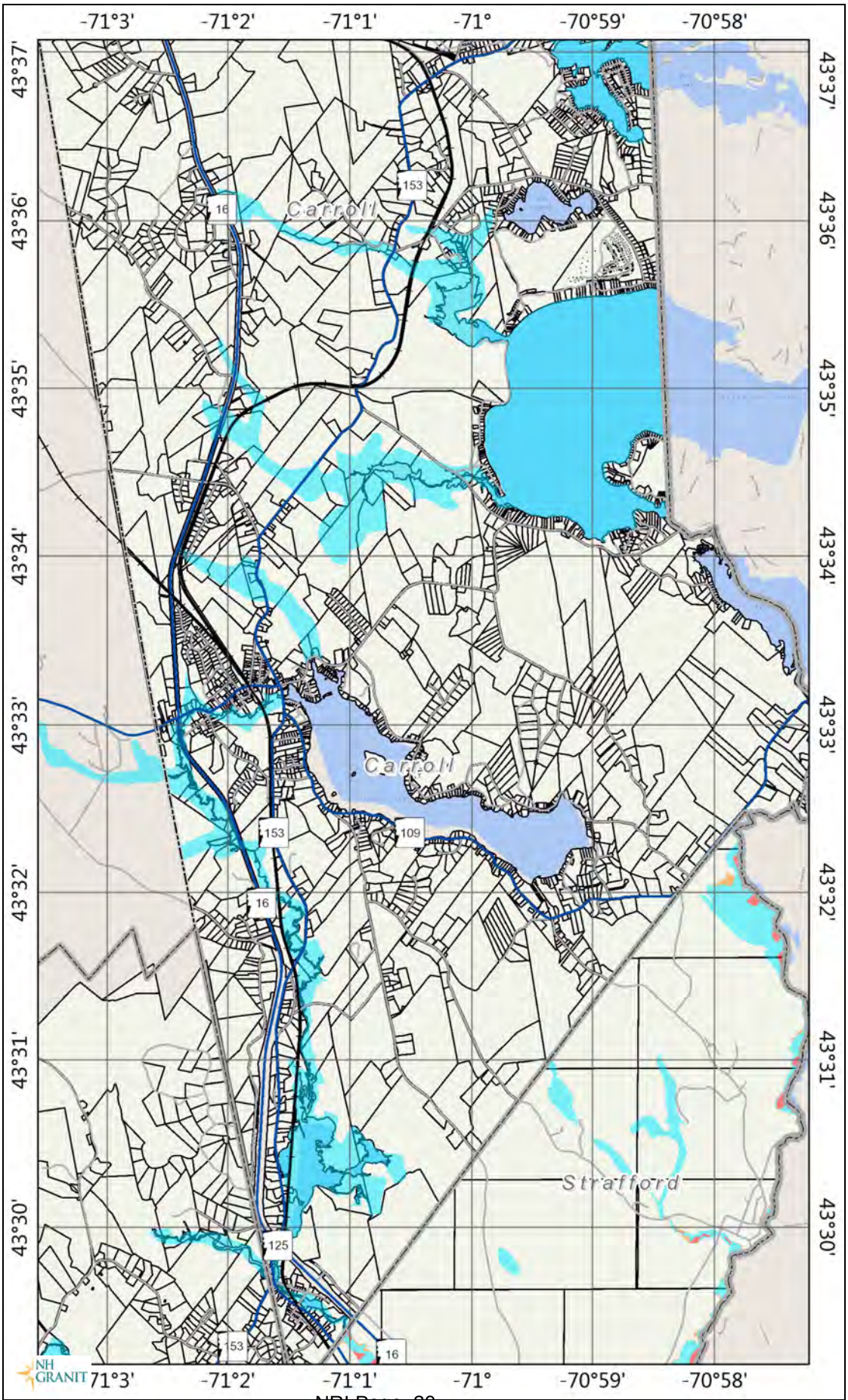
Map Generated: 10/28/2018

Notes

Wakefield Conservation Commission



Floodplains - South



Legend

- Polygons
- State
- County
- City/Town
- Railroads
- Turnpikes
- Interstates
- US Routes
- State Routes
- Local Roads

Flood Hazard - Areas

- 1 pct. Annual Chance Flood Hazard
- Floodway
- 0.2 pct. Annual Chance Flood Haza
- Area of Undetermined Flood Hazar
- Area Protected by Levee

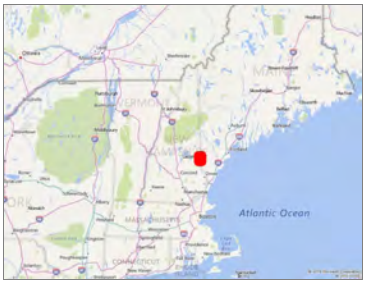
Map Scale

1: 62,500

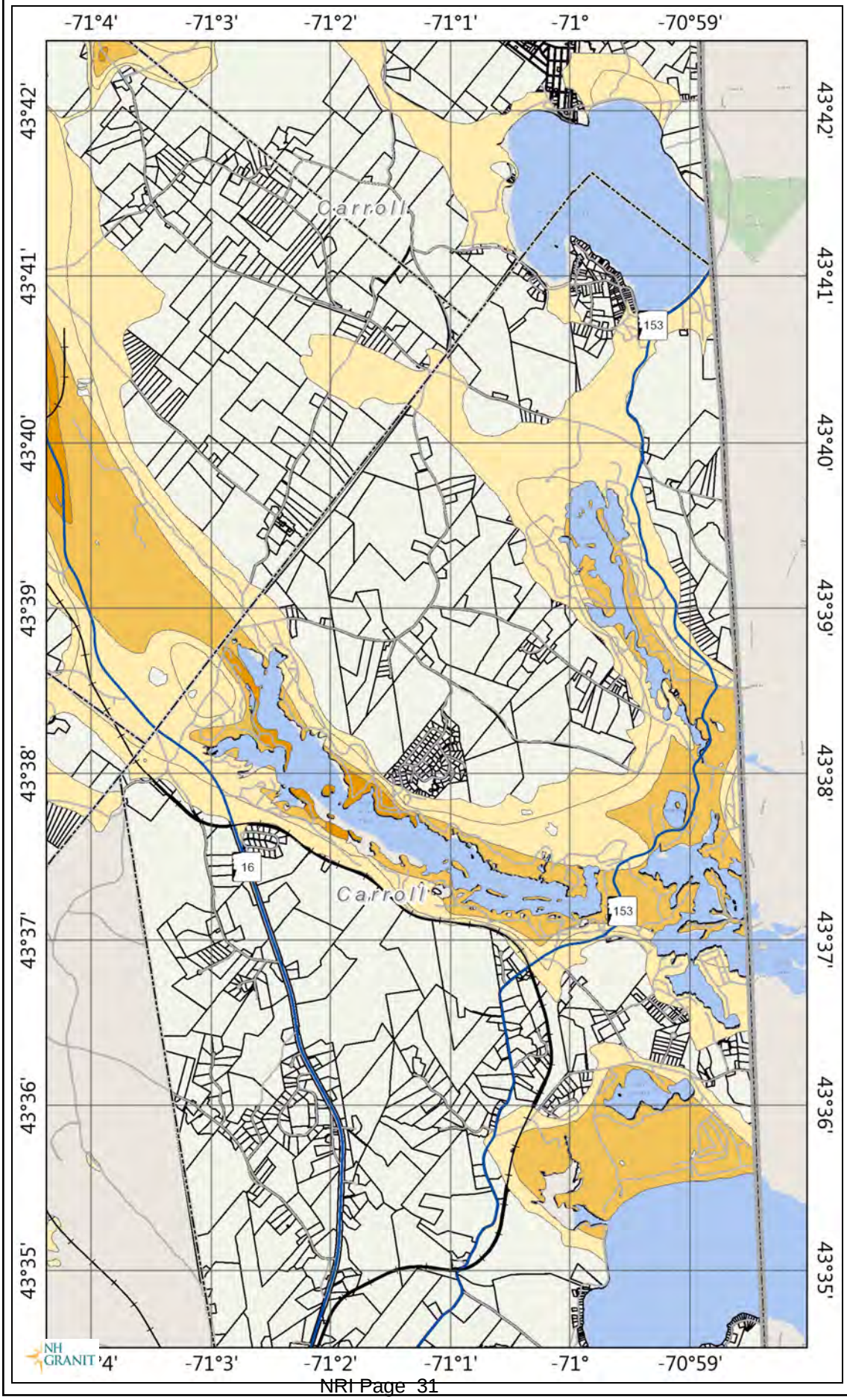
Map Generated: 10/28/2018

Notes

Wakefield Conservation Commission



Aquifers - North



Legend

- Polygons
- State
- County
- City/Town
- Railroads
- Turnpikes
- Interstates
- US Routes
- State Routes
- Local Roads

Aquifer Transmissivity

- Less than 2000 feet sq./day
- 2000 - 4000 feet sq./day
- Greater than 4000 feet sq./day

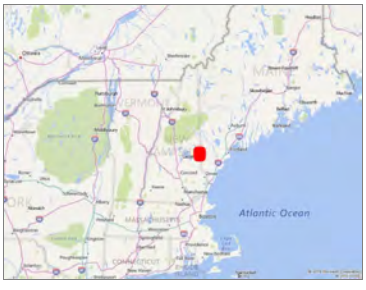
Map Scale

1: 62,500

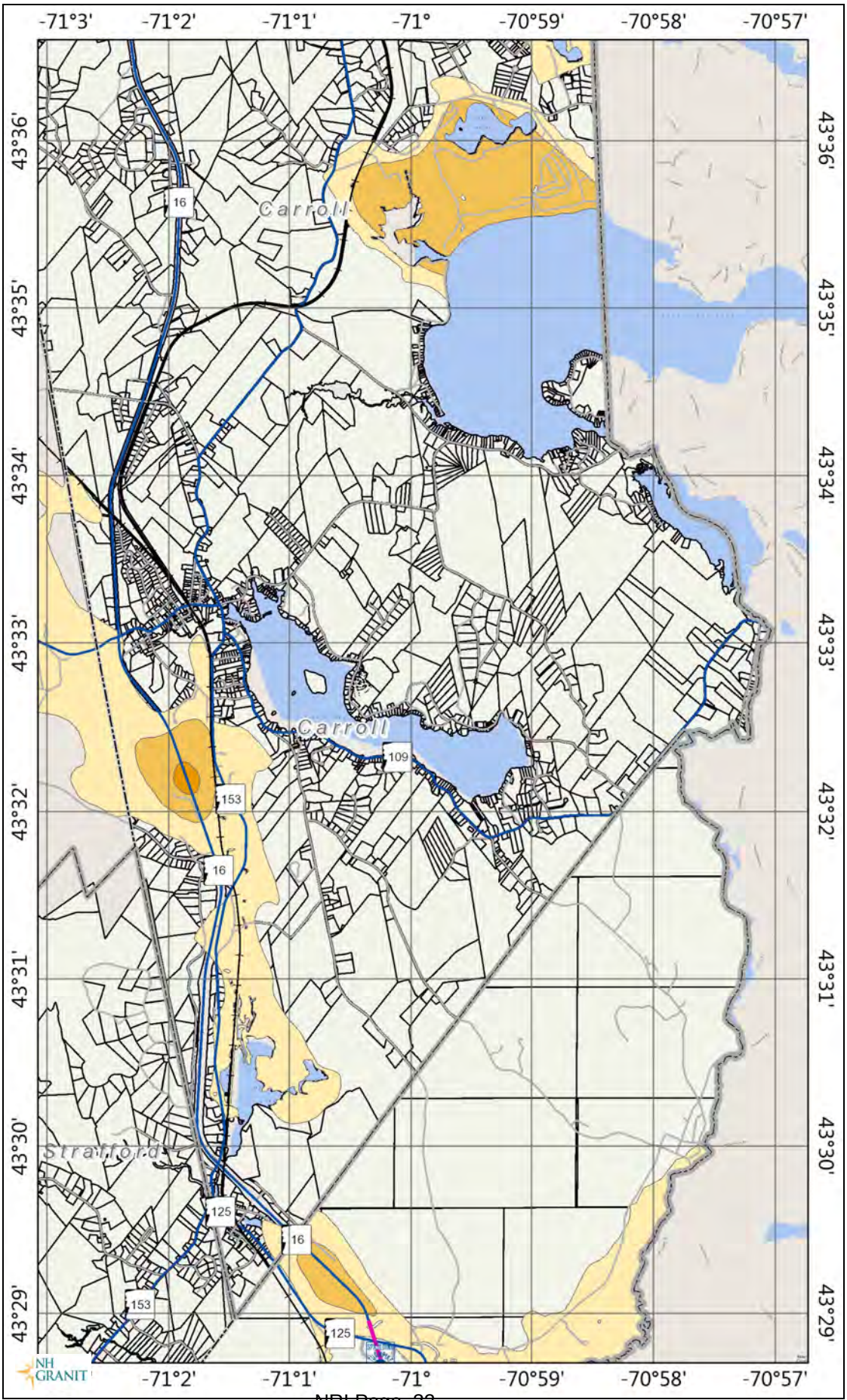
Map Generated: 10/28/2018

Notes

Wakefield Conservation Commission



Aquifers - South



Legend

- Polygons
- State
- County
- City/Town
- Railroads
- Turnpikes
- Interstates
- US Routes
- State Routes
- Local Roads

Aquifer Transmissivity

- Less than 2000 feet sq./day
- 2000 - 4000 feet sq./day
- Greater than 4000 feet sq./day

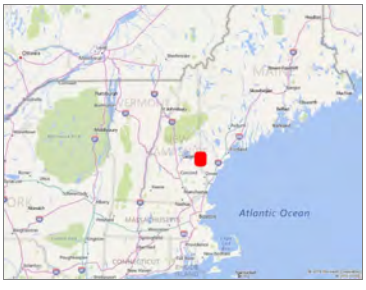
Map Scale

1: 62,500

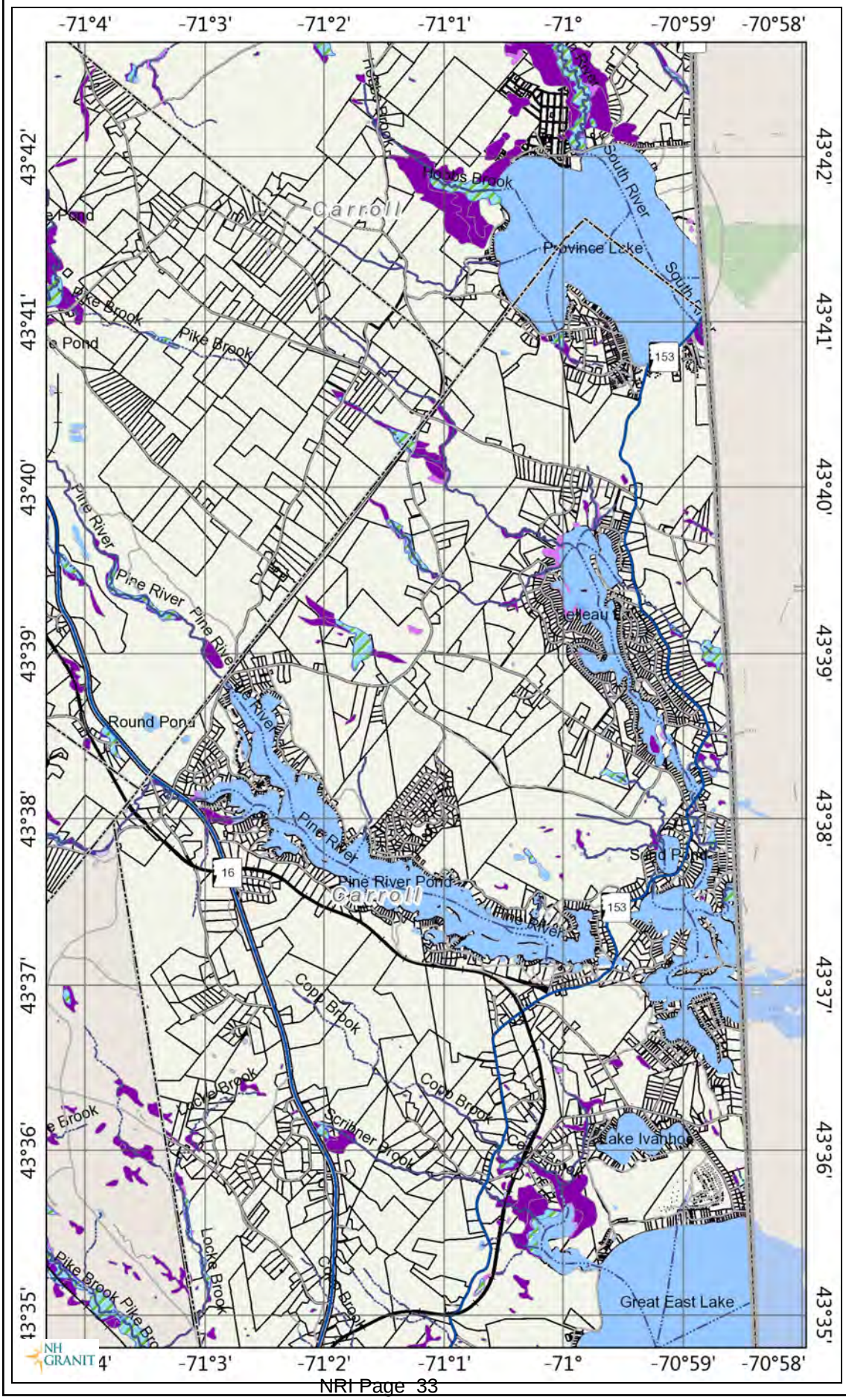
Map Generated: 10/28/2018

Notes

Wakefield Conservation Commission



Wetlands - North



Legend

- Polygons
- State
- County
- City/Town
- Railroads
- Turnpikes
- Interstates
- US Routes
- State Routes
- Local Roads
- Stream Centerlines
  - Perennial Stream
  - Intermittent Stream
- Artificial Paths
- Water Bodies
  - Lake/Pond
  - Reservoir
  - Estuary
  - Swamp/Marsh
- Wetlands
  - Estuarine and Marine Deepwater
  - Estuarine and Marine Wetland
  - Freshwater Emergent Wetland
  - Freshwater Forested/Shrub Wetland
  - Freshwater Pond
  - Lake
  - Other
  - Riverine

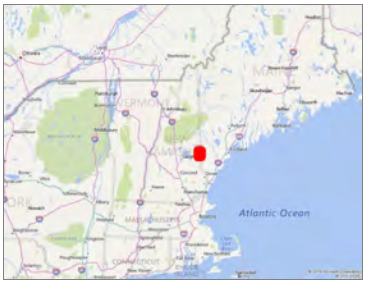
Map Scale

1: 62,500

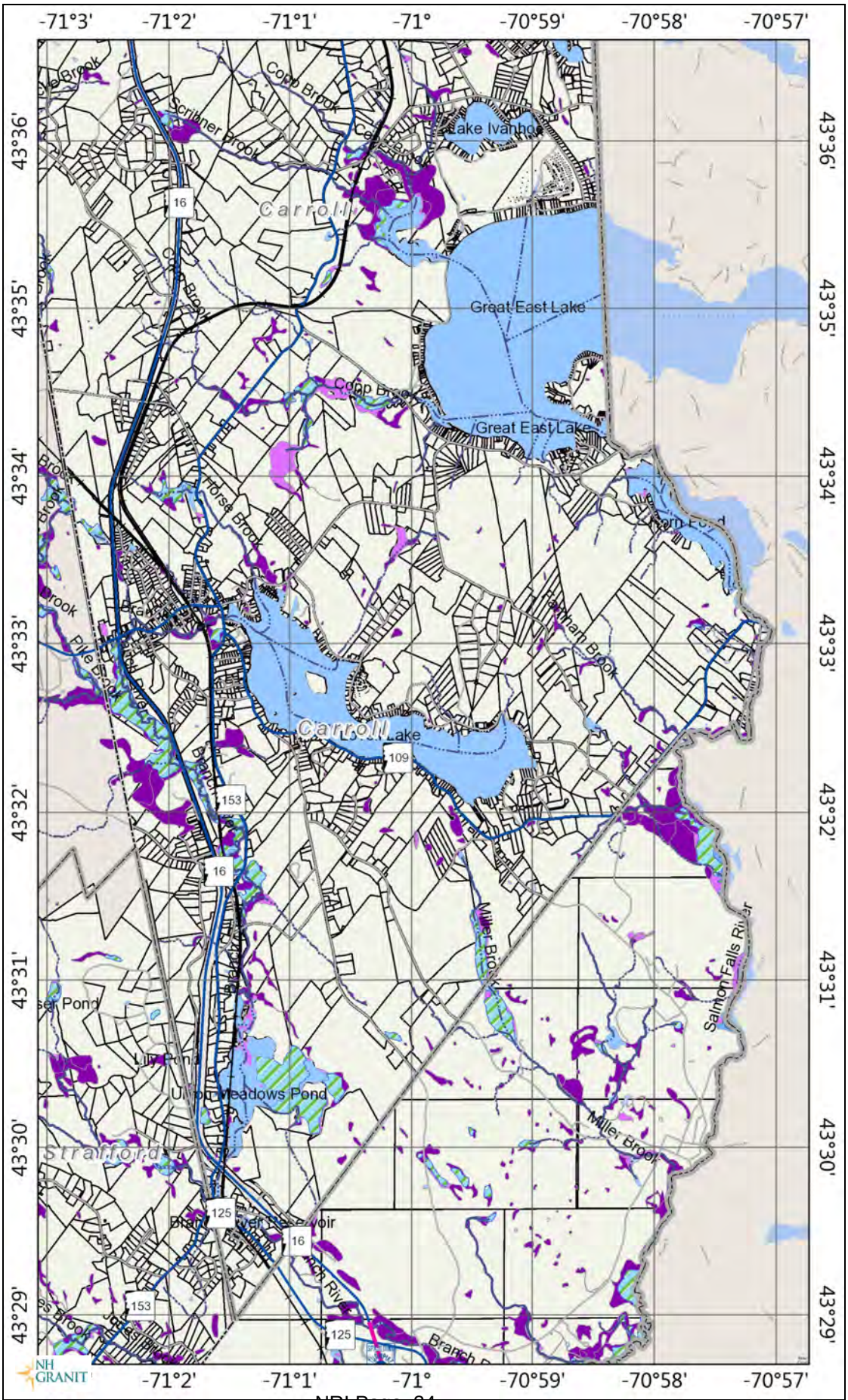
Map Generated: 10/28/2018

Notes

Wakefield Conservation Commission



Wetlands - South



Legend

- Polygons
- State
- County
- City/Town
- Railroads
- Turnpikes
- Interstates
- US Routes
- State Routes
- Local Roads
- Stream Centerlines
  - Perennial Stream
  - Intermittent Stream
- Artificial Paths
- Water Bodies
  - Lake/Pond
  - Reservoir
  - Estuary
  - Swamp/Marsh
- Wetlands
  - Estuarine and Marine Deepwater
  - Estuarine and Marine Wetland
  - Freshwater Emergent Wetland
  - Freshwater Forested/Shrub Wetlan
  - Freshwater Pond
  - Lake
  - Other
  - Riverine

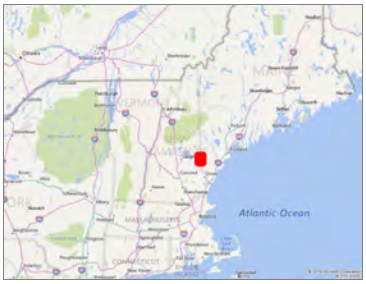
Map Scale

1: 62,500

Map Generated: 10/28/2018

Notes

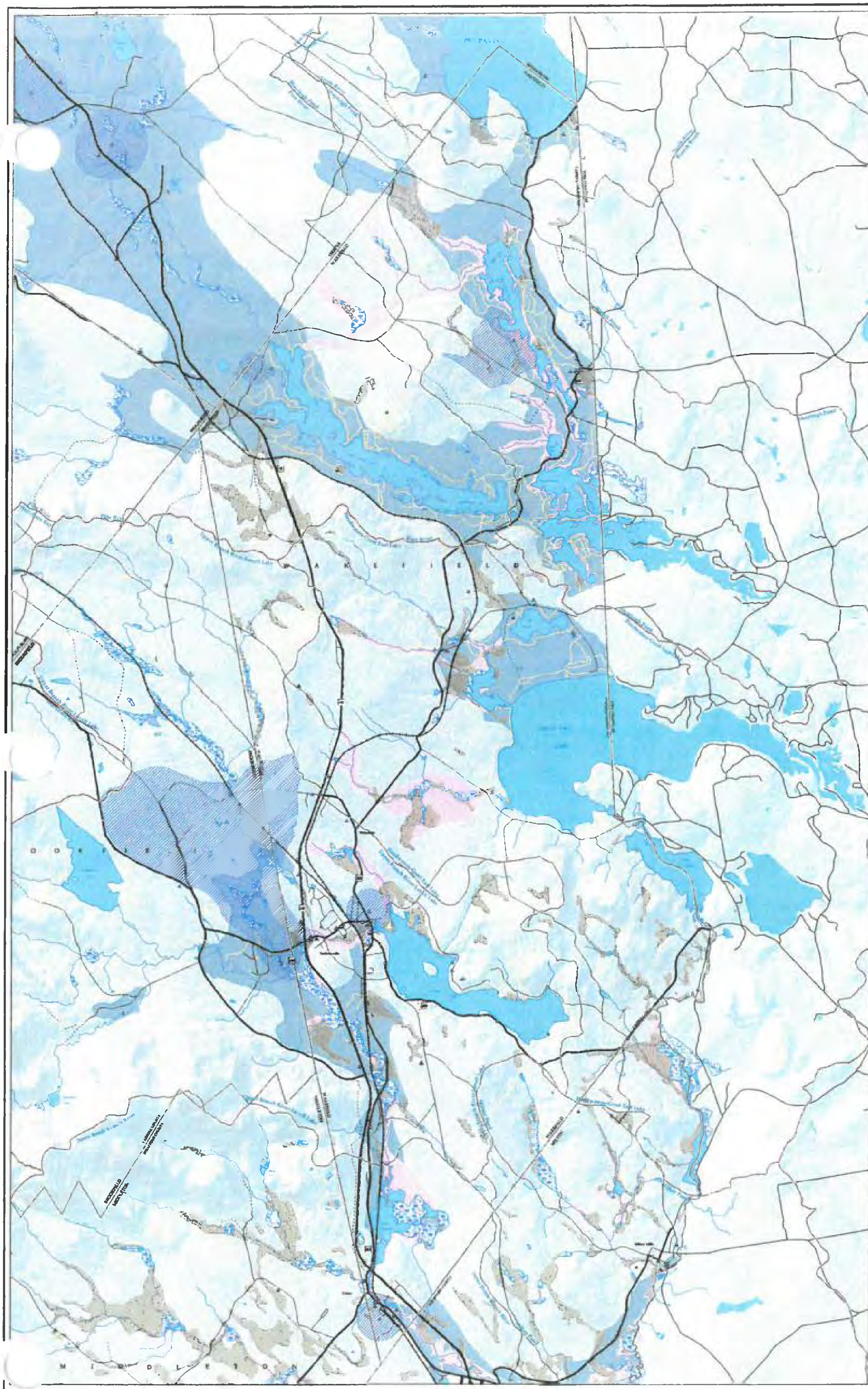
Wakefield Conservation Commission



Town of Wakefield, NH

Master Plan: Toward the Year 2020

Water Resources Inventory Map



Legend

- Lands Owned or Controlled By Suppliers of Public Drinking Water
- Stratified-Drift Aquifer
- 100-Year Floodplain

Wetlands (Soils)

- Hydric Soils A&B (Very Poorly & Poorly Drained)
- Wellhead Protection Area
- 20' Contour Intervals
- Watersheds
- Public Water Supply
- Coastal Watershed Boundary

Source Water Hazards

- Above-ground Storage Tank
- CERCLA
- Complaints to Groundwater Protetion Bureau)
- Other
- Groundwater release Detection Permit
- Isolated GW Sample with Contaminant
- Non-Petroleum related Contamination
- Non-Hazardous Holding Tank
- Initial Response Spill
- Landfill
- Leaking Above-ground Storage Tank
- Leaking Underground-ground Storage Tank
- Lagoon (Sludge, Lined, Unlined, Septage, etc...)
- Leaking Motor or Heating Oil Tank
- Septic receiving > 20,000gal/day
- Oil Spill or Release
- Underground Injection (Benign waters)
- Local Inventory of Potential Contamination Sources

Status of Facilties Generating Hazardous Waste

- Active

Surface Water Features

- Surface Water Features
- Wetland
- Stream, Intermittent Stream
- Apparent Wetland Limit

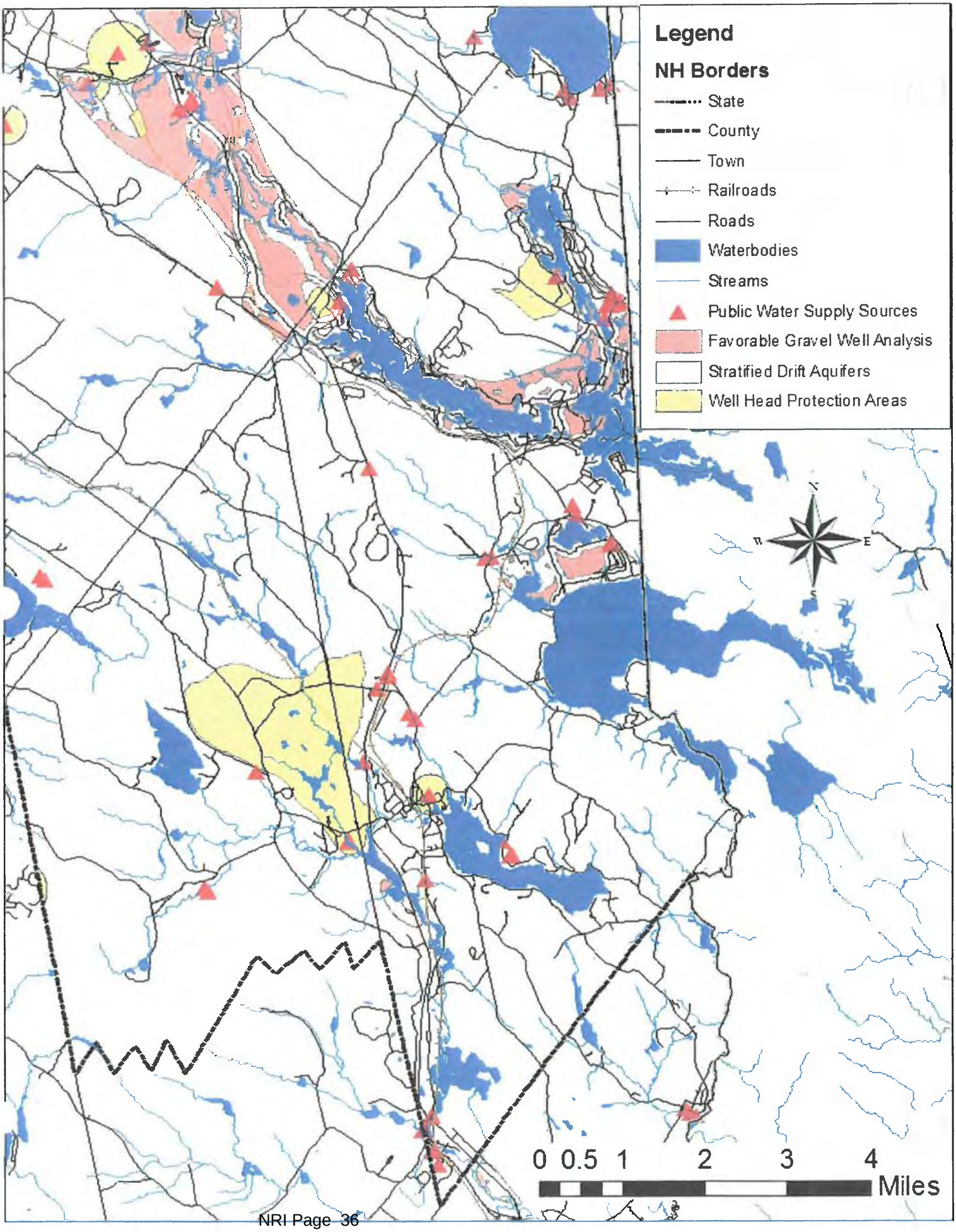
Roads by RSA Class

- Class I Trunk Line Highways
- Class II Secondary Highways
- Class III Recreational Roads
- Class IV Town or City Streets Inside Compact
- Class V Town or City Streets Outside Compact
- Class VI Not Maintained
- Brookfield_Wakefield_pnt

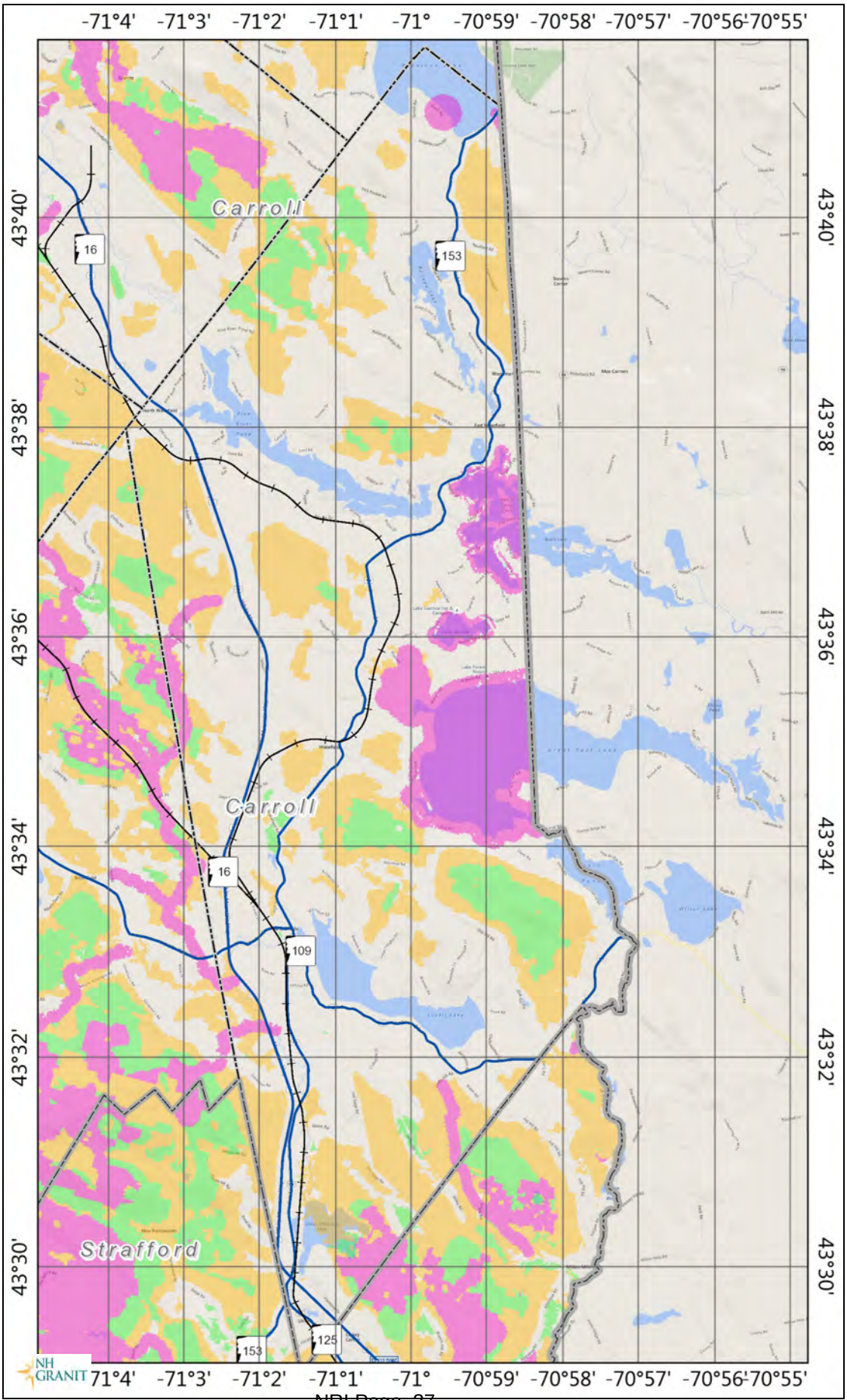
Miscellaneous

- Transmission Lines
- Railroad
- NH MUNICIPAL BOUNDARY

Water Sources



WAP 2015: Highest Ranked Wildlife Habitat



Legend

- State
- County
- City/Town
- Railroads
- Turnpikes
- Interstates
- US Routes
- State Routes

WAP 2015: Highest Ranked Wildlife Habitat

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

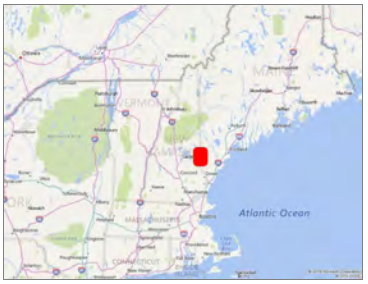
Map Scale

1: 100,000

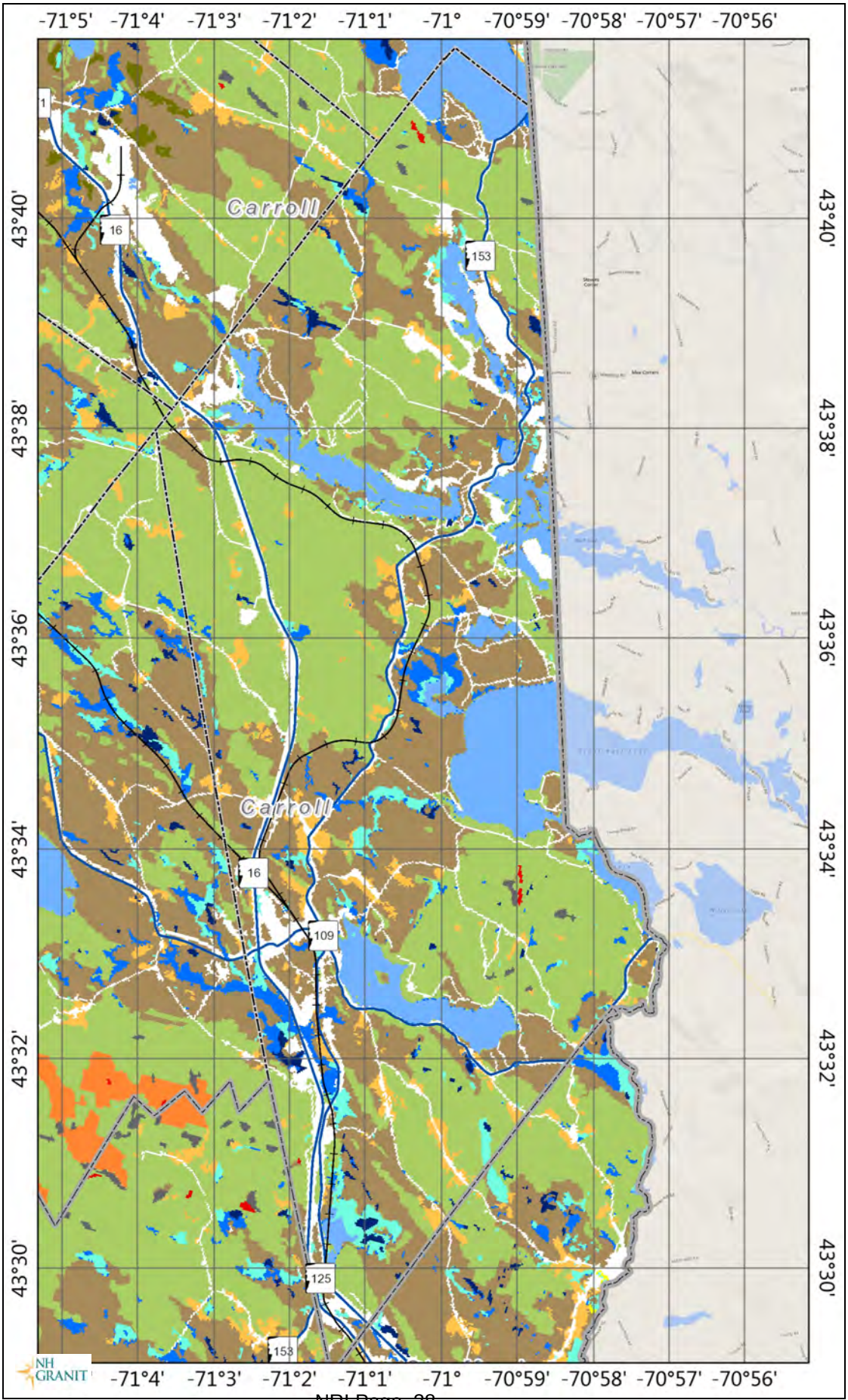
Map Generated: 10/29/2018

Notes

Wakefield Conservation Comission



WAP 2015: Wildlife Habitat Land Cover



Legend

- State
- County
- City/Town
- Railroads
- Turnpikes
- Interstates
- US Routes
- State Routes

WAP 2015: Wildlife Habitat l Cover

- Alpine
- Appalachian oak-pine
- Cliff and Talus
- Coastal island
- Dune
- Floodplain forest
- Grassland
- Hemlock-hardwood-pine
- High-elevation spruce-fir
- Lowland spruce-fir
- NLCD Developed or barren
- Northern hardwood-conifer
- Northern swamp
- Open water
- Peatland
- Pine barren
- Rocky ridge
- Salt marsh
- Temperate swamp
- Wet meadow/shrub wetland

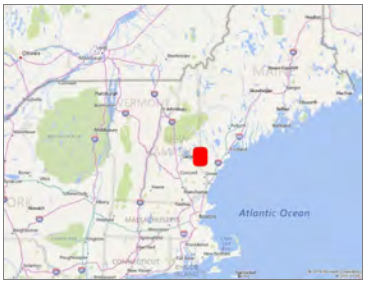
Map Scale

1: 100,000

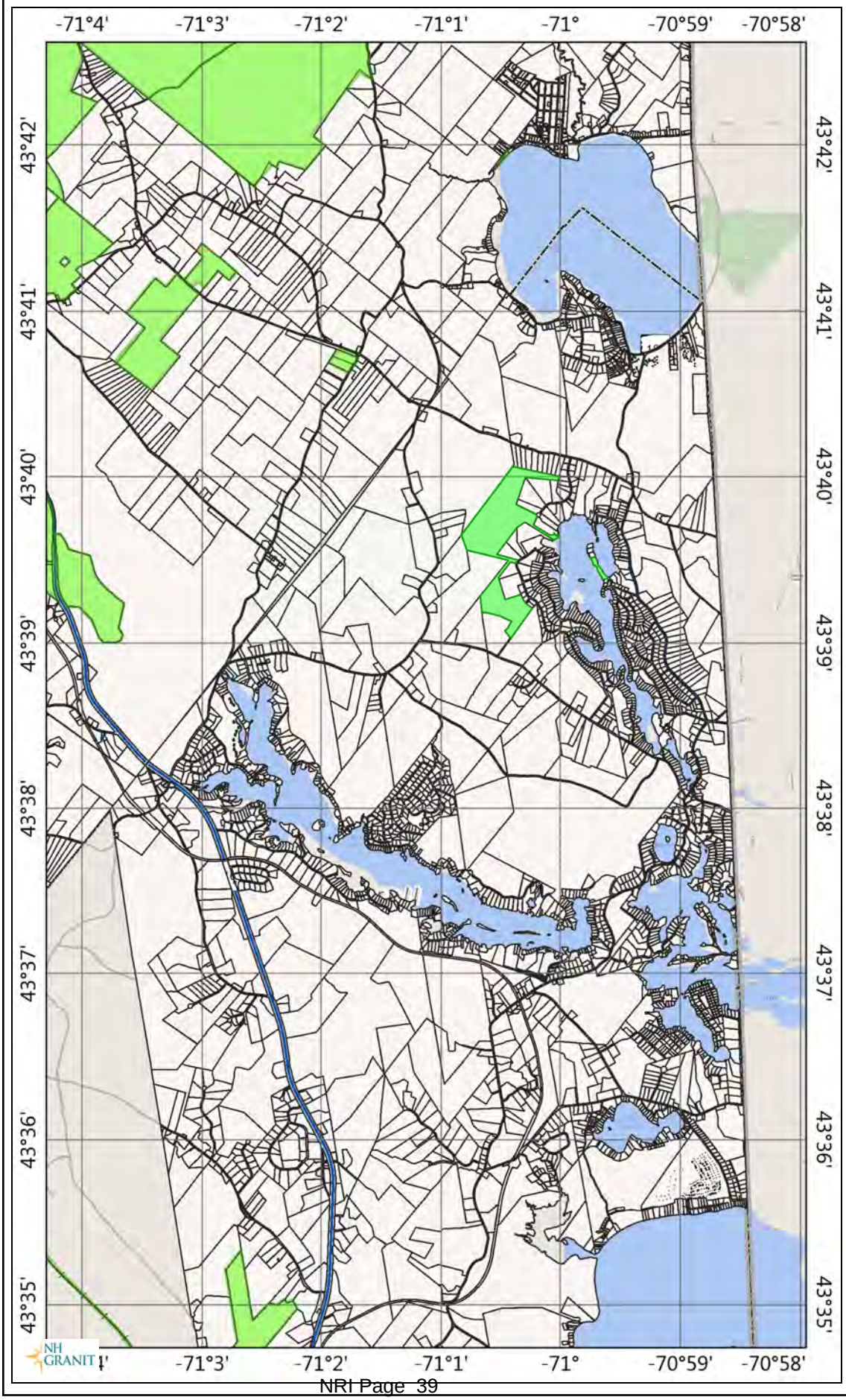
Map Generated: 10/29/2018

Notes

Wakefield Conservation Commission



Conservation & Public Lands - North



Legend

- Polygons
- State
- County
- City/Town
- Railroads
- Turnpikes
- Interstates
- US Routes
- State Routes
- Local Roads
- Conservation and Public Lar

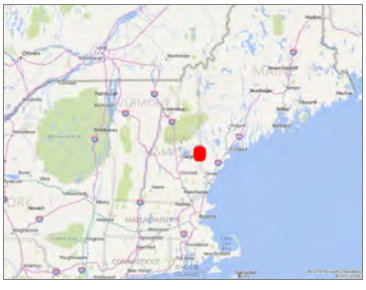
Map Scale

1: 62,500

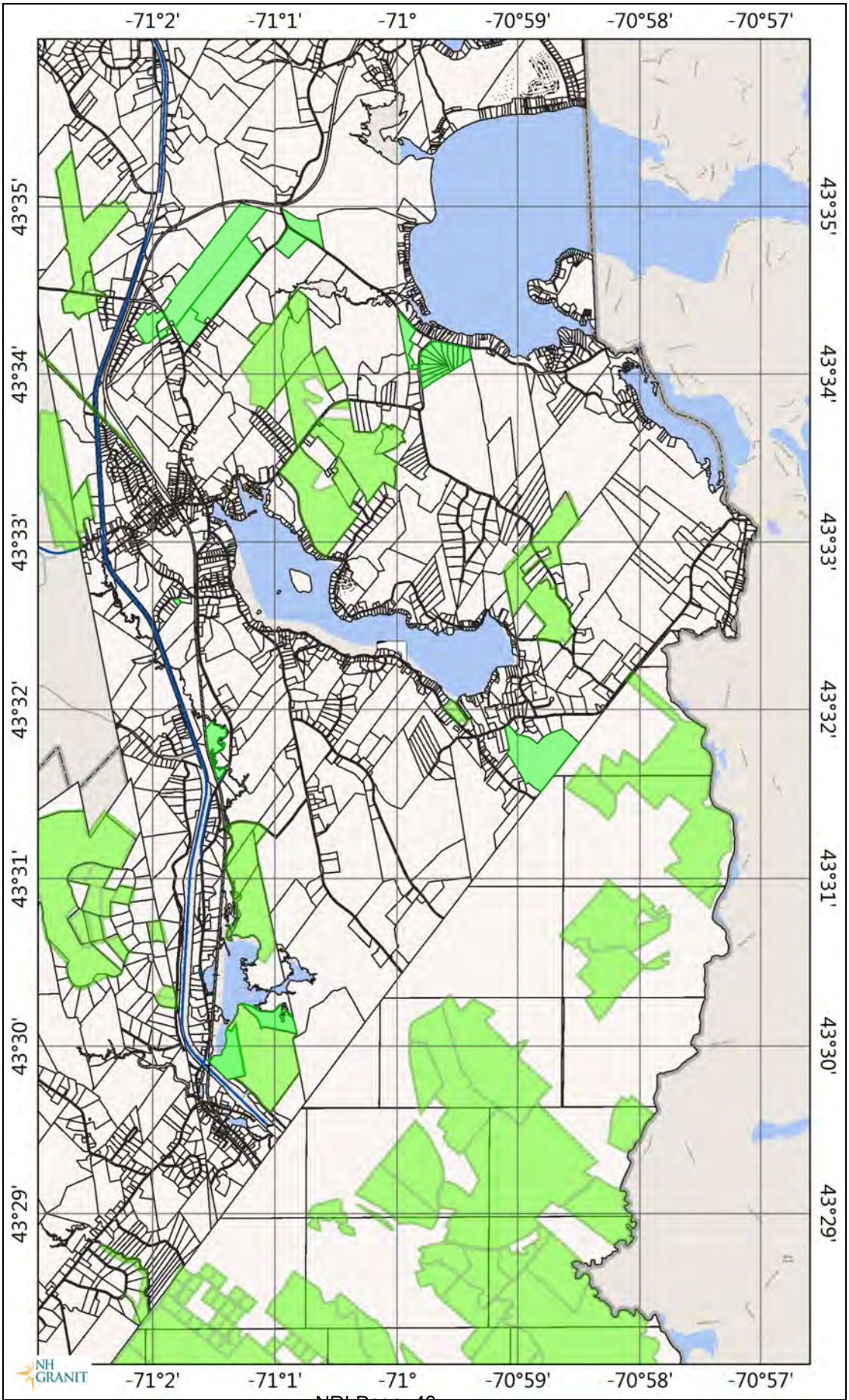
Map Generated: 1/23/2019

Notes

Wakefield Conservation Commission



Conservation & Public Lands - South



Legend

- Polygons
- State
- County
- City/Town
- Railroads
- Turnpikes
- Interstates
- US Routes
- State Routes
- Local Roads
- Conservation and Public Lar

Map Scale

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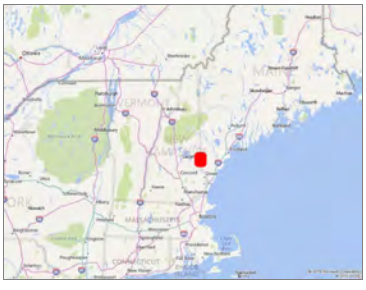
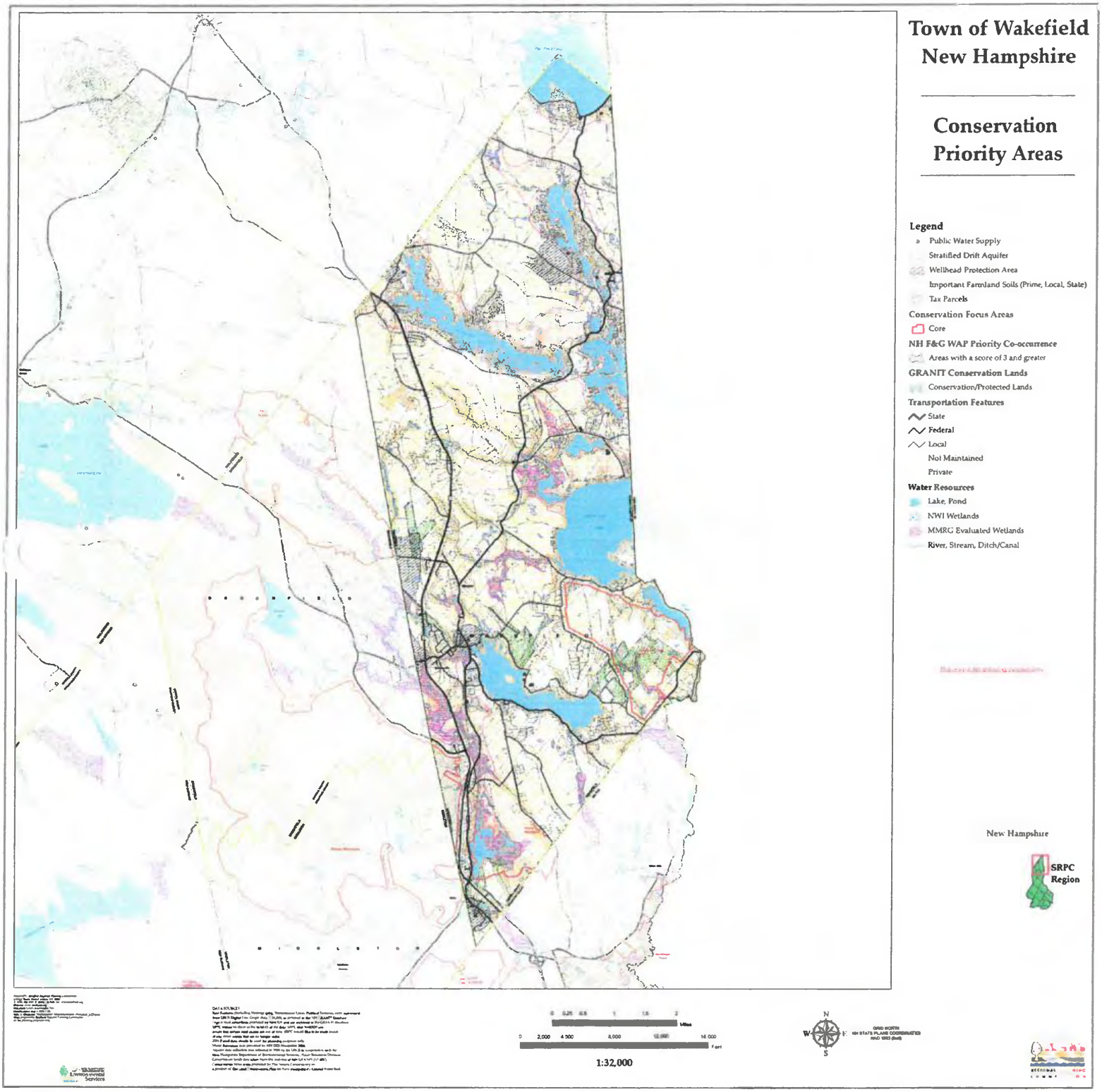
Map Generated: 1/23/2019

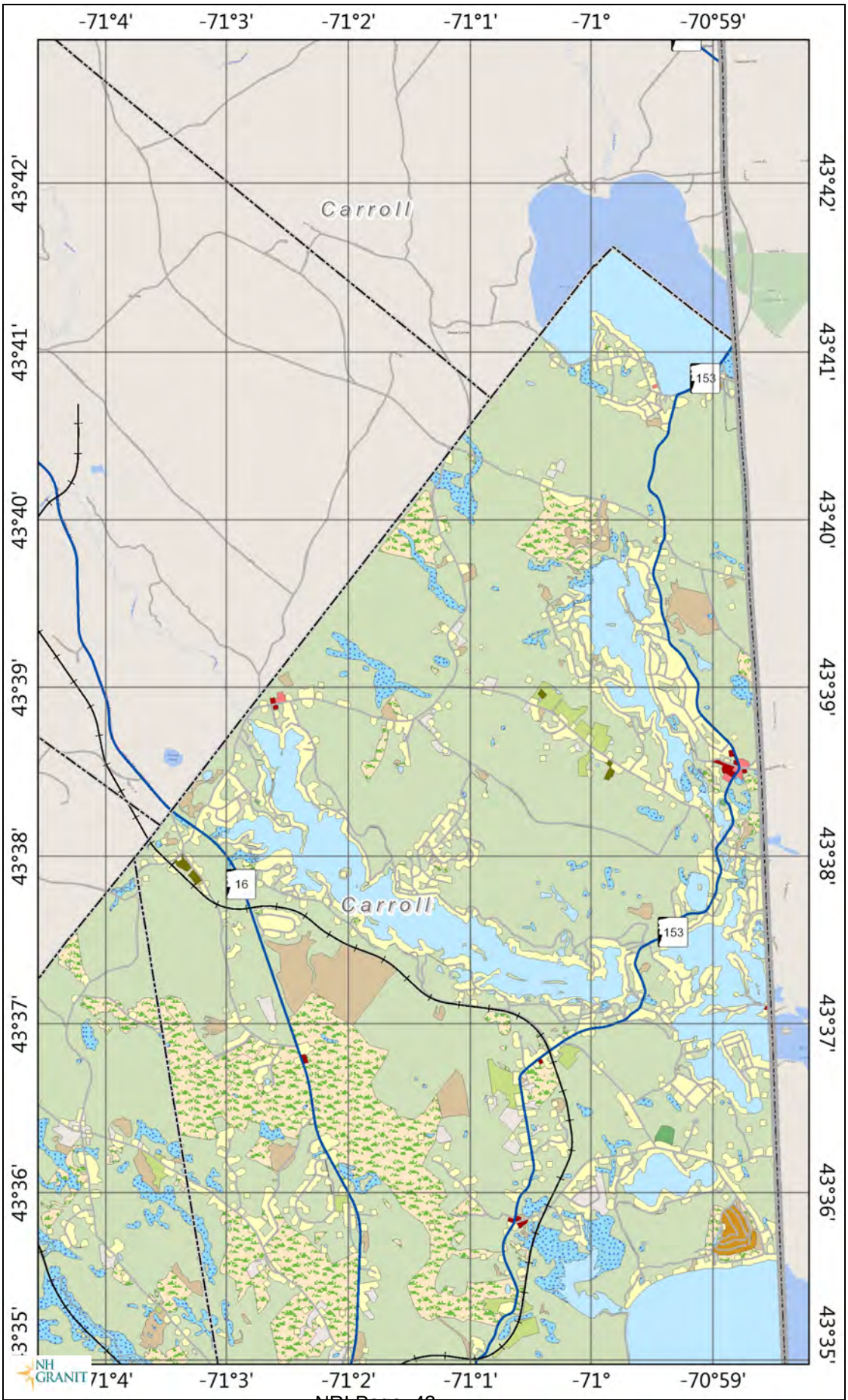
Notes

Wakefield Conservation Commission




Town of Wakefield
New Hampshire
Conservation
Priority Areas
Legend
Public Water Supply
Stratified Drift Aquifer
Wellhead Protection Area
Important Farmland Soils (Prime, Local, State)
Tax Parcels
Conservation Focus Areas
Core
NH F&G WAP Priority Co-occurrence
Areas with a score of 3 and greater
GRANIT Conservation Lands
Conservation/Protected Lands
Transportation Features
State
Federal
Local
Not Maintained
Private
Water Resources
Lake, Pond
NWI Wetlands
MMRG Evaluated Wetlands
River, Stream, Ditch/Canal
New Hampshire
SRPC
Region
1:32,000

Land Use : 2015 - North



Legend

- State
- County
- City/Town
- Railroads
- Turnpikes
- Interstates
- US Routes
- State Routes
- Local Roads

2015 Regional Land Use

- Multi-family (4 or more stories)
- Multi-family (1-3 stories)
- Single family/duplex
- Mobile home parks
- Group and transient quarters
- Other residential
- Commercial retail
- Commercial wholesale
- Services
- Lodging
- Government
- Institutional
- Educational
- Indoor cultural/ public assembly
- Other commercial, services, and institutional
- Industrial
- Mining
- Air transportation
- Rail transportation
- Limited & controlled highway right-of-way
- Road right-of-way
- Park & ride lot
- Parking structure/lot
- Auxilliary transportation
- Other road transportation
- Communication
- Electric, gas, and other utilities

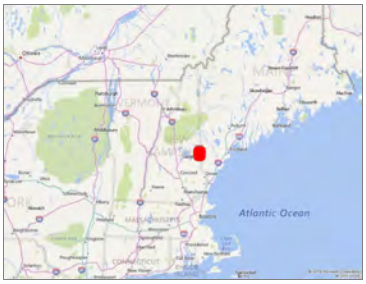
Map Scale

1: 62,500

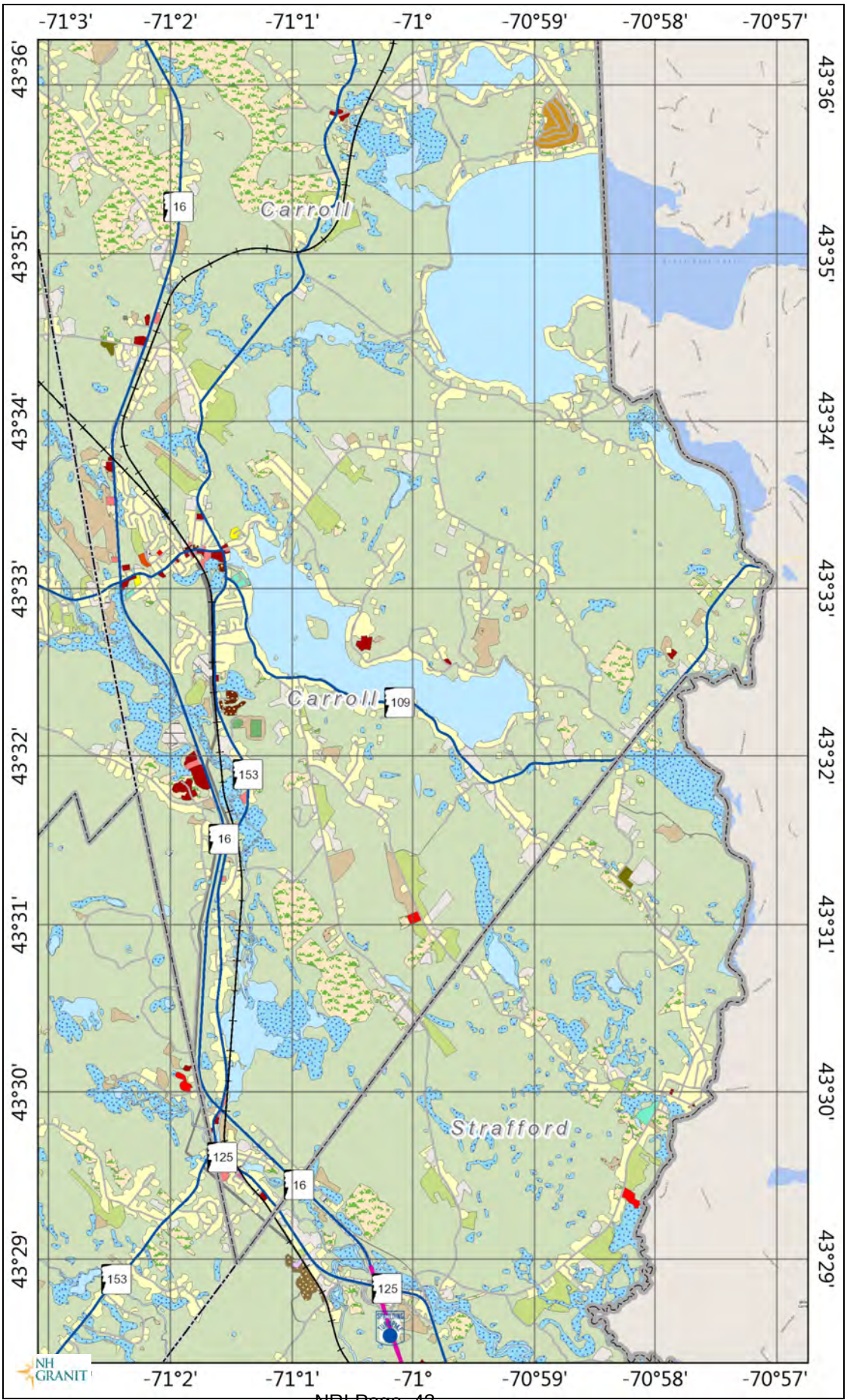
Map Generated: 10/28/2018

Notes

Wakefield Conservation Commission



Land Use : 2015 - South



Legend

- State
- County
- City/Town
- Railroads
- Turnpikes
- Interstates
- US Routes
- State Routes
- Local Roads

2015 Regional Land Use

- Multi-family (4 or more stories)
- Multi-family (1-3 stories)
- Single family/duplex
- Mobile home parks
- Group and transient quarters
- Other residential
- Commercial retail
- Commercial wholesale
- Services
- Lodging
- Government
- Institutional
- Educational
- Indoor cultural/ public assembly
- Other commercial, services, and institutional
- Industrial
- Mining
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- Rail transportation
- Limited & controlled highway right-of-way
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- Park & ride lot
- Parking structure/lot
- Auxilliary transportation
- Other road transportation
- Communication
- Electric, gas, and other utilities

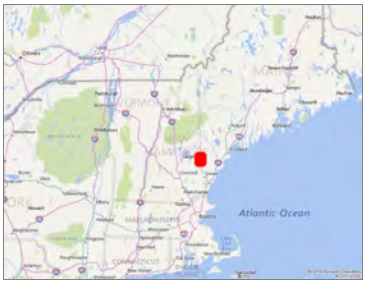
Map Scale

1: 62,500

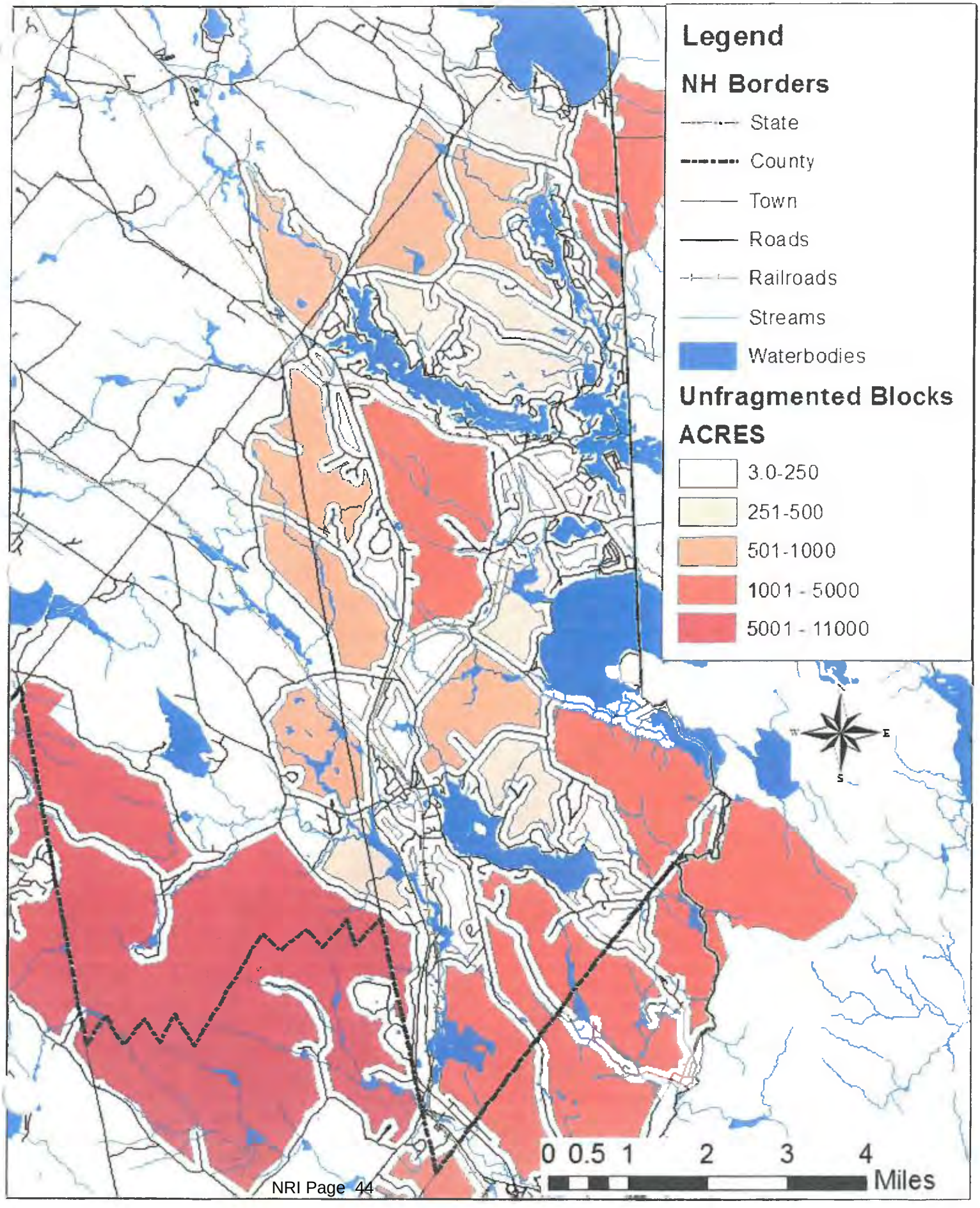
Map Generated: 10/28/2018

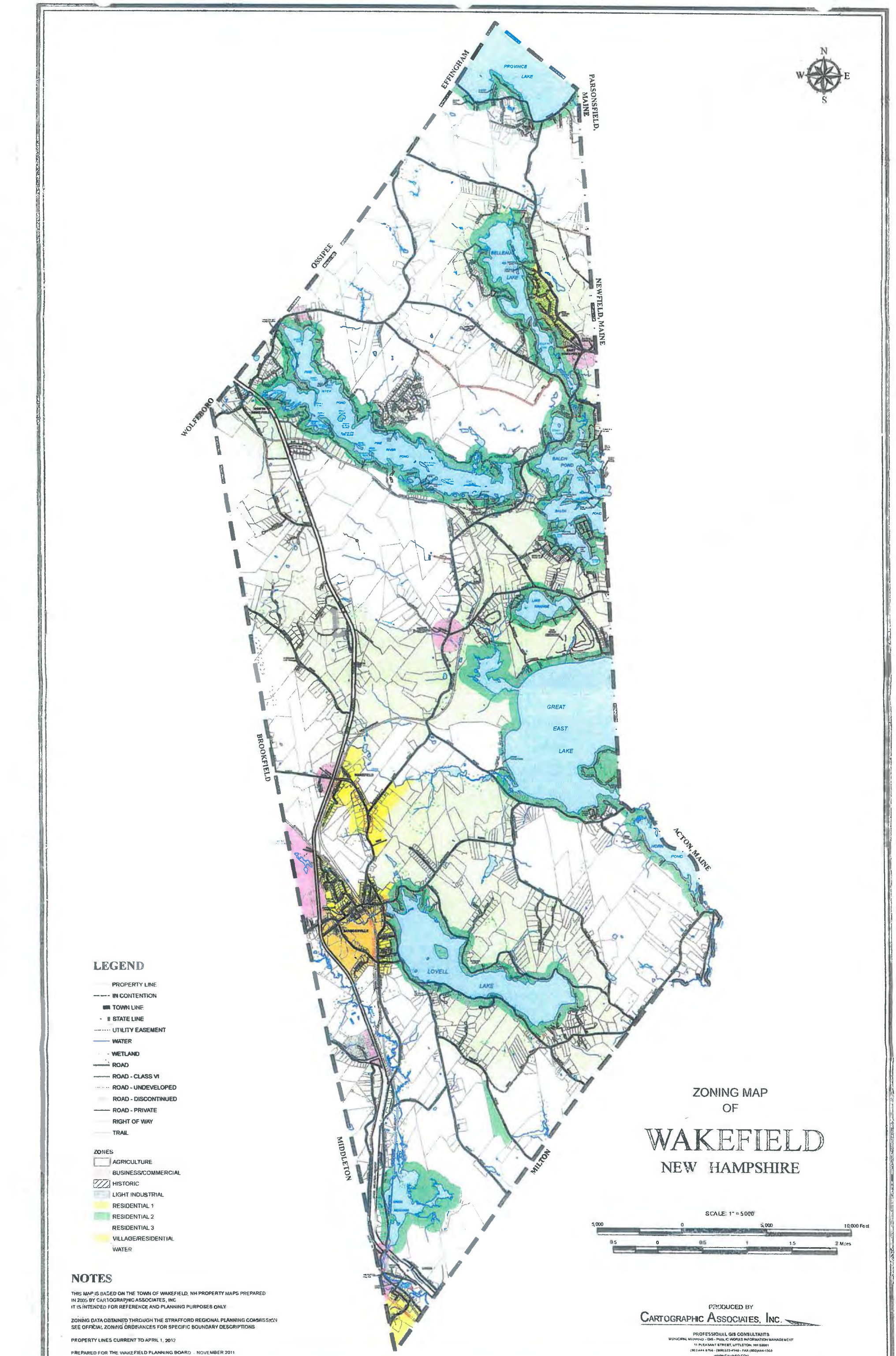
Notes

Wakefield Conservation Commission

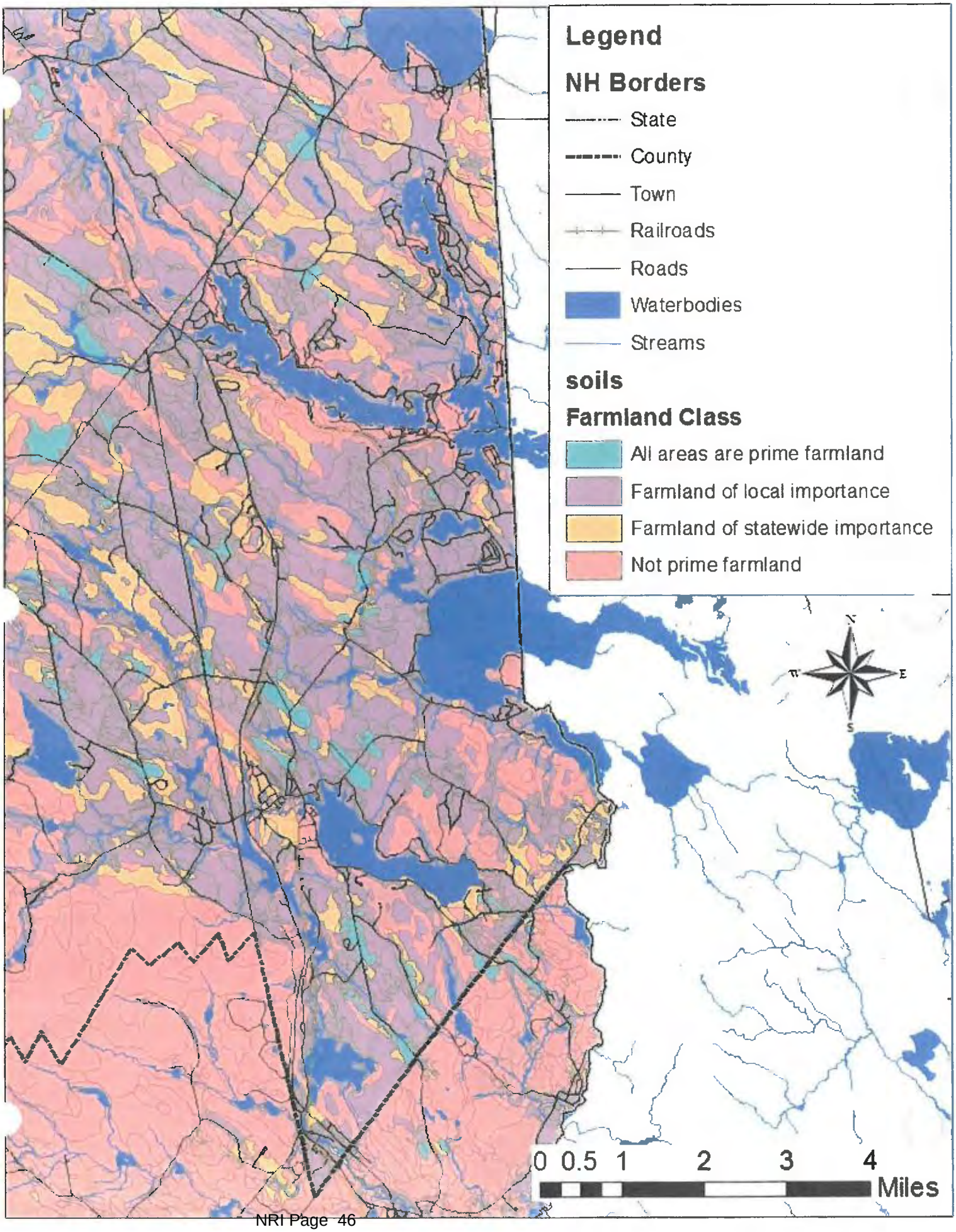


Unfragmented Blocks




N
W
E
S
EFFINGHAM
PARSONSFIELD, MAINE
OSSIPEE
NEWFIELD, MAINE
WOLFEBORO
BROOKFIELD
ACTON, MAINE
MIDDLETON
MILTON
PROVINCE LAKE
BELLEAU LAKE
BALCH POND
LAKE WINNIPESAUKEE
GREAT EAST LAKE
HORN POND
LOVELL LAKE
WAKEFIELD
SANBORNVILLE
LEGEND
PROPERTY LINE
IN CONTENTION
TOWN LINE
STATE LINE
UTILITY EASEMENT
WATER
WETLAND
ROAD
ROAD - CLASS VI
ROAD - UNDEVELOPED
ROAD - DISCONTINUED
ROAD - PRIVATE
RIGHT OF WAY
TRAIL
ZONES
AGRICULTURE
BUSINESS/COMMERCIAL
HISTORIC
LIGHT INDUSTRIAL
RESIDENTIAL 1
RESIDENTIAL 2
RESIDENTIAL 3
VILLAGE/RESIDENTIAL
WATER
NOTES
THIS MAP IS BASED ON THE TOWN OF WAKEFIELD, NH PROPERTY MAPS PREPARED IN 2005 BY CARTOGRAPHIC ASSOCIATES, INC.
IT IS INTENDED FOR REFERENCE AND PLANNING PURPOSES ONLY.
ZONING DATA OBTAINED THROUGH THE STRAFFORD REGIONAL PLANNING COMMISSION
SEE OFFICIAL ZONING ORDINANCES FOR SPECIFIC BOUNDARY DESCRIPTIONS
PROPERTY LINES CURRENT TO APRIL 1, 2012
PREPARED FOR THE WAKEFIELD PLANNING BOARD - NOVEMBER 2011
ZONING MAP
OF
WAKEFIELD
NEW HAMPSHIRE
SCALE: 1" = 5,000'
5,000 0 5,000 10,000 Feet
0.5 0 0.5 1 1.5 2 Miles
PRODUCED BY
CARTOGRAPHIC ASSOCIATES, INC.
PROFESSIONAL GIS CONSULTANTS
MUNICIPAL MAPPING - GIS - PUBLIC WORKS INFORMATION MANAGEMENT
11 PLEASANT STREET, LITTLETON, NH 03561
(603)444-6764 - (800)322-4540 - FAX (603)444-1360
WWW.CAI-GIS.COM

#11 - Prime Farmlands



APPENDIX C

TITLE III
TOWNS, CITIES, VILLAGE DISTRICTS, AND UNINCORPORATED PLACES

CHAPTER 36-A
CONSERVATION COMMISSIONS

36-A:1 Method of Adoption. – Any city by vote of its city council, and any town at any duly warned meeting, may adopt or rescind the provisions of this chapter.

Source. 1963, 168:1, eff. Aug. 20, 1963. 2008, 317:1, eff. Jan. 1, 2009.

36-A:2 Conservation Commission. – A city or town which accepts the provisions of this chapter may establish a conservation commission, hereinafter called the commission, for the proper utilization and protection of the natural resources and for the protection of watershed resources of said city or town. Such commission shall conduct researches into its local land and water areas and shall seek to coordinate the activities of unofficial bodies organized for similar purposes, and may advertise, prepare, print and distribute books, maps, charts, plans and pamphlets which in its judgment it deems necessary for its work. It shall keep an index of all open space and natural, aesthetic or ecological areas within the city or town, as the case may be, with the plan of obtaining information pertinent to proper utilization of such areas, including lands owned by the state or lands owned by a town or city. It shall keep an index of all marshlands, swamps and all other wet lands in a like manner, and may recommend to the city council or selectmen or to the department of natural and cultural resources a program for the protection, development or better utilization of all such areas. It shall keep accurate records of its meetings and actions and shall file an annual report which shall be printed in the annual town or municipal report. The commission may appoint such clerks and other employees or subcommittees as it may from time to time require.

Source. 1963, 168:1. 1973, 550:1, eff. Sept. 3, 1973. 2017, 156:14, I, eff. July 1, 2017.

36-A:3 Composition of Commission. – The commission shall consist of not less than 3 nor more than 7 members. In a town which has a planning board, one member of the commission may also be on the planning board. In a city which has a planning board, one member of the commission may be on the planning board. In cities, the members of the commission shall be appointed by the mayor subject to the provisions of the city charter, and in towns the members of the commission shall be appointed by the selectmen. Alternate members may be appointed in a

like manner and when the alternate serves in the absence or disqualification of a regular member, the alternate shall have full voting powers. When a commission is first established, terms of the members shall be for one, 2, or 3 years, and so arranged that the terms of approximately 1/3 of the members will expire each year, and their successors shall be appointed for terms of 3 years each. Any member of a commission so appointed may, after a public hearing, if requested, be removed for cause by the appointing authority. A vacancy occurring otherwise than by expiration of a term shall be filled for the unexpired term in the same manner as an original appointment. Members of a conservation commission shall be residents of the city or town which they represent. Members of a conservation commission also may serve on other municipal boards and commissions, including, but not limited to a historic district commission established under RSA 673:4, and a heritage commission established under RSA 673:4-a.

Source. 1963, 168:1. 1973, 550:2. 1974, 44:2. 1987, 318:1. 1995, 138:1, eff. July 23, 1995. 1997, 31:1, eff. June 27, 1997.

APPENDIX D

Scribner Brook Natural Resource Inventory

Scribner Brook Natural Resources Inventory

NR 775 Senior Project
Department of Natural Resources
University of New Hampshire
Durham, NH
Fall 1999
Barrett, Victoria
Boucher, Sarah
Cobb, Caitlin
Miller, Carrie
Roy, Dan

ACKNOWLEDGEMENTS

We would like to thank Nancy Spencer Smith, Paul Johnson, Frank Mitchell, and Bob Craycraft for their assistance with this project.

TABLE OF CONTENTS

INTRODUCTION

The Scribner Brook area is an aesthetically beautiful wilderness, which provides an alternative ground water source for Wakefield. Scribner Brook itself feeds into Great East Lake, which is the water source for the Salmon Falls River (Figure 1).

The area is currently owned by two landowners and is mostly undeveloped. The Wakefield Conservation Commission hopes to keep the Scribner Brook area preserved, and to prevent future development. In order to get a full natural resources inventory; we wanted to get an overview of the area. We did a forest and ground cover inventory, a water quality study (including an inventory of aquatic vegetation and animal species, and water samples to test nutrient levels), and researched the wildlife currently residing in the Scribner Brook area (See Appendix A for further details).

Background for Water Quality Testing

With increasing human populations, the need for quality drinking water continually grows. Future drinking water sources need to be located and their quality maintained. One of the aspects of this inventory is to evaluate the potential of the Scribner Brook area being used as a potential drinking water source. Beneath Scribner Brook an aquifer is located. An aquifer is often defined as a permeable and porous geological formation that store, transmits and yields enough water to springs and wells (Manning 1997). Aquifers can be either confined or unconfined. In this study, we assume that the aquifer beneath Scribner Brook is unconfined and that there is an interaction between the surface and groundwater, primary flow from groundwater to surface (Figure 1). This being the case, it could be assumed that samples of surface water would resemble the constituents of the groundwater below. In conjunction with this assumption it is also assumed that surface water entering the area would have an impact on the quality of

water contained in the aquifer. Therefore, samples were collected from the mouths of known water bodies entering the main body of the river mouth, within the main body, and where the brook enters Great East Lake (Figure 1).

Nutrient loading of water bodies has increased over the years with increases in land use activities. Nitrogen, in the form of nitrates, at high concentrations can cause the disease methaemoglobinaemia in infants less than six months of age. The Environmental Protection Agency has set drinking water standards at a concentration of 10 mg/L. Any potential drinking water source has to have nitrate concentrations below this level and have no potential for these levels to increase due to land use.

Phosphorus is another nutrient that is introduced to water bodies as a result of human activities. In freshwater systems it is generally accepted that phosphorus is the limiting factor. A limiting factor is defined as a nutrient that if in low levels will not allow for growth even with an excess of other nutrients. Therefore, with increases of phosphorus to a lake or pond, the rate of eutrophication is likely to increase. Eutrophication is the enrichement of waters by inorganic plant nutrients (Mason, 1996). High levels of phosphorus can increase algae blooms that not only decrease the potability of a water source and the oxygen available to aquatic organisms but also increase treatment costs.

Drinking water with high levels of organic matter treated with chlorine can produce carcinogenic by-products formed by the combination of the two. These parameters were tested to determine the potential for the aquifer to be used as a drinking water source (Mason, 1996).

MATERIALS AND METHODS

Wildlife Monitoring

Identifying the species of wildlife in the inlet was done primarily through observation and searching for sign. Unfortunately, because of the late season timing and the short duration of this survey, observation of wildlife was very limited. Therefore, much of the species determination was based upon information gathered from the local people who have been to the inlet in all seasons. To supplement personal observation, additional species likely to use the sites were found through library research.

Vegetation

The forest species of the Scribner Brook inlet were inventoried by surveying the landscape. The north side of the inlet was surveyed from a canoe on the inlet, as permission was not given for the group to inventory that property. Walking the extensive network of trails there completed the inventory of the south side. From these trails, we surveyed the understory and overstory species.

The aquatic vegetation was inventoried via a canoe. Some plants were identified on site, while others were taken to Bob Craycraft for identification.

Water Quality

Water samples were collected on October 16, 20, and 31 and November 7, 1999. For all dates there were no rain events within a day prior to sampling. Collection sites varied between sampling dates due to accessibility. This accessibility depended on access to a canoe. During October, the samples were taken on foot, but on the last date of sampling; samples were collected by canoe. Sample sites are displayed in Figure 1. On the first sampling date, samples were collected from the Great East Lake. Sample sites used on October 20 were the Great East Lake

and Copp River mouth. The upper Scribner Brook was an additional site that was sampled on October 31. The Great East Lake and Copp River sites remained the same while two sites were located within the larger body of water, and one at the mouth of Scribner Brook (Figure 1). The upper Scribner Brook site was not sampled on the last date, since the site at the mouth would better depict what was entering the larger water body (Figure 1).

Sample bottles were rinsed out three times with the water being sampled before actual collection of the sample. From each site, two 60-ml water samples were collected. Samples were transported in ice. Until samples could be filtered they were kept frozen. Samples were filtered using a sterile syringe with an ashed 0.7-micrometer GF/F filter. Filtered samples were then analyzed for nitrate, ammonium, phosphorus, and carbon by Dr. William McDowell's lab at the University of New Hampshire. Nitrate was analyzed by the flow injection method on a Quick Chem E lachat (cadmium reduction method). The alkaline phenolate method was used for ammonium analysis. The ammonium molybdate method was used to analyze phosphate (PO4). Carbon was analyzed for by the high temperature catalytic oxidation method (Personal communication, Jeff Merriam).

RESULTS

WILDLIFE

The Scribner Brook inlet into Great East Lake is an area of land of great importance to many species of wildlife. The characteristics of the inlet, that is, emergent vegetation mixed with open water, provides a habitat diversity that can be used by a variety of waterfowl, fish, amphibians, songbirds, and mammals. The specific species and food habits of the key species can be found in Table 1. Current management techniques are working for most species;

however, some slight improvements can be easily made to increase the species diversity even farther.

Habitat Use

Nearly all of the wildlife listed in Table 1 is at least partially dependent upon water for fulfilling life requirements. An entire food web system is set up at the inlet, due to a combination of abiotic factors in the inlet. Emergent vegetation has slowed the water in the backwater sections of the inlet and where the two brooks, Scribner and Copp "enter." This vegetation provides a variety of resources to wildlife, including cover for ground-nesting ducks, food for songbirds, exposed roots for fish cover, and excellent breeding habitat for red-winged blackbirds and grackles. Also, woody debris in the form of downed trees and exposed roots provide additional cover for these species.

Through the center of these slow-moving areas are faster-moving channels which funnel water quickly into and out of the inlet. These areas are more suitable to trout, sandpipers, clams and river otter, and allow diving birds open areas into which they can swoop upon prey.

The land to the north of the inlet is a dense array of white pines, oaks, and understory berry species. These provide food and cover for songbirds, beaver, deer, rodents, moose, and turkey. The taller trees overlooking the inlet are also great perching sites for wood ducks, eagles, crows, heron and osprey. On the south side, the vegetation is primarily pitch pine and sandy soils, with a sparse understory of laurel and scrub oak, which, though low in food quality, provides easy access to the inlet for larger species.

Human Use and Effects

Because of its connection to Great East Lake, the Scribner Inlet receives much attention from vacationers. Camps are abundant along the shore right up to the mouth of the inlet. Though

there is a definitive boundary between lake and inlet, fishermen routinely use the inlet for recreation. Because the lake is stocked, the individual impact of each fisherman is slight. However, a large number of fishermen will have larger negative effects upon potential food for diving birds.

Power boating has the largest impact on waterfowl in the Scribner Inlet. Fast moving boats produce high wakes, which destroy nests and nestlings. Engine noise also scares away both waterfowl and songbirds, and may prevent them from returning the following year. Also, with loud noise, and too much human activity, many species of waterfowl and songbirds may avoid the area entirely.

On the south side of the inlet is a network of trails used by people for hiking and all-terrain vehicle use. Though ATV's tear up trails and promote erosion, they help to keep trails open for hikers and bird-watchers, providing access for people to more backwater areas of the inlet.

In the winter, snowmobile enthusiasts are abundant. The inlet is part of a major trailway that stretches from Portsmouth to the White Mountains and beyond. Though these machines are loud, it would be controversial and costly to try to completely restrict them from the area. Snowmobiles also provide a service in keeping trails open in the winter for skiing and hiking. The impact of this activity on waterfowl is small anyway, since they have all migrated by the time snow falls.

Habitat Management

The land surrounding the Scribner Brook Inlet provides good resources for terrestrial mammalian species and bird species that are independent of the inlet. The north side seems to have areas in early successional stages, an increasing rarity in New Hampshire, as farms mature

into forests. Game birds, hawks, rabbits, rodents, deer, and foxes do well in these areas, though the size of the field plays an important role in which species will be found there. Continued management practices, such as select harvesting and clearcuts will help keep this area open to these species.

Beyond the pitch pine forest to the south is an area of older hardwoods and hemlock, suitable for nearly every woodland species. Since the trees are already mature, leaving the area alone, and letting the forest mature further would best benefit those species that cannot be accommodated by the fields on the north side, like porcupine and fisher. Also, if recreation is ever to be a component at the inlet, the south side is the side to build trails, provide bird watching areas, and provide canoe access.

Though these lands are valuable, the inlet itself is the gem. The vast diversity of bird life the inlet attracts and supports alone makes the whole area worth protecting. In addition, the combination of backwater wetlands, fast-moving water and a large, open lake creates a diversity of aquatic habitats. To keep this area rich, trees and terrestrial vegetation cannot be allowed to take over the grassy islands. Fortunately, the current practice of lowering the water level at the end of the summer does much to prevent encroachment from occurring, as this practice causes exposed roots to freeze and die.

An enhancement of the inlet, as far as attractiveness to waterfowl goes, would be to increase the number of snags. Snags provide roosting sites for loon, heron, and osprey, plus denning sites for many species of bats. Increasing the number of dead trees can be done simply by girdling some of the trees along the shore, or by raising the water level for a time. However, raising the water level would also flood out some areas and restrict nesting sites for a season.

Another enhancement would be to restrict powerboat use on the inlet. Making the inlet a "No Wake Zone" would do much to help waterfowl. Usually, posting a large, visible sign before the zone does well to make people slow down or not enter at all. The narrowness of the channel where the lake meets the inlet makes this spot the perfect place for such a sign. The key to this would be to keep the writing simple (i.e. "Loon Nesting Site – No Wake Zone – Wakefield Conservation Commission.").

The most important thing to remember is that by promoting or protecting one species or group of species, many others will benefit. Reptilian and amphibian species were missed on this survey, mostly because they are not the types of species to be noticed. A no-wake zone would help these species in their reproductive successes and would likely attract new ones. Also a much more complete songbird and waterfowl inventory, encompassing all seasons of the year, should be done, so that an accurate count of all bird species and numbers can be made. The easiest way to do this and estimate densities would be to observe and count waterfowl and establish point listening posts for songbirds.

Also, many more wildlife species than those listed previously probably use the inlet at some point. There are a fair amount of privately owned forests that stretch back from the inlet into the surrounding landscape. Black bears, foxes, raccoons, weasels and coyotes are all species that probably inhabit these forests, whose territories could overlap the inlet at some point. Inventorying these species during all seasons would be profitable.

VEGETATION

Terrestrial

The Scribner Brook area is mostly composed of a single cohort stand. The overstory surrounding Scribner Brook and the Great East Lake inlet is predominately White pine (*Pinus*

strobus) with an average age of 60 – 80 years. There is a large amount of merchantable timber with potential board footage in numbers upwards of 200,000.

White pine is the dominant overstory species on the northern side of the inlet. Understory species include American beech (*Fagus grandifolia*) and Eastern hemlock (*Tsuga canadensis*). Over time, these shade-tolerant species will outgrow the pines and become the dominant species where soil type permits.

The southeastern portion of the site is comprised of hand-planted White pine seedlings on a previously cleared area about 15 acres in size. The seedlings are approximately three years old. Heading west out of the clear-cut and toward the boundary of route 153, the understory turns to beech and hemlock (*Fagus sylvatica* and *Tsuga cadensis*). The far northwestern portion of the land retains the same beech/hemlock understory with the White pine overstory, but is dotted with two fields ranging from three to five acres in size. These are visible as you enter the site from route 153.

On the northeast side of the inlet, the overstory remains the same; however, the understory changes to predominately sugar maple (*Acer saccharum*). This is again due to the change in soil chemistry and canopy density on the site. The canopy density is lesser on the northern side of the inlet meaning the overstory trees are younger in age. More light is able to penetrate to the ground floor, allowing for more shade intolerant species to prosper.

Aquatic

The survey of aquatic species identified the following aquatic species in the inlet: bur-reed (Sparganium spp.), cattail (Typha latifolia), bladderwort (Utricularia spp.), watershield (Brasnia schreberi), and white lily (Lilium longiflorum). Two species of bur-reed, branching bur-reed and large bur-reed are extremely rare in New Hampshire. Branching bur-reed is only

historically known in New Hampshire, and there are only 6-20 occurrences of large bur-reed in the state (New Hampshire Natural Heritage Inventory 1994).

Water Quality

This study assumes that the aquifer is a major source of the surface water. Therefore conclusions of the aquifer's water quality are assumed to be equivalent to the surface water concentrations.

Nitrate concentration, phosphorus, and non-purgable organic carbon (NPOC) are displayed in Figures 5-7, respectively. These values are also included in Table 2. The p-values for the concentrations of nitrate, ammonium, phosphorus and non-purgable organic carbon are listed in Table 3. Phosphorus, as orthophosphate (PO4), concentrations did not exceed 10 ug/L (Table 2). Ammonium (NH4) concentrations ranged from 4 to 58 ug N/L (Table 2). Concentrations of non-purgable organic carbon (NPOC) ranged from 2.11 to 6.51 mg C/L (Table 2). Single factor ANOVA's were used to analyze the concentrations for all parameters between sample sites for each sampling date. The p-values obtained using the single factor ANOVA's are displayed in Table 3. P-values less than 0.05 were considered significantly different. The sample dates with significant differences between sample sites were the 20 and 31 of October and November 7 for NPOC, and for nitrates October 31 and November 7.

Nitrate concentrations were well below the drinking water standard of 10-mg N/L (Table 2). Therefore under the circumstances at the time of sampling health risks due to high nitrate concentrations would be obsolete. As a result, the aquifer could be used as a drinking water source.

The Great East Lake site nitrate concentrations were low for all sampling dates except for October 31 (Figure 5). The concentrations at this site on the other dates were similar to those

understood. Accumulation of nitrates with the addition of sources could explain the increase with downstream flow.

Phosphorus concentrations were much more variable between site samples than those that occurred with nitrates. This is due to a greater variability in the precision of the phosphorus analysis method used. Variability between site samples increased as the sites were located farther upstream. General trends were that phosphorus concentration decreased with downstream flow. Therefore Scribner Brook and Copp Brook had higher concentration than at the Great East Lake site. This decrease could be due to greater uptake by phytoplankton and aquatic plants. Another reason for the decrease could be the settling out and binding of phosphorus to sediments. No significant differences were found between samples on sampling days (Table 3).

Water bodies with total phosphorus concentrations greater than 30 ug/L are eutrophic while concentrations less than or equal to 10 ug/L were oligotrophic (Lampert and Sommer, 1997). The portion of total phosphorus that was analyzed for was orthophosphate (PO4). These concentrations did not exceed 10 ug/L therefore at the point of sampling the water body was more oligotrophic than eutrophic (Table 2). This indicates that Scribner Brook is not likely to be adding an excessive amount of phosphorus to Great East Lake. The low values of phosphorus are a good sign that algael blooms may be limited and unlikely to occur at these levels.

Concentrations of non-purgable organic carbon (NPOC) were within the accepted normal range of streams, which is 0.7 to 28 mg C/L. Most steams are rarely above 10 mg C/L (Alan, 1995). The highest value of NPOC observed in this study was 6.51 mg C/L at the Scribner lower site. Except for Copp Brook, NPOC decreased from the Scribner Brook sites to the Great East Lake site (Figure 5). The Copp Brook site is more shaded than the other sites and light limitation

may explain why the concentrations were lower there. Another explanation is that at this site organic debris was not as noticeable as at the other sites. Lower concentrations at the Great East Lake site could be due to dilution or lower amounts of organic debris.

The low nutrient concentrations at all sites indicate that impacts by human activities are minimal. Since this study was conducted as an initial survey these data may not be indicative of year round concentrations. Human influence on nutrient loading may be greater during other times of the year when there is greater activity, such as people staying at their camps.

Further studies could be conducted to better depict the water quality of this area. Monitoring of nutrients over a longer time frame will give greater insight into nutrient loading of this water body. Since this area is being considered as a drinking water source fecal coliform tests should be conducted. Fecal coliform testing indicates if there is a potential for diseases from bacteria or viruses. Since the aquifer is a potential drinking water source being considered for use, its characteristics and relationship with surface water should be studied.

In order to maintain this pristine body of water human activities that would increase nutrient loading and other pollution need to be minimized and if possible avoided. Such human activities include poor maintenance of septic systems, fertilizing, etc. By maintaining the surface water the aquifer can also be maintained. Even if there is no need for a drinking water source now in the future it may be necessary. Therefore due to the limited impact the area has already seen the quality of this surface water and essentially ground waters are good. For this reason maintaining this high quality will produce water for the future.

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Figure 1. Aquifer Boundaries Surrounding Scribner Brook in the Town of Wakefield, NH (Sample Sites).

Created by Carrie Miller and Vicky Barrett (12/1/99), UNH NR 775 Senior Project
Topographic data source: US Geological Survey
Last revision: Fall 1997
Source Scale: 1: 24000/ 1: 25000
Aquifer data source: US Geological Survey
Last Revision: Winter 1998
Source Scale: 1: 24000/ 1: 25000

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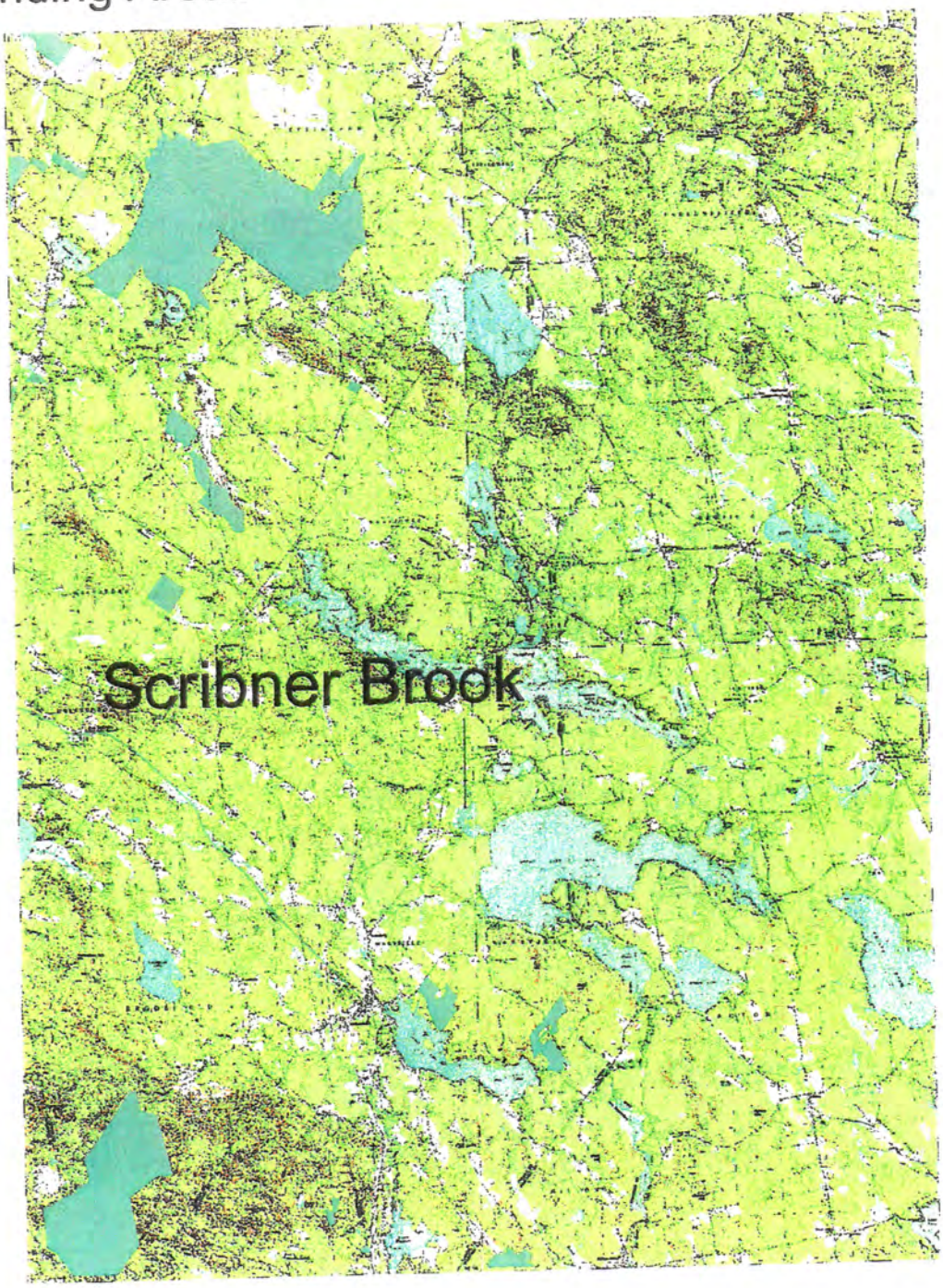
Figure 2. Conservation Lands for Wakefield, NH and Surrounding Areas



Conservation Lands

1 0 1 2 3 Miles

N

Created by Carrie Miller
and Vicky Barrett (12/1/99),
UNH NR 775 Senior Project
Topographic data source: US
Geological Survey
Last revision: Fall 1997
Source Scale: 1: 24000/
1: 25000
Conservation lands data source:
Society for the Protection of NH
Forests
Last Revision: Fall 1998
Source Scale: 1: 24000/
1: 25000

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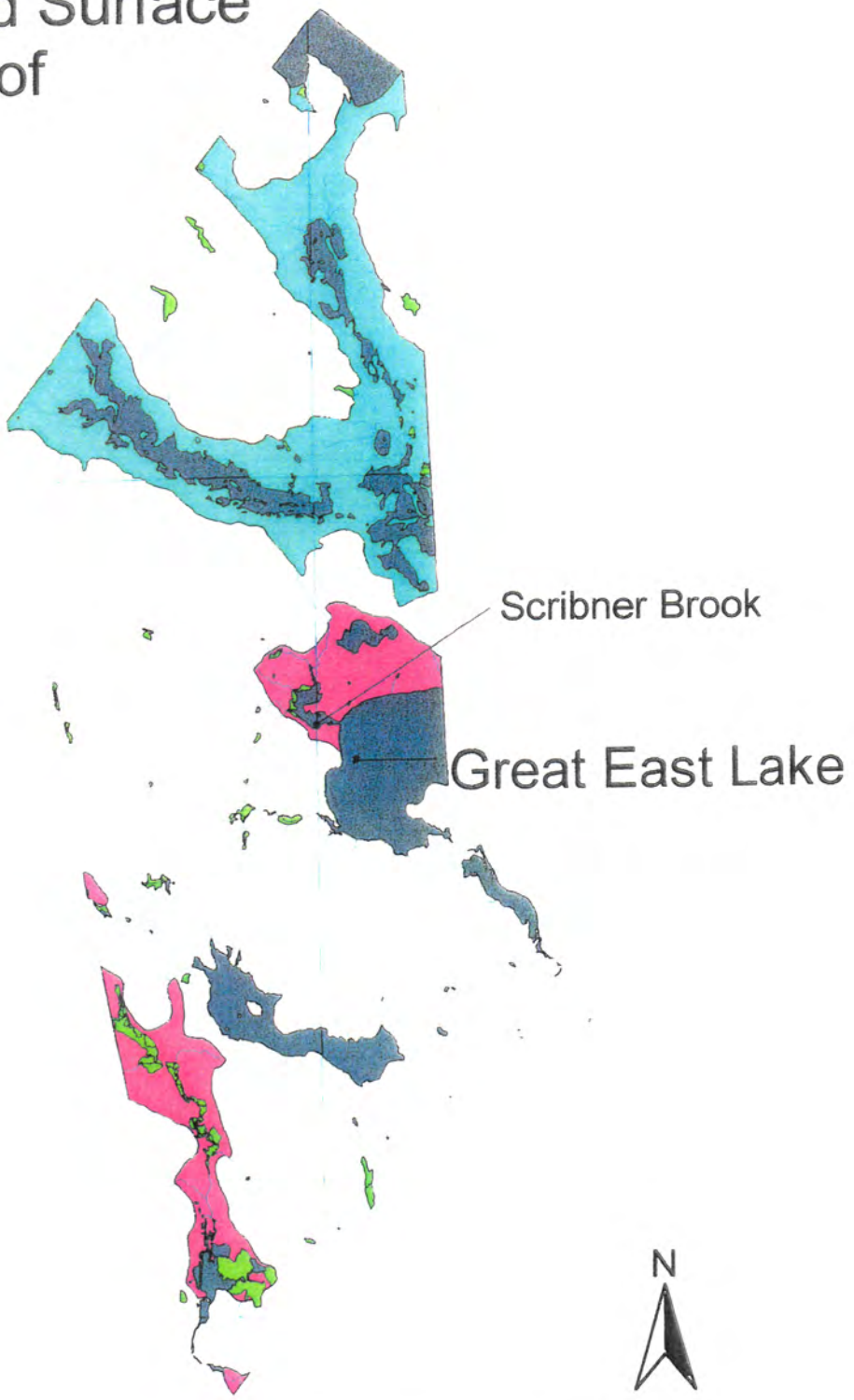
Figure 3. Ground and Surface Waters for the Town of Wakefield, NH.

Created by Carrie Miller
and Vicky Barrett (12/1/99),
UNH NR 775 Senior Project
Aquifer data source: US
Geological Survey
Last Revision: Winter
1998
Source Scale: 1: 24000/
1: 25000
Surface data source: Digital Line
Graphs, US Geological
Survey
Last Revision: Fall 1995
Source Scale: 1: 24000/
1: 25000



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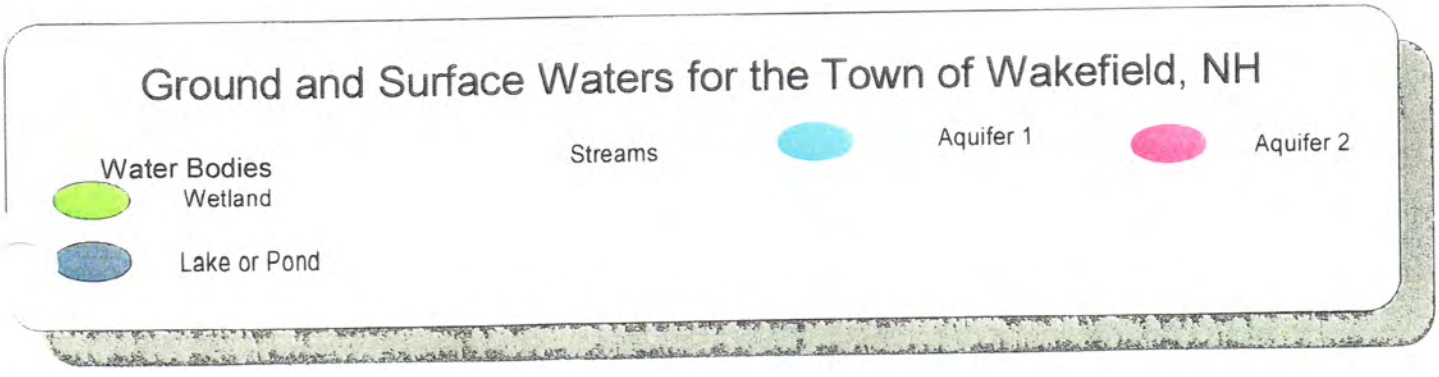
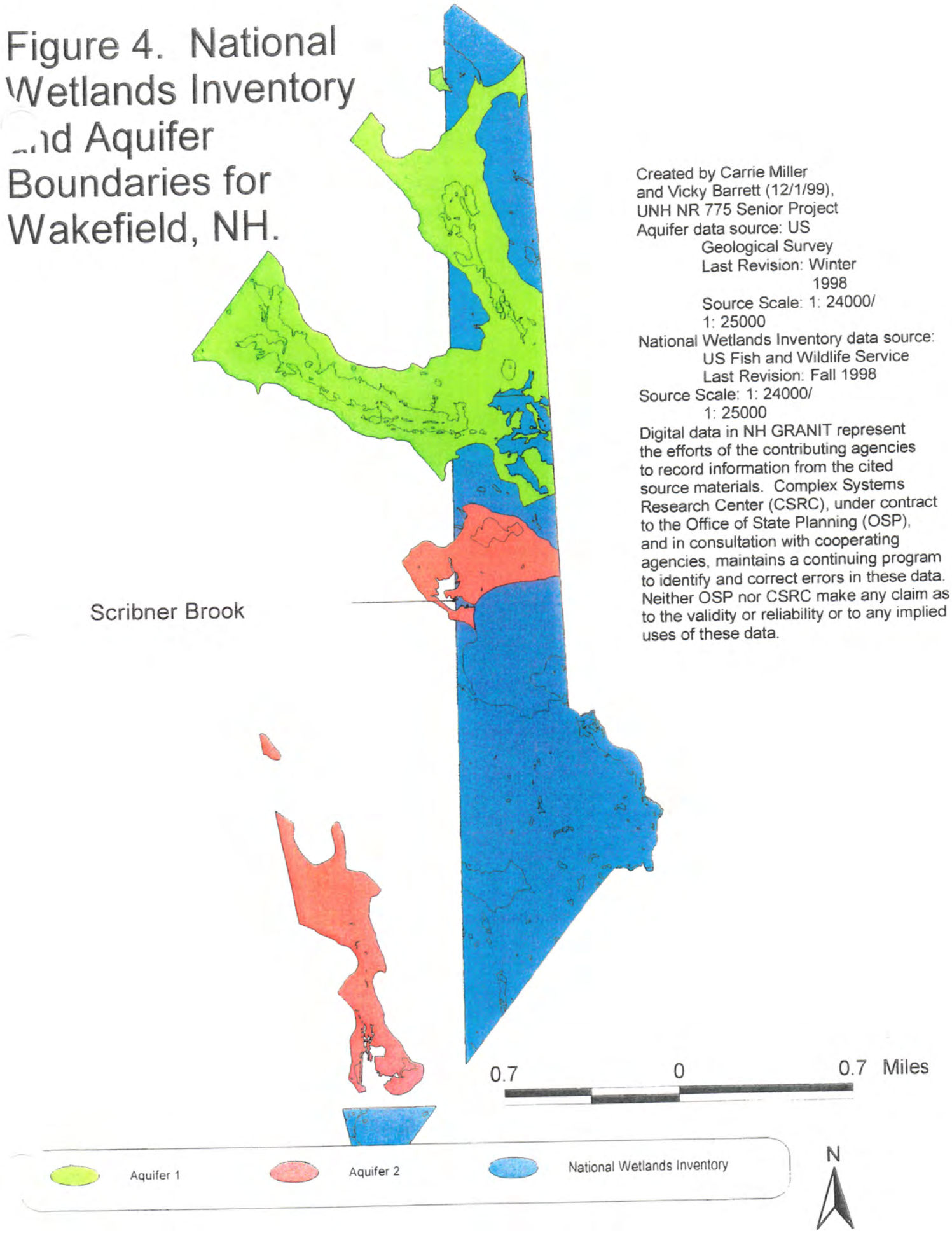


Figure 4. National Wetlands Inventory and Aquifer Boundaries for Wakefield, NH.



Created by Carrie Miller
and Vicky Barrett (12/1/99),
UNH NR 775 Senior Project
Aquifer data source: US
Geological Survey
Last Revision: Winter
1998
Source Scale: 1: 24000/
1: 25000
National Wetlands Inventory data source:
US Fish and Wildlife Service
Last Revision: Fall 1998
Source Scale: 1: 24000/
1: 25000

Digital data in NH GRANIT represent the efforts of the contributing agencies to record information from the cited source materials. Complex Systems Research Center (CSRC), under contract to the Office of State Planning (OSP), and in consultation with cooperating agencies, maintains a continuing program to identify and correct errors in these data. Neither OSP nor CSRC make any claim as to the validity or reliability or to any implied uses of these data.

Figure 5. Nitrate Concentrations.

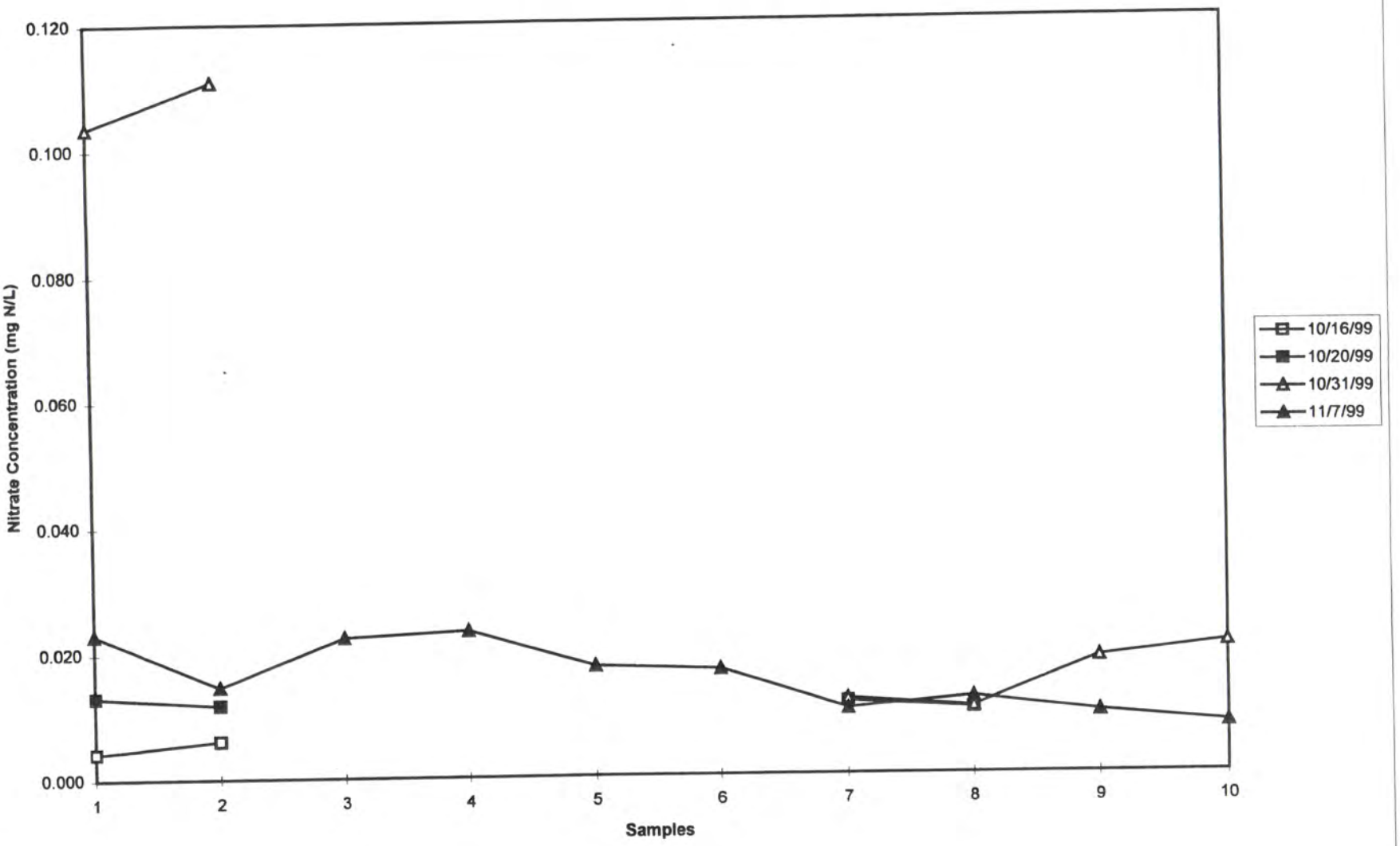


Figure 6. Phosphorus (PO4) Concnetrations.

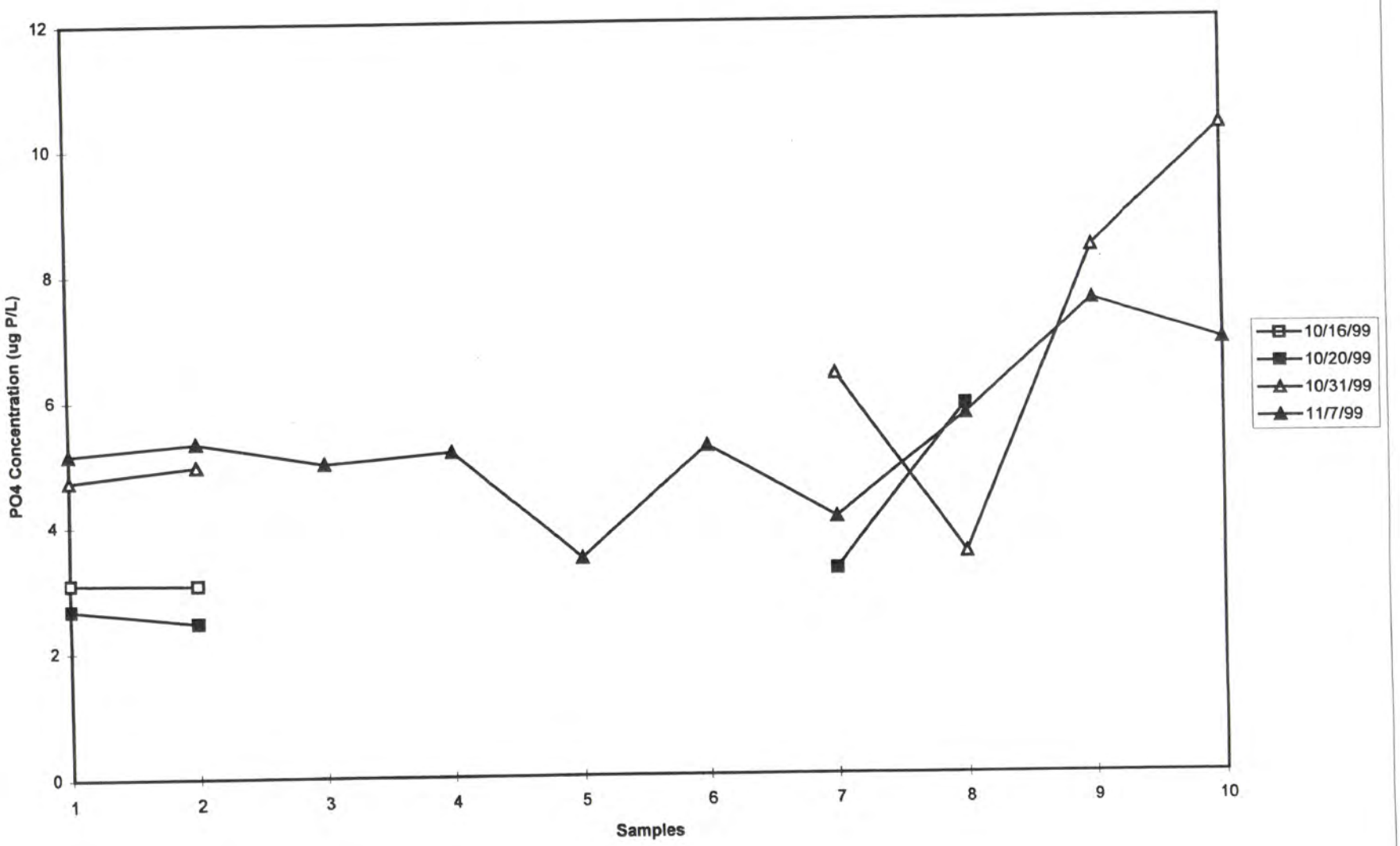


Figure 7. NPOC Concentrations for Samples.

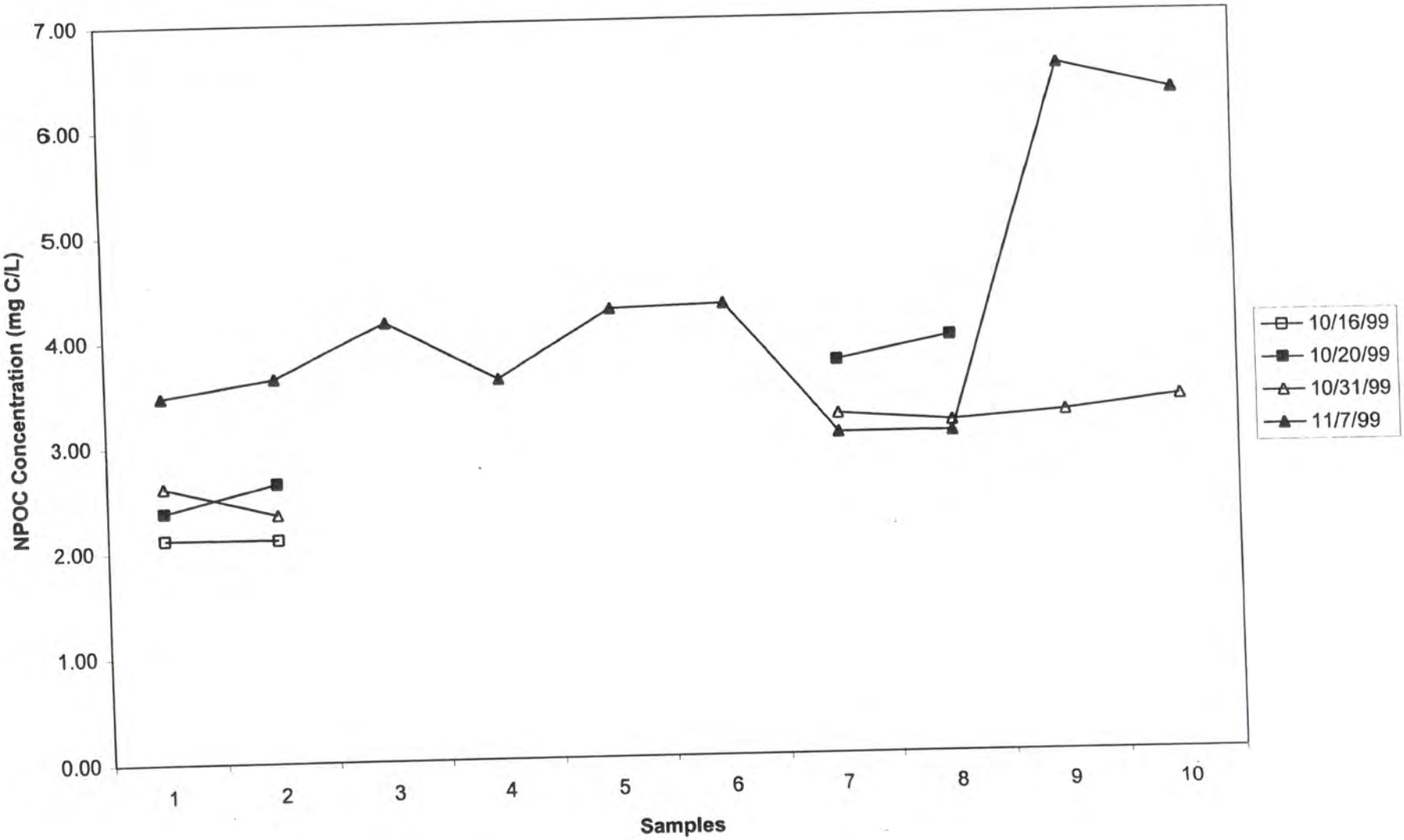


TABLE 1: LIST OF WILDLIFE SPECIES THAT USE THE SCRIBNER BROOK INLET

SPECIES	LATIN NAME	OBSERVATION METHOD	FOODS	STATUS IN NH	TIME OF INLET USE
BIRDS AND WATERFOWL					
erican crow	*Corvus brachyrhyncos*	O	ALL		A
ald eagle	*Haliaeetus leucocephalus*	R	F		A
Belted kingfisher	*Megaceryle alcyon*	L	F, I		S
Black duck	*Anas rubripes*	R	AP, Se, G, I		S/M
Black-capped chickadee	*Parus atricapillus*	O	I, Se, B		S/M
Blue-winged teal	*Anas crecca*	L	AP, Se, G, I	3B	S/M
Canadian goose	*Branta canadensis*	O	AP, Se, G		S/M
Common grackle	*Quiscalus quiscula*	L	I, Se,		S
Common loon	*Gavia immer*	R	F, C	3B	S/M
Great blue heron	*Ardea herodias*	L	F, C, Fr	4B	S/M
Mallard duck	*Anas platyrhynchos*	R	AP, Se, G, I		S/M
Osprey	*Pandion haliaetus*	R	F	2B	S/M
Pied-billed grebe	*Podilymbus podiceps*	R	F, C, I	1B	S/M
Red-winged blackbirds	*Agelaius phoeniceus*	L	I, Se		S
Spotted sandpiper	*Actitis macularia*	L	I, C		S
Wild turkey	*Meleagris gallopavo*	O	Se, I, B, N		A
Wood duck	*Aix sponsa*	O	I, AP		S/M
MAMMALS					
Beaver	*Castor canadensis*	O	AP, Tv		A
Eastern chipmunk	*Tamias striatus*	O	N, B		A
Little brown bat	*Myotis lucifugus*	L	I		A/T
Mink	*Mustela vison*	L	Ca		A
Moose	*Alces alces*	R	G, AP, Tv		A/T
uskrat	*Ondatra zibethicus*	O	AP, Tv		A
iver otter	*Lutra candensis*	L	C		A
White-tailed deer	*Odocoileus virginianus*	R	Tv		A/T
FISH					
Brown trout		R			A
Eels	*Anguilla bostoniensis*	R			A
Largemouth bass	*Micropterus samoides*	R			A
Pumpkinseed	*Lepomis gibbosus*	R			A
Rainbow trout		R			A
Smallmouth bass	*Micropterus dolomieu*	R			A
White perch	*Roccus Americanus*	R			A
INVERTEBRATES					
Fairy shrimp	*Anostraca spp.*	L			
Mosquito	*Culicidae spp.*	L			
Water boatmen	*Corixidae spp.*	L			

LEGEND

O	observed	Tv	terrestrial vegetation	B	berries	Fr	frogs
R	reported	AP	aquatic plants	N	nuts	Se	seeds
L	likely	Ca	carnivorous	G	grasses	S	seasonal
I	incsects	F	fish	C	crayfish	T	temporary

A all seasons
M migratory

*these species are all secure throughout their range, but in NH have special considerations B signifies that only breeding occurrances are ranked (1-5) in the state

List of wildlife likely to be in inlet taken from Weller 1999, Frederickson and Laubham 1996, Halfpenny 1986, Peterson 1980 and Murie 1974.

ist of wildlife population status from NH Heritage Inventory, 1994

Table 2. Concentrations of nitrate, ammonium, phosphorus, and carbon.

number on graphs	Site and Replication	Sample Date	Nitrate mg N/L	NH4 ug N/L	PO4 ug P/L	NPOC mg C/L
1	Great East Lake A	10/16/99	0.004	9	3	2.12
2	Great East Lake B	10/16/99	0.006	7	3	2.11
1	Great East Lake A	10/20/99	0.013	11	3	2.38
2	Great East Lake B	10/20/99	0.012	8	2	2.65
7	Copp River A	10/20/99	0.011	15	3	3.73
8	Copp River B	10/20/99	0.010	14	6	3.95
1	Great East Lake A	10/31/99	0.104	13	5	2.61
2	Great East Lake B	10/31/99	0.111	4	5	2.35
7	Copp River A	10/31/99	0.012	18	6	3.22
8	Copp River B	10/31/99	0.011	20	4	3.14
9	Scribner Upper A	10/31/99	0.018	7	8	3.22
10	Scribner Upper B	10/31/99	0.021	13	10	3.34
1	Great East Lake A	11/7/99	0.023	13	5	3.47
2	Great East Lake B	11/7/99	0.015	18	5	3.64
7	Copp River A	11/7/99	0.010	24	4	3.04
8	Copp River B	11/7/99	0.012	29	6	3.04
9	Scribner Lower A	11/7/99	0.010	27	8	6.51
10	Scribner Lower B	11/7/99	0.008	46	7	6.25
5	Pond 1A	11/7/99	0.017	53	3	4.26
6	Pond 1B	11/7/99	0.017	58	5	4.29
3	Pond 2A	11/7/99	0.022	30	5	4.16
4	Pond 2B	11/7/99	0.023	39	5	3.61

Table 3. P-Values of NO3, PO4, and NPOC concentrations.

	NO3	PO4	NPOC
	p-values	p-values	p-values
10/20/99	0.215881741	0.26679739	0.016645
10/31/99	0.000131248	0.07862117	0.013769
11/7/99	0.018615816	0.08830262	9.57E-05

Memorandum of Understanding

UNH Department of Natural Resources

NR 775

NRI for Schibner Brook

We, the undersigned, agree to the terms of the project outlined herein, including the various responsibilities noted, the products to be produced, and the financial commitment detailed in the budget. Any modifications of this Memorandum of Understanding must be agreed to in writing by all the parties involved.

Wakefield Conservation Commission, represented by Nancy Spencer Smith

Nancy Spencer Smith 10/13/99

Date

NR 775 Project Team, Caitlin Cobb, Project Manager

Caitlin J. Cobb 10/2/99

Date

Team Members:

Victoria Barrett, Sarah Marie Boucher, Caitlin Cobb, Carrie Miller, Daniel Roy, and Wade "Brooks" Weathers

Advisory Committee Members:

Joe Donahue (Chairman of the Wakefield Conservation Commission, employee of Fish and Game Department) and Frank Mitchell (UNHCE)

UNH Department of Natural Resources, Paul C. Johnson, NR775 Instructor

Paul C. Johnson 10/20/99

10-13-99

Date

Team Advisor, Frank Mitchell, UNH Cooperative Extension

Frank Mitchell 10/19/99

Date

Project Objectives

Objective 1. The Project Team will perform a natural resource inventory (NRI) on the Schibner Brook area in Wakefield, NH. The Team will perform a representative random sampling of the vegetation in the area of both woody and herbaceous plants. Signs of wildlife (tracks, woodpecker holes, deer beds, etc.) that are in the area will be recorded as well as those species of wildlife that would be expected to be in the area given various habitat types.

The Team will present data obtained from the NH GRANIT database and other sources that will indicate the Schibner Brook's relation to natural resource features that may include: stratified drift aquifers, rare species and natural communities, other wetlands in the watershed, flood plains, potential non-point pollution risks, and conservation lands. The Project Team will also delineate the Schibner Brook watershed on a USGS topographic map.

Objective 2. The Team will prepare some form of educational material to be available for the community of Wakefield.

Objective 3. The Project Team will perform water quality tests on Schibner Brook. The Team will collect samples of the Schibner Brook at five (5) specific locations on more than one occasion. Sample

collections would include that of macroinvertebrates and water samples based on drinking water standards for sources. Water samples will be collected on (3) occasions while macroinvertebrates would be collected only once. Additional sample sites may be added to locate point sources of pollution.

Responsibility of Parties

Nancy Spencer Smith, Client Contact:

The Client Contact will be responsible for providing background information about the Schibner Brook and pertinent surrounding areas, Great East Lake, for example. This will include a map of the town of Wakefield with the Schibner Brook identified. The Client Contact (or the Conservation Commission itself) will acquire permission for the group to collect data on private property. This permission must be obtained in writing before the group begins work on the areas in question. The client will also provide the group with a watercraft and life jackets as needed. Lastly, the Client Contact will fund the project as proposed in the attached budget.

NR 775 Project Team:

The Project Team will be responsible for the design of the project and completing the data collection. In addition, the Project Team will keep both the Department of Natural Resources and the Client Contact informed as to the progress of the project. Upon completion of the Project, the Project Team will then prepare and deliver an oral presentation, using slides, educational material for the community, a journal of documented entries pertinent to the project, and maps designating the location of findings. The Team will also prepare a written report to be given to the Wakefield Conservation Committee, the Department of Natural Resources, and to the Team Advisor, Frank Mitchell.

UNH Department of Natural Resources:

The Department will provide technical advice to the Project Team for the expedient and accurate completion of the project. Dr. Paul C. Johnson will be responsible for the direct oversight of the project.

UNH Cooperative Extension:

UNHCE's water resources specialist, Frank Mitchell, will advise the Project Team, review report drafts, and contribute to the evaluation of the project.

Project Timeline

Date:	Task(s) to be completed:
10/12/99	MOU finalized and signed by all parties
11/15/99	Data collection completed
11/22/99	1st Draft of final report completed
12/6/99	Final report completed
12/14/99	Meet with client to review project
12/16/99	Presentation to client

Product Description

The Project Team will complete a report that will summarize the findings of the Natural Resource Inventory (NRI). Included in the report will be a list of the representative vegetative (woody and herbaceous plants) and wildlife species expected to be in the area, as well as those already present. Lab results from water sampling tests will be provided and explained thoroughly. A map showing specific areas where certain animal and vegetative species inhabit will be submitted as well. The Project Team will have additional copies of the written report made, one for each member of the Project Team, one for the Team Advisor, one for the Department of Natural Resources, and one copy for the Wakefield Conservation Committee, nine (9) copies in total.

Project Budget

Client Appropriation $571.80

Category	Budgeted	Explanation
Travel		
Personal Vehicle	$0.31/mile x 80 miles/trip x 6 trips = $148.80	
Tolls	$.50/way (Rte. 16) x 12 trips (two ways Rte.16) = $6.00	
Equipment		
Item 1	1 quad. map of the area = $5.00	
Item 2	1 disposable camera = $7.00	
Supplies	$20.00	
Communications		
Phone	$5.00	
FAX	$5.00	
Postage	$5.00	
Copying & Printing		
Photocopying	$5.00	
Printing Services	$15.00/report x 9 reports = $135.00	
Photographs (slides)	$5.00/roll of slides x 2 rolls = $10.00	

Data Acquisition & Analysis

Analytical Services	Water quality testing: $20.00/sample x 5 sample sites x 3 separate occasions = $300.00

Miscellaneous

Misc.	$20.00

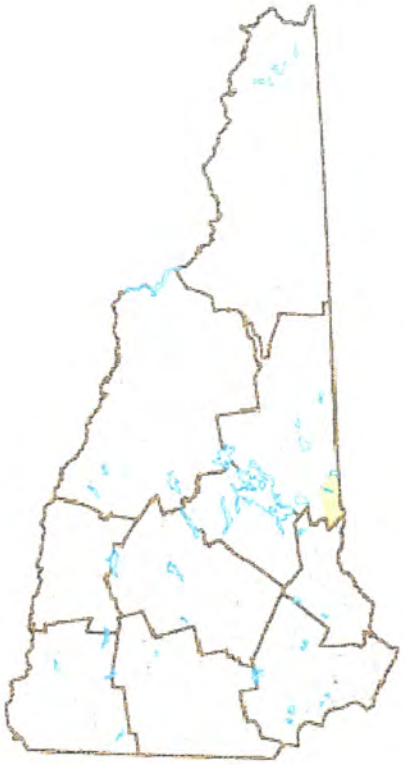
TOTALS

Total	$671.80
UNH Dept. Funding	$100.00
Client Funding	$571.80

APPENDIX E

Wakefield Information Sheet

Wakefield, NH



Community Contact	**Town of Wakefield** **Kelley A. Collins, Town Administrator** **2 High Street, Town Hall** **Sanbornville, NH 03872**
Telephone	**(603) 522-6205**
Fax	**(603) 522-6794**
E-mail	**townadmin@wakefieldnh.com**
Web Site	**www.wakefieldnh.com**
Municipal Office Hours	**Monday through Friday, 8:30 am - 4 pm; Town Clerk: Monday, Tuesday, Friday, 8:30 - 4 pm, Wednesday, 8:30 am - 1:30 pm, Thursday, 8:30 am - 6 pm, first and last Saturday of month, 8:30 am - 12:30 pm**
County	**Carroll**
Labor Market Area	**Wolfeboro, NH LMA**
Tourism Region	**Lakes**
Planning Commission	**Strafford Regional**
Regional Development	**Wentworth Economic Development Corp.**
Election Districts	
US Congress	**District 1**
Executive Council	**District 1**
State Senate	**District 3**
State Representative	**Carroll County Districts 5, 8**

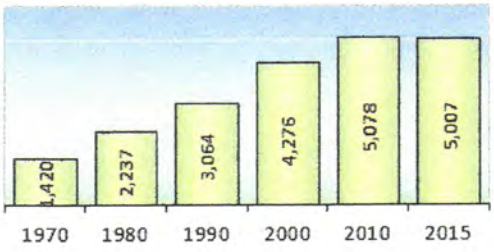
Incorporated: 1774

Origin: This territory was settled by colonists from Dover and Somersworth who received a charter from the Masonian Proprietors in 1749. The settlement was known variously as Ham's-town, East-town, and Watertown. In 1774, residents petitioned the Proprietors for incorporation with township powers and privileges, and it was incorporated as Wakefield by Governor John Wentworth. Wakefield in Yorkshire, England, was the location of Wentworth Castle, the home of Wentworth ancestors. In 2002, the Wakefield Town Hall was listed on the New Hampshire State Register of Historic Places.

Villages and Place Names: East Wakefield, North Wakefield, Sanbornville, Union, Woodman, Province Lake

Population, Year of the First Census Taken: 646 residents in 1790

Population Trends: Population change for Wakefield totaled 3,784 over 55 years, from 1,223 in 1960 to 5,007 in 2015. The largest decennial percent change was an increase of 58 percent between 1970 and 1980, followed by increases of 37 percent and 40 percent, respectively over the next two decades. The 2015 Census estimate for Wakefield was 5,007 residents, which ranked 69th among New Hampshire's incorporated cities and towns.



Population Density and Land Area, 2015 *(US Census Bureau)*: 126.7 persons per square mile of land area. Wakefield contains 39.5 square miles of land area and 5.3 square miles of inland water area.

Municipal Services

Type of Government	**Selectmen**
Budget: Municipal Appropriations, 2017	**$5,235,927**
Budget: School Appropriations, 2016-2017	**$9,763,936**
Zoning Ordinance	**1986/17**
Master Plan	**2003**
Capital Improvement Plan	**Yes**
Industrial Plans Reviewed By	**Planning Board**

Boards and Commissions

Elected: **Selectmen; Planning; Budget; School; Assessors; Trust Funds; Checklist**

Appointed: **Conservation; Cemetery; Zoning; Heritage; Parks & Recreation**

Public Library **Gafney Library, Inc.; Wakefield Library Association**

Emergency Services

Police Department	**Full-time**
Fire Department	**Full-time & volunteer**
Emergency Medical Service	**Municipal**

Nearest Hospital(s)	Distance	Staffed Beds
Huggins Hospital, Wolfeboro	**13 miles**	**25**

Utilities

Electric Supplier	**Eversource Energy; NH Electric Coop**
Natural Gas Supplier	**None**
Water Supplier	**Sanbornville Water Department**
Sanitation	**Private septic & municipal**
Municipal Wastewater Treatment Plant	**Yes**
Solid Waste Disposal	
Curbside Trash Pickup	**Private**
Pay-As-You-Throw Program	**No**
Recycling Program	**Mandatory**
Telephone Company	**Time Warner; Fairpoint**
Cellular Telephone Access	**Yes**
Cable Television Access	**Yes**
Public Access Television Station	**Yes**
High Speed Internet Service: Business	**Yes**
Residential	**Yes**

Property Taxes *(NH Dept. of Revenue Administration)*

2016 Total Tax Rate (per $1000 of value)	**$12.94**
2016 Equalization Ratio	**91.0**
2016 Full Value Tax Rate (per $1000 of value)	**$11.73**

2016 Percent of Local Assessed Valuation by Property Type

Residential Land and Buildings	**95.8%**
Commercial Land and Buildings	**3.3%**
Public Utilities, Current Use, and Other	**1.0%**

Housing *(ACS 2011-2015)*

Total Housing Units	**3,871**
Single-Family Units, Detached or Attached	**3,306**
Units in Multiple-Family Structures:	
Two to Four Units in Structure	**157**
Five or More Units in Structure	**45**
Mobile Homes and Other Housing Units	**363**

Demographics *(US Census Bureau)*

Total Population	Community	County
2015	**5,007**	**47,513**
2010	**5,078**	**47,818**
2000	**4,276**	**43,918**
1990	**3,064**	**35,526**
1980	**2,237**	**27,929**
1970	**1,420**	**18,548**

Demographics, American Community Survey (ACS) 2011-2015

Population by Gender

Male **2,583** Female **2,424**

Population by Age Group

Under age 5	**213**
Age 5 to 19	**595**
Age 20 to 34	**660**
Age 35 to 54	**1,424**
Age 55 to 64	**1,008**
Age 65 and over	**1,107**
Median Age	**52.5 years**

Educational Attainment, population 25 years and over

High school graduate or higher	**87.9%**
Bachelor's degree or higher	**20.4%**

Income, Inflation Adjusted $ *(ACS 2011-2015)*

Per capita income	**$28,004**
Median family income	**$58,221**
Median household income	**$47,568**

Median Earnings, full-time, year-round workers, 16 years and over

Male	**$43,812**
Female	**$29,778**
Individuals below the poverty level	**3.6%**

Labor Force *(NHES – ELMI)*

Annual Average	2006	2016
Civilian labor force	**2,397**	**2,325**
Employed	**2,312**	**2,255**
Unemployed	**85**	**70**
Unemployment rate	**3.5%**	**3.0%**

Employment & Wages *(NHES – ELMI)*

Annual Average Covered Employment	2006	2016
Goods Producing Industries		
Average Employment	**88**	**78**
Average Weekly Wage	**$ 510**	**$ 687**
Service Providing Industries		
Average Employment	**328**	**591**
Average Weekly Wage	**$ 363**	**$ 962**
Total Private Industry		
Average Employment	**415**	**669**
Average Weekly Wage	**$ 394**	**$ 930**
Government (Federal, State, and Local)		
Average Employment	**280**	**306**
Average Weekly Wage	**$ 608**	**$ 686**
Total, Private Industry plus Government		
Average Employment	**695**	**975**
Average Weekly Wage	**$ 480**	**$ 853**

Education and Child Care

Schools students attend: **Wakefield operates grades K-8; grades 9-12 are tuitioned to Rochester** District: **SAU 64**
Career Technology Center(s): **R.W. Creteau Regional Technology Ctr (Rochester)** Region: **12**

Educational Facilities (includes Charter Schools)	Elementary	Middle/Junior High	High School	Private/Parochial
Number of Schools	1			
Grade Levels	K 1-8			
Total Enrollment	424			

Nearest Community College: **Lakes Region**
Nearest Colleges or Universities: **University of NH; Nasson (ME)**

2017 NH Licensed Child Care Facilities (DHHS-Bureau of Child Care Licensing) Total Facilities: **4** Total Capacity: **110**

Largest Businesses	Product/Service	Employees	Established
Lovell Lake Food Center	Convenience store	35	
Poor Peoples Pub	Restaurant	35	
Knotty Pine Restaurant & Tavern	Restaurant	25	2010
Longmeadow Hardware	Hardware	18	
Dunkin Donuts	Donut shop	17	2015
Tumbledown Café	Restaurant	15	2014
Badman Family Practice	Health care services	7	1993
Irving	Gas, convenience store	7	
Seven Lakes Provisions	Grocery store	5	
Mobil on the Run	Gas, convenience store		

Employer Information Supplied by Municipality

Transportation *(distances estimated from city/town hall)*

Road Access US Routes
State Routes **16, 109, 110, 153**
Nearest Interstate, Exit **Spaulding Tpk., Exit 18; I-95, Exit 5**
Distance **6 miles; 40 miles**

Railroad **NH Northcoast**
Public Transportation **No**

Nearest Public Use Airport, General Aviation
Skyhaven, Rochester Runway **4,200 ft. asphalt**
Lighted? **Yes** Navigation Aids? **Yes**

Nearest Airport with Scheduled Service
Portland (ME) International Distance **49 miles**
Number of Passenger Airlines Serving Airport **6**

Driving distance to select cities:

Manchester, NH	**62 miles**
Portland, Maine	**51 miles**
Boston, Mass.	**93 miles**
New York City, NY	**301 miles**
Montreal, Quebec	**258 miles**

Commuting to Work *(ACS 2011-2015)*

Workers 16 years and over	
Drove alone, car/truck/van	**82.2%**
Carpooled, car/truck/van	**8.5%**
Public transportation	**0.0%**
Walked	**1.7%**
Other means	**0.9%**
Worked at home	**6.8%**
Mean Travel Time to Work	**38.9 minutes**

Percent of Working Residents: ACS 2011-2015

Working in community of residence	**19.5**
Commuting to another NH community	**66.3**
Commuting out-of-state	**14.2**

Recreation, Attractions, and Events

- X Municipal Parks
- YMCA/YWCA
- Boys Club/Girls Club
- X Golf Courses
- Swimming: Indoor Facility
- Swimming: Outdoor Facility
- Tennis Courts: Indoor Facility
- Tennis Courts: Outdoor Facility
- Ice Skating Rink: Indoor Facility
- Bowling Facilities
- X Museums
- Cinemas
- Performing Arts Facilities
- X Tourist Attractions
- X Youth Organizations (i.e., Scouts, 4-H)
- X Youth Sports: Baseball
- X Youth Sports: Soccer
- X Youth Sports: Football
- X Youth Sports: Basketball
- Youth Sports: Hockey
- X Campgrounds
- X Fishing/Hunting
- X Boating/Marinas
- X Snowmobile Trails
- X Bicycle Trails
- Cross Country Skiing
- X Beach or Waterfront Recreation Area
- X Overnight or Day Camps

Nearest Ski Area(s): **Gunstock, King Pine**

Other: **Frisbie Golf**

APPENDIX F

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