TOWN OF ALTON

2022 NATURAL RESOURCE INVENTORY

Prepared By:

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Prepared For And In Consultation With:
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Alton Planning Board
Alton Conservation Commission

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Table of Contents

Introduction

Purpose & Methodology

The purpose of this 2022 Natural Resource Inventory (NRI) is to review and analyze the Town of Alton's natural resources in order to update the distribution and composition of them from the 2002 NRI. The value of updated data from this NRI is used to make future development and planning related decisions by the town.

Map and data analysis was done primarily through the following programs: ESRI ArcMap v. 10.8.1 and Microsoft Excel. The most recent available data was utilized for each component studied in this NRI. Data was acquired from numerous sources, which included NH GRANIT GIS Clearinghouse, NH Department of Environmental Services (NH DES), and United States Geological Survey (USGS) to name a few. A full comprehensive list of the data sources used has been included near the end of this document.

Every effort has been made to be as accurate as possible to document the natural resources assessed within this report, which is based on the most recent GIS data available and correspondence with various departments of the town. A majority of the GIS data is based on aerial imagery and LiDAR data, so some data inaccuracies are possible based on original surveying conditions of the data. Data conditions that could lead to inaccuracies are: the scale of the original data (smaller scale datasets tend to have lower accuracy), technology used/available to capture data (modern LiDAR/aerial data will be more accurate than those used in older datasets), and ground conditions during the original survey (factors such as time of year and weather conditions may affect the visibility of certain features being digitized or assessed). Some incorporated GIS layers did have some observed discrepancies especially those based on older information. Any maps that may have large data discrepancies or apparent data inaccuracies have been noted in their respective section.

Section 1: Historic/Cultural Resources

The Town of Alton was originally settled during the 1770's and at the time of its formation was originally known as New Durham Gore.[1)] The town was first settled by Jacob Chamberlain for farming and agricultural purposes.[2)] Other notable families aside from the Chamberlains in 1774 included – Coffin, Davis, Flanders, Glidden, Horn, Peavy, Roberts, and Rogers.[3)] 1775 is considered the birth year of the town as this was when the town government and other institutions/officers related to government started to form.[3)] By March of 1777 the first recorded town meeting was conducted at the Timothy Davis Homestead (which was originally located along Prospect Mountain Road).[3)] In the early years of the town's inception, residents also led important roles within numerous battles of the American Revolutionary War. Some notable battles that Alton residents took part in were the Battle of Bunker Hill and the Battle of Bennington. Alton received its current name in 1796 after a multitude of petitions to the court for the name change, and by 1797 the town was officially incorporated.[1)]

As Alton became more and more established, fundamentals like new roads, aqueducts, pumps and more were being installed. By the early 1800's the first school houses within the town were being constructed.[4)] For a long while, the common methods of transportation were done via horseback or by foot. Transportation within Alton quickly evolved starting in the mid 1820's with the use of carriages and then to the steamboats within the early 1830's. Starting from the 1840's, multiple railroad connections were being constructed in Alton, but it wouldn't be until 1851 when the first railroad engine, from the Cocheco Railroad, made its appearance in Alton.[5)] Railroads such as the Lake Shore Railroad and the previously mentioned Cocheco Railroad passed through and stopped in Alton. Though these railroads would eventually cease their operations, remnants of them still exist and are considered valuable historic sites. The Alton Bay Railroad Station, a National Registered Historic property, once housed the Cocheco Railroad, and the Letter S Road Trestle Bridge Supports, a State Registered Historic landmark, once allowed the Cocheco Railroad to pass over the Merrymeeting River. As tourism and traveling continued to blossom in Alton and along Lake Winnipesaukee, the steamboat known as the MS Mount Washington was established in 1872.[1)] This boat was made to transport cargo and people around the lakes region, and while the original boat may be gone, the successor of it still operates under the same name today. This makes the MS Mount Washington one of the only older transportation lines still operational as of today.

After the civil war in the mid-1860's and beyond, Alton, with the expansion of new technologies and the increased demand of tourism, began to shift away from agriculture as its prime use of the land. With the creation of the MS Mount Washington, and the expansion of general recreational opportunities within the town, Alton has shifted more into a seasonal resort community. Though Alton has evolved, the town still pays great respect to its history and this can be evident with the registration of historic properties with both the National Register and the

State Register. A total of 4 properties and 1 district are registered under the National Register, and 1 landmark is registered under the State Register. Below is the list of these properties with a brief description of them. Additionally listed are properties/landmarks that had an application made for review to be registered but never were officially designated the registered status. **These lists are up-to-date as of September 2021 based on data provided by the New Hampshire Division of Historical Resources (NHDHR).**

National Registered Historic Properties:

1) Alton Bay Railroad Station – Listed as of 1983. This passenger station was used by the Cocheco Railroad starting in the 1850's, which was when the first version of this building was built. Over the course of time, this station burnt down twice, and the latest rebuild of the station was completed in 1907. This version of the passenger station was used between 1907 and 1935, with 1935 being when railroad operations started to cease in Alton. The property was soon after purchased by the town and renovated to act as the Alton Bay Community Center. This property, located at 58 Mount Major Highway, still serves as a Community Center to this day.[6)]

2) First Congregational Church – Listed as of 1990. This church was constructed between 1853 and 1854, and is located at 20 Church Street. The architectural design of the church is known as Greek Revival, which makes the building unique as there are only 12 surviving churches in Belknap County of this style that date back prior to the Civil War. The church is still used to this day for religious services and community gatherings, and is currently known as the Community Church of Alton.[7)]

3) First Freewill Baptist Church – Listed as of 1978. This church was the first of Alton's landmarks/properties to be registered with the National Register of Historic Places. It was originally constructed approximately in 1826 and is located at 347 Drew Hill Road. The church is located where the original town center of Alton was once located, and it is one of the only surviving structures from the original center.[8)]

4) Second Free Baptist Church – Listed as of 1990. This church, similar to the First Congregational Church, was constructed between 1853 and 1854. It is located at 101 Main Street, and the architectural style of it is known as Italianate. It is the only pre-Civil War Italianate styled church within Belknap County, making it a significant landmark in this regards. The church to this day is still used for religious services.[9)]

5) Monument Square Historic District – Listed as of 1984. This district is located within the heart of Alton, and situated along Main Street/Route 11 and between Route 140 and Church St/Depot St. It is an open space area and contains the following historical properties/landmarks: Dudley Barker Store, Parsonage Lot, Morrell's Store, Wheeler

House, the White Lodge, the Barns (once used as a livery stable and corkscrew factory), Cocheco House, James N. Jones House, J. Jones & Son Store, Tobias Berry House, Alton Town Hall, Civil War Soldiers Monument, and War Memorial. The Harold S. Gilman Museum though included within this District does not contribute to it.[10)]

State Registered Historic Properties:

1) Letter S Road Trestle Bridge Supports – Listed as of 2016. These bridge supports are the only landmark/property under the State Register within Alton. The trestle and its bridge supports were constructed along Letter S Road during the mid-1850's to allow the Cocheco Railroad to cross over the Merrymeeting River. This railroad provided transportation between Dover and Alton Bay. Railroad operations in Alton were eventually abandoned during the mid-1930's, and as such the trestle was removed. The railbed, abutment supports, and pier still remain of the trestle to this day.[11)]

Unregistered Historic Properties (based on information from NHDHR):

1) Ordway Residence – Not eligible for the National Register as of 1993 evaluation
2) Sheldon House – Not eligible for the National Register as of 1998 evaluation
3) Moore Residence – Not eligible for the National Register as of 1993 evaluation
4) Smith Emerson House – Eligible for the National Register as of 1995 evaluation
5) Ernest Chamberlain House – Eligible for the National Register
6) Saint Joan of Arc Church – Not reviewed (Church was destroyed by a fire in 2000)[1)]
7) Alton Bay Advent Christian Church – Not reviewed
8) Cabin at Camp Kehonka – More info needed as of 2009 evaluation
9) Jeremiah Woodman House – Property contributes to a Nationally Registered/State Registered/Eligible District
10) Stockbridge House – Not eligible for the National Register or State Register as of 2010 evaluation
11) Avery House – Not eligible for the National Register or State Register as of 2010 evaluation

12) Drew House – Not eligible for the National Register or State Register as of 2010 evaluation

13) Downing's Landing – Not eligible for the National Register or State Register as of 2014 evaluation

14) NH Route 11/Alton Brook Culvert – Not eligible for the National Register or State Register as of 2018 evaluation

15) Lake Shore Railroad/Alton Brook Culvert – National Register Eligible as of 2018 evaluation

16) Batchelder House – More info needed as of 2018 evaluation

17) Dugas House – More info needed as of 2018 evaluation

18) Bridge 076/277 – No provided information by NHDHR

19) John Littlefield Farm & Mill – National Register Eligible as of 1998 evaluation

*Green = Eligible or Contributes to a Register

*Yellow = Not Reviewed, Missing Information, or Additional Information Needed

*Red = Not Eligible for a Register based on the last review

*Black = No longer Eligible for a Register due to structure being destroyed

In addition to the historic resources evaluated by NHDHR, the town of Alton and the Lakes Region Planning Commission (LRPC) determined other numerous properties and landmarks within the town that were of significant value. These sites were assessed in 2006 for the creation of a Natural, Cultural, and Historic Site Map developed by the LRPC for the town. SRE was able to acquire this data and was able to update it based on correspondence with the Alton Historic Society. Below is the updated list of additional historic/cultural resources (not including the NH DHR listings) within Alton that the town deems important. A brief description based on correspondence with the Alton Historic Society has been listed for some of the properties below:

1) Jonathan Leighton House – located at Gilman Corner Road, East Alton

2) Alton Town Hall – c.1894, Part of National Registered Monument Square District

3) Cocheco House – Site of Savage Hotel, M.H. Savage G.A.R. (Grand Army of the Republic) Post #49 named in honor of Moses Henry Savage, and American Legion Post #72. Part of National Registered Monument Square District

4) White Lodge – Part of National Registered Monument Square District

5) Beaver Brook Sites, East Alton – An old bridge located under a new bridge. Site of a grist mill and Tabor clay pipe factory

6) Bennett House – c.1774-1782, located along Old New Durham Road

7) Carder House – c.1770, located along Meaderboro Road

8) Indian Plaque – Located near Alton Bay Bridge. Site of annual Pow Wow of 6 Lakes Region Tribes

9) Bay View Pavilion – c.1928-1929, featured a roller rink and dancing hall. Burned down in 2006, and was rebuilt as condos

10) Alton Bay Christian Conference Center – Started in 1863, formerly railroad land

11) Second Winnipesaukee House – c.1905, Also featured Alton Bay Inn, Dellos Lodge, and JP China. The First Winnipesaukee House burned down in 1905

12) Railroad Square, Alton Bay – Includes both bandstands, railroad station and town docks & state road marker

13) Mt. Major Community Center & Garage – c.1841, One room school house with addition.

14) One Room School House – Located along Halls Hill Road, intact one room school house

15) Site of Original Alton Meeting House – c.1790, located along Main Street. A plaque is located at the Aroma Joe's driveway entrance near the sidewalk. This was the location of the first dedicated townhall meeting house (this is not the location where the first town meeting was held, which occurred along Prospect Mountain Road at the Timothy David Homestead)

16) Grave of Civil War Horse "Old Tom" – Steed of Major George Savage, both of whom were wounded at the Battle of Chancellorsville, VA (1863)

17) Downing's Garage – Old marine/boat service garage

18) Bay Fire Station – c.1894-1895, Main Street Hose Company #2

19) Gilman Museum – Located at the corner of Main Street and Route 140, site of former Alton Shoe Co. factory

20) Alton Historic Society Museum – Located at the lower level of Gilman Library and 13 Depot Street

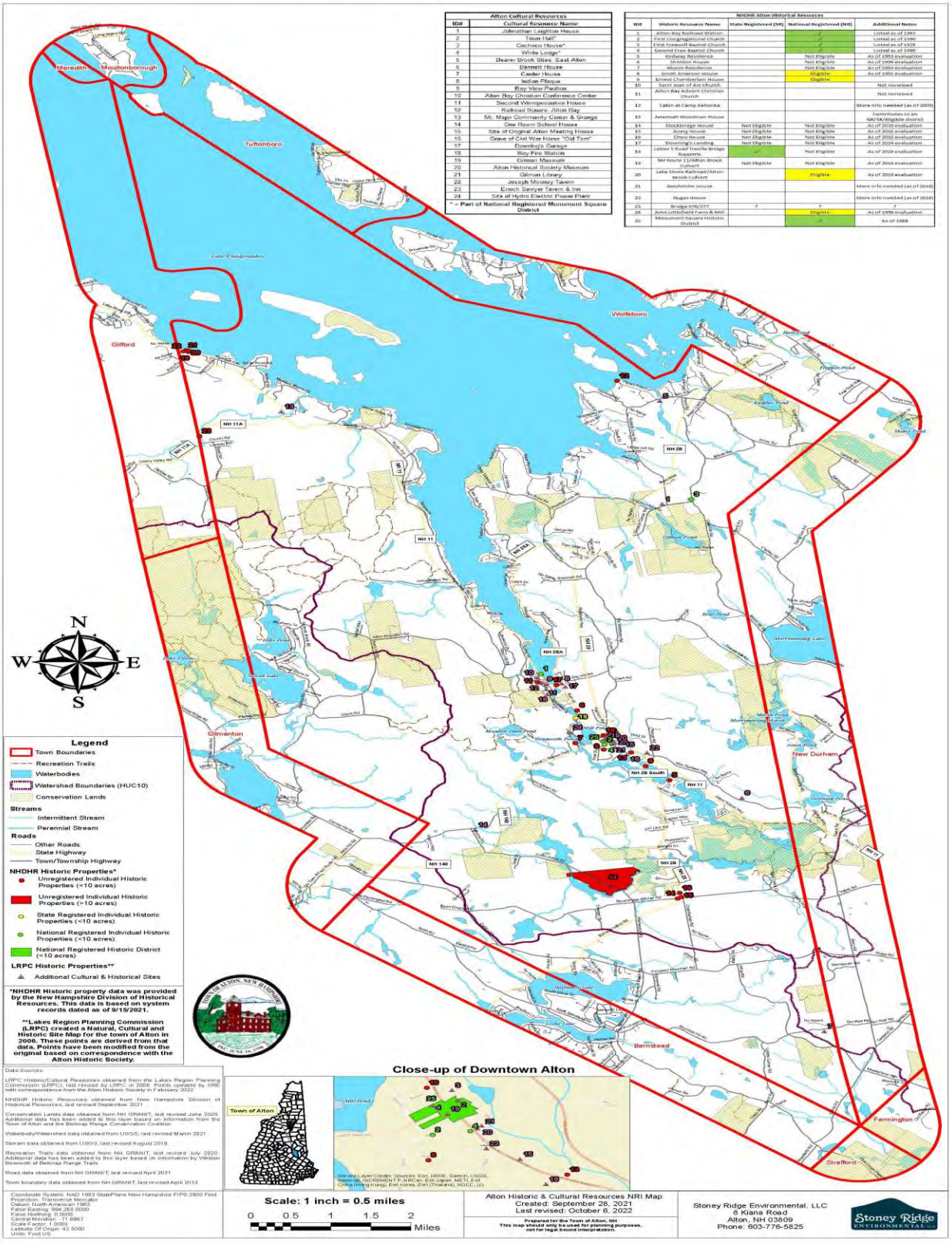
21) Gilman Library – Located along Main Street

22) Joseph Mooney Tavern – c.1775, located near the Alton Traffic Circle at Homestead Place. Building still stands

23) Enoch Sawyer Tavern & Inn – c.1798, located at the corner of Main Street and School Street. Building still stands

24) Site of Hydro Electric Power Plant – Located at the Merrymeeting River along Letter "S" Road. Turbine house still stands

Alton Historic & Cultural Resources



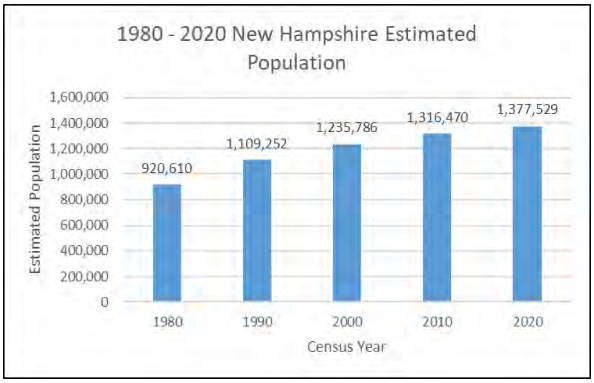
Section 2: Population & Land-Use

Based on area alone, the Town of Alton ranks as the fifth largest municipality in all of New Hampshire.[12)] The town's total area is approximately 53,231 acres and is comprised of diverse land types such as forests, wetlands, lakes, agriculture lands, and developed areas. Of the town's total acreage, approximately 41,577 acres make up the land area of Alton and the remaining 11,654 acres is comprised of Lake Winnipesaukee. Alton is also home to numerous significant natural areas that include Lake Winnipesaukee, the Merrymeeting River, the Belknap Mountains, Quarry Mountain Forest, and much more.

In 1778, after the French and Indian Wars (1702-1763) and during the Revolutionary War (1775-1783), Alton was settled as a part of New Durham Gore. The town received its charter as a separate town in 1796 as Alton, named for an English town of the same name. The town covered 100 square miles and by 1803 was divided into 26 school districts. By 1820 Alton had a population of 2,058, which is a figure that would not be matched again until the 1970s. The first ever U.S. Census conducted in 1790 estimated Alton's population to be 445 residents.[1)] Fast forward 200 years, and over the span of the past 40 years, the population within the state of New Hampshire has been continually increasing, and as of 2020 a total of 1,377,529 residents were recorded.[13)] When the state's population is evaluated on a decade-by-decade analysis, the overall population percent of change for each decade has been decreasing almost by half each time. The most recent population percent of change from 2010 to 2020, was an increase of 4.64%.

Table 2-1: New Hampshire Population from 1980 - 2020

Census Year	NH Total Population	% Change
1980	920,610	-
1990	1,109,252	20.49%
2000	1,235,786	11.41%
2010	1,316,470	6.53%
2020	1,377,529	4.64%

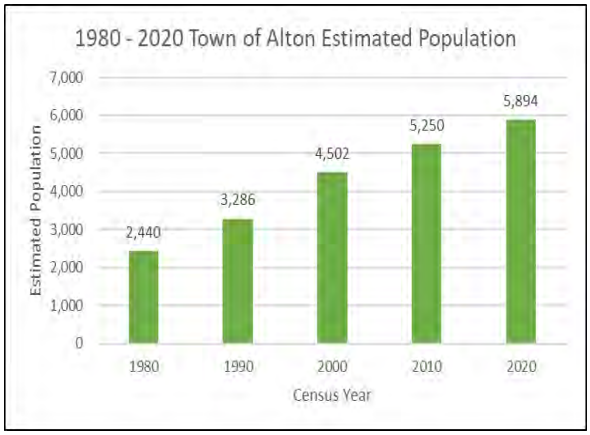


As for Alton on an individual town basis, the population has been increasing on a similar trend to the state as a whole. A total of 5,894 residents were recorded within the town of Alton under the 2020 version of the U.S. Census.[13)] When analyzing the town's population on a decade-by-decade basis, the percent change has been decreasing nearly every decade except between 1990 and 2000. Between 2010 and 2020, the most current decade population percent change was +12.27%. Although, its anticipated that the population percent change will once

again fluctauate in the following decades, the future population of Alton can be estimated. If the latest +12.27% population percent change is used for the next three decades we would get the following predicted number of residents: 6,617 (2020-2030), 7,429 (2030-2040), and 8,340 (2040-2050). The listed population values do not take into consideration the summer population values within the town, which is drastically different than the year round population. It has been estimated by the town that the summer population could be somewhere between 15,000 residents and 17,000 residents.[14)] This seasonal population estimate is nearly triple the population value documented by the U.S. Census. This high seasonal population value establishes Alton's popular standing as a summer time destination, which is understandable considering Alton contains the largest acreage of Lake Winnipesaukee out of all the surrounding municipalities.

Table 2-2: Town of Alton Population from 1980 - 2020

Census Year	Town of Alton Population	% Change
1980	2,440	-
1990	3,286	34.67%
2000	4,502	37.01%
2010	5,250	16.61%
2020	5,894	12.27%
2030	**6,617**	**12.27%**
2040	**7,429**	**12.27%**
2050	**8,340**	**12.27%**



A majority of the land use during Alton's early years was primarily for farming.[3)] The earliest settlements cleared land for subsistence agriculture. The most favorable agricultural land was found in the eastern and southern parts of New Durham Gore. Alton's agricultural land was greatly expanded for grazing of sheep during the "Great Sheep Boom" from 1810-1840. According to ecologist Tom Wessels' "Reading the Forested Landscape: A Natural History of New England," the sheep boom of the 19th century had its start in Europe and spread to New England. This led to the deforestation of central New England and the building of stone walls to keep the sheep corralled, including many of those found in Alton's woods today. By 1840, there were an average of 65 sheep per square mile – more than two sheep for every person. Competition and oversupply of wool among other factors quickly turned the boom to a bust and farms were rapidly abandoned.

As the population of Alton continues to increase, locations of development will need to be taken into consideration. The primary rural character and the natural areas present in the town give Alton its unique identity, and without the consideration for future development strategies the reason people move here will be lost. Based on 2019 data from the Multi-Resolution Land

Characteristics Consortium (MRLC), approximately 3,761 acres of Alton is comprised of developed area, which is 9% of the land base area of the town (~41,577.02 acres due to the exclusion of Lake Winnipesaukee). These 3,761 acres can be further broken down into several categories: Developed Minimal-Green Space (2,156 acres), Developed Low Intensity (1,049 acres), Developed Medium Intensity (493 acres), and Developed High Intensity (62 acres). The MRLC data is based on Landsat imagery and various spatial datasets including the United States Department of Agriculture's Cropland data and the United States Fish & Wildlife Service's National Wetland Inventory data.[15)]

Land-Use Category Definition (as defined within the 2019 MRLC Metadata):

Developed, Minimal-Green Space (Considered as Developed, Open Space within the Metadata) – "Includes areas with a mixture of some constructed materials, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20% of total cover. These areas most commonly include large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.

Developed, Low Intensity - Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20%-49% of total cover. These areas most commonly include single-family housing units.

Developed, Medium Intensity - Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50%-79% of the total cover. These areas most commonly include single-family housing units.

Developed, High Intensity - Includes highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses and commercial/industrial. Impervious surfaces account for 80%-100% of the total cover."[15)]

Table 2-3: 2019 Developed Land Use within Alton

Alton Developed Areas - (Based on 2019 Land Cover Data)		
Developed Land-Use Category	**Acreage**	**% of Alton's Landbase Area (41,577.02 acres)**
Developed, Minimal-Green Space	2,156	5.2%
Developed, Low Intensity	1,049	2.5%
Developed, Medium Intensity	493	1.2%
Developed, High Intensity	62	0.1%
Total	**3,761**	**9.0%**

Developed Minimal-Green Space is the most dominant type of development within the town and is primarily composed of roadways and parks. The greatest pockets of high intensity development are found near the southern tip of Lake Winnipesaukee and east of Wentworth Pond. Despite some pockets of high intensity development, this category of development contributes approximately 0.1% of Alton's land base. The physical characteristics of Alton's land areas such as its mountainous terrain and quantity of water resources has affected how development is distributed throughout the town. A majority of the town's overall development has occurred near waterbodies/watercourses, while minimal development has occurred on areas of steep terrain especially near West Alton, which has some of the steepest slopes in all of Alton. The overall low percentage of developed areas aids in maintaining Alton's rural and scenic character, and accentuating its popularity as a seasonal destination.

Residential development overtime can also assessed based on the approved building permits from a respective year. Table 2-4 below shows the quantity of approved building permits for new houses/rebuilds, remodels, new commercial buildings, and new lots within Alton between 2012 - 2021.

Table 2-4: Approved Building Permits within Alton [16),17),18),19),20)]

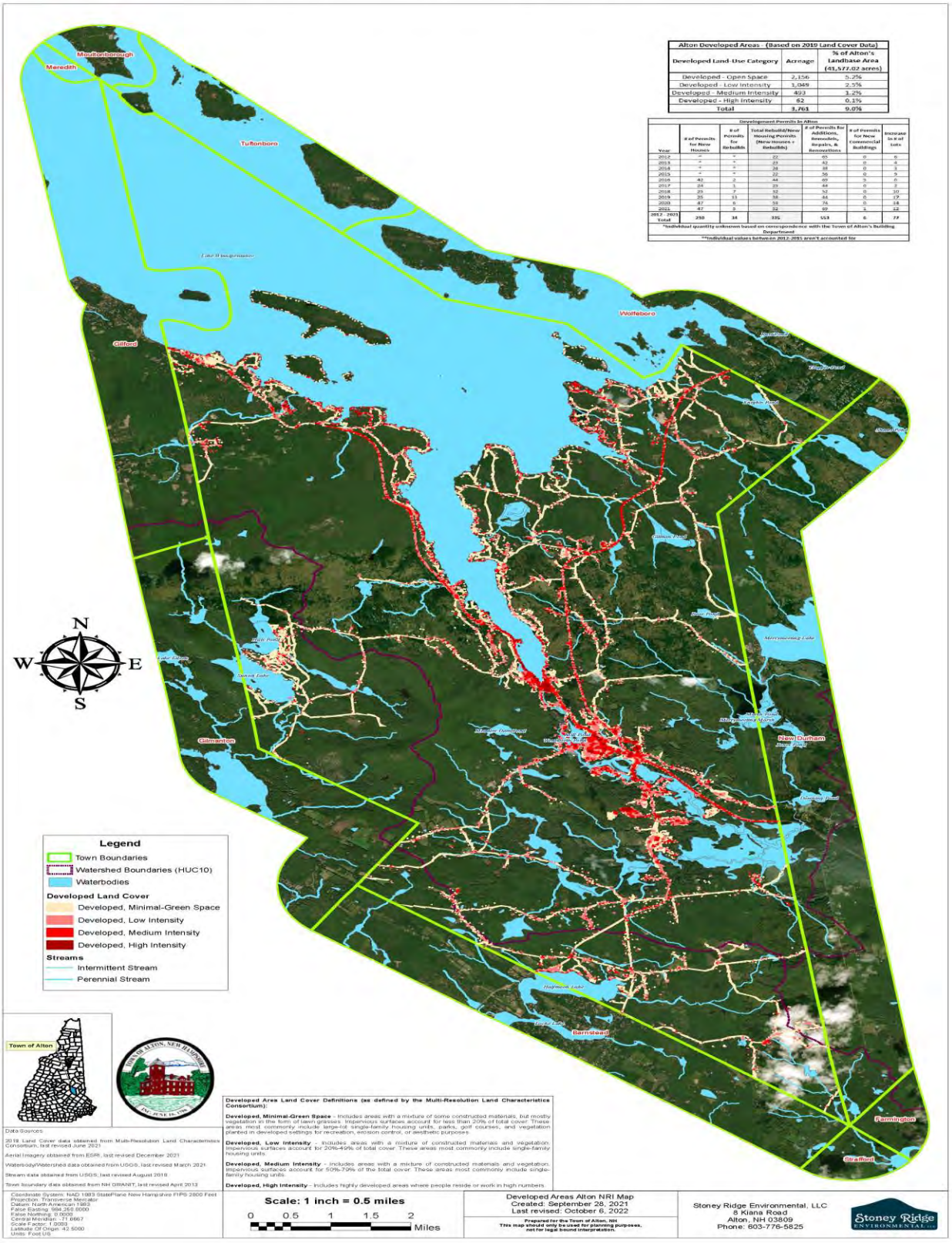
Development Permits in Alton						
Year	# of Permits for New Houses	# of Permits for Rebuilds	Total Rebuild/New Housing Permits (New Houses + Rebuilds)	# of Permits for Additions, Remodels, Repairs, & Renovations	# of Permits for New Commercial Buildings	Increase in # of Lots
2012	*	*	22	65	0	6
2013	*	*	23	42	0	4
2014	*	*	24	38	0	3
2015	*	*	22	56	0	9
2016	42	2	44	69	5	0
2017	24	1	25	44	0	2
2018	25	7	32	52	0	10
2019	25	13	38	44	0	17
2020	47	6	53	74	0	14
2021	47	5	52	69	1	12
2012 - 2021 Total	**210**	**34**	**335**	**553**	**6**	**77**
***Individual quantity unknown based on correspondence with the Town of Alton's Building Department**						
****Individual values between 2012-2015 aren't accounted for**						

Building permits were evaluated from 2012 up to the most recent collected data which was 2021. Between 2017 through 2019, new housing permits (not including rebuilds) were leveled at roughly 25 permits. In 2020 and 2021, the recorded number of new building permits (not including rebuilds) increased by nearly double the quantity from the past few years, and it was also the largest number of permits accounted for within this assessed period. Additionally, 2020 and 2021 had the largest quantity of permits for overall building permits for new homes + rebuilds as well as for remodels. This large increase in building permits within 2020 and 2021 is speculated to be related to the remote work dynamic shift caused by the Coronavirus, which started within the U.S. in early 2020. The quantity of new house building permits for 2022 is anticipated to be similar in quantity to that of 2020 and 2021 reflecting the continuation of work from home opportunities for the public.

Developed Land Cover Map Methodology

The main data analyzed was the 2019 National Land Cover Data (NLCD) acquired from the MRLC. This data depicts all types of land cover throughout the United States, however developed areas were the ones being focused on. This 2019 NLCD is represented as raster data (pixelized data), and in order to assess approximate acreage of developed areas, this data was first converted from raster data to vector data (data represented as points, lines, and/or polygons). Having vector data enables one to estimate the area of a certain feature. The 2019 NLCD was then clipped (cut out extraneous data outside of a noted boundary) to the town of Alton's boundary and only the land type covers related to development were displayed and had their area calculated.

Alton Developed Land Cover



Section 3: Water Resources

3.1 Watersheds

Watersheds are areas of a certain region where all the water resources such as rivers/streams or rainfall drain into a common outlet point.[21)] Watersheds can be assessed on a variety of scales known as Hydrologic Unit Codes (HUC). The smaller the HUC value then the more expansive the area to be assessed will be. HUC values can be level 2 (region), 4 (sub-region), 6 (basin or accounting unit), 8 (sub-basin or cataloguing unit), 10 (watershed), or 12 (sub-watershed).[22)] Each subsequent unit resides in the area of the previous unit. HUC2 is the broadest of the scales and HUC 12 is the smallest and resides within HUC10 which resides within HUC8 and so forth. For the purposes of this Natural Resource Inventory, watersheds within Alton will be assessed on the HUC10 scale.

There are three different HUC10 watersheds that can be found in Alton and they are the Lake Winnipesaukee Watershed, Cocheco River Watershed, and the Headwaters Suncook River Watershed. The Lake Winnipesaukee Watershed includes hydrologic areas such as Lake Winnipesaukee, Merrymeeting River, Coffin Brook, Knights Pond, and many others. This watershed accounts for 43,446 acres of Alton which is approximately 81.6% of the town, and encompasses the largest part of the town in comparison to the other two watersheds. The next largest watershed is the Headwaters Suncook River, which comprises of 9,429 acres of Alton (approximately 17.7% of the town). This watershed includes important water resources such as Sunset Lake, Frohock Brook, Halfmoon Lake, and Hills Pond. The last watershed, the Cocheco River Watershed, encompasses a small portion of the town at 356 acres or approximately 0.7% of Alton. No significant lakes or rivers within Alton are found in the boundary of the Cocheco River Watershed. The only water resources observed in this watershed in Alton include small unnamed waterbodies and wetlands/wetland drainages.

Table 3-1: HUC10 Watersheds and their respective area within Alton

HUC10 Watersheds within Alton		
Watershed Name	**Acreage**	**% of Alton**
Lake Winnipesaukee	43,446	81.6%
Cocheco River	356	0.7%
Headwaters Suncook River	9,429	17.7%
Total	**53,231**	**100.0%**

3.2 Surface Waters

Wetlands & Hydric Soils (Poorly/Very Poorly Drained Soils)

Under Title L: Water Management and Protection – Chapter 482-A: Fill & Dredge in Wetlands, wetland is defined as "an area that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal conditions does support, a prevalence of vegetation typically adapted for life in saturated soil conditions."[23] Wetlands are highly important for reasons that include: providing habitat for both aquatic/terrestrial plants and animals, assist in flooding control, aid in the absorption of nutrients/sediments/pollutants, and also enhanced recreational activities (bird watching, fishing, hiking, etc.).[24] The National Wetland Inventory (NWI) captures wetland data all across the United States through the detailed analysis of aerial imagery and LiDAR data. The NWI classifies wetlands based on the Cowardin classifications.[25] The following Cowardin wetland systems can be found within Alton: Lacustrine (related to lakes), Palustrine (related to freshwater inland wetlands), and Riverine (related to rivers). Each of these systems can be divided further into classes. For this NRI analysis, wetlands were assessed based on the system category for Lacustrine and Riverine wetlands and then on the system-class category for Palustrine wetlands. Alton is home to a large number of wetland systems and areas. If assessing only the land base area of Alton (excluding Lake Winnipesaukee), a total of 3,767.88 acres of the town area can be considered as wetland or approximately 9.06%. Palustrine wetlands in general account for a total of 2,755.40 acres within Alton, and the dominant class of Palustrine wetlands is Scrub-Shrub (PSS). While there is some sporadic scattering of Scrub-Shrub wetlands throughout Alton, the largest concentration of these types of wetland can be located near the Merrymeeting River. The overall largest networks of Palustrine wetlands were observed near the Merrymeeting River and Coffin Brook. Riverine wetland systems throughout Alton comprise of approximately 379.52 acres of area. Lacustrine wetland systems throughout Alton, excluding Lake Winnipesaukee, consists of 632.96 acres. The lacustrine wetland system associated with Lake Winnipesaukee alone has a total area of 11,716.41 acres.

Table 3-2: Wetlands found throughout Alton

NWI Wetland Types by Area in Alton (2021)			
Dominant Wetland Types	**Area (Acres)**	**% of Overall Wetlands**	**% of Landbase Area of Alton (41,577.02 acres)**
Scrub-Shrub (PSS)	1,130.90	30.01%	2.72%
Emergent (PEM)	713.33	18.93%	1.72%
Forested Wetland (PFO)	704.02	18.68%	1.69%
Unconsolidated Bottom (PUB)	146.95	3.90%	0.35%
Aquatic Bed (PAB)	60.20	1.60%	0.14%
Lacustrine (L) - Excluding Lake Winnipesaukee	632.96	16.80%	1.52%
Riverine (R)	379.52	10.07%	0.91%
Total (overall)	**3,767.88**	**100.00%**	**9.06%**

The calculated wetlands are based entirely on the NWI data, which again mainly identifies wetlands through imagery and LiDAR data which captures open very wet areas. Wetland identification based on imagery and LiDAR leaves out a key component which defines wetlands, and that is soil type. In order to determine a truer estimate of Alton's wetlands, soil data attained from the Natural Resources Conservation Service (NRCS) is incorporated into this analysis. Hydric soil conditions are one of the prime components to the identification of wetlands. These soils are typically labeled as poorly drained soils or very poorly drained soils. Alton is home to approximately 8,078.26 acres of poorly drained and very poorly drained soils, which make up nearly 19.5% of the land base area of the town. The dominant of these two soil types is very poorly drained soils which comprise 10.71% of Alton's land base area or 4,450.92 acres of it. Distribution of these soils occurs generally throughout all of the town with some lesser concentrations west of Winnipesaukee. This makes sense, as the general western area of Winnipesaukee has some of the steepest areas found within Alton.

Table 3-3: Very-Poorly/Poorly Drained Soils Overall Acreage within Alton

Poorly Drained Soils Area in Alton		
Soil Type	**Area (Acres)**	**% of Landbase Area in Alton (41,577.02 acres)**
Poorly Drained Soil	3,627.34	8.72%
Very Poorly Drained Soil	4,450.92	10.71%
Total Poorly/Very Poorly Drained Soils	**8,078.26**	**19.43%**

Table 3-4: Hydric Soils & Very-Poorly/Poorly Drained Soils Found within Alton

Specific Very-Poorly/Poorly Drained Soils Types in Alton				
Soil Map Unit Name	**Soil Map Unit Symbol**	**Soil Type**	**Area (Acres)**	**% of Very-Poorly / Poorly Drained Soils in Alton**
Pillsbury fine sandy loam, 0 to 8 percent slopes, very stony	647B	Poorly Drained	2,815.44	34.85%
Moosilauke fine sandy loam, 3 to 8 percent slopes, very stony	415B	Poorly Drained	532.06	6.59%
Naumburg loamy sand, 0 to 5 percent slopes	214A	Poorly Drained	157.57	1.95%
Moosilauke fine sandy loam, 0 to 3 percent slopes, very stony	415A	Poorly Drained	92.52	1.15%
Rumney fine sandy loam, 0 to 3 percent slopes, frequently flooded	105A	Poorly Drained	28.79	0.36%
Leicester-Ridgebury fine sandy loams, 3 to 8 percent slopes, very stony	LrB	Poorly Drained	0.96	0.01%
Meadowsedge peat, 0 to 1 percent slopes	894A	Very Poorly Drained	1,819.63	22.53%
Chocorua, 0 to 1 % slopes	394A	Very Poorly Drained	1,241.12	15.36%
Searsport-Chocorua-Naumburg complex, 0 to 1 percent slopes	17A	Very Poorly Drained	757.62	9.38%
Peacham mucky peat, 0 to 8 percent slopes, very stony	649A	Very Poorly Drained	367.65	4.55%
Catden mucky peat, 0 to 1 % slopes, ponded	194A	Very Poorly Drained	243.66	3.02%
Medomak mucky silt loam, 0 to 2 percent slopes, frequently flooded	406A	Very Poorly Drained	11.36	0.14%
Freetown and Swansea mucky peats, 0 to 2 percent slopes	Mp	Very Poorly Drained	9.86	0.12%
Fresh water marsh	Fa	Very Poorly Drained	0.02	0.00%
Total Poorly/Very Poorly Drained Soils	**-**	**-**	**8,078.26**	**100.00%**

Of the poorly drained soils located within Alton, the most frequent Soil Map Unit is Pillsbury fine sandy loam, 0 to 8 percent slopes, very stony which comprises approximately 34.85% of all the poorly-very poorly drained soils within Alton. The two most common Soil Map Units for very poorly drained soils are Meadowsedge peat, 0 to 1 percent slopes and Chocorua, 0 to 1 % slopes which respectively comprise of 22.53% and 15.36% of the town's poorly-very poorly drained soils.

To acquire the final estimate of overall wetlands within the town, calculated NWI data will be added together with the overall quantity of hydric soils that don't overlap with the NWI data. Of the 8,076.26 acres of hydric soils, approximately 5,569.88 acres of them don't overlap with the NWI wetlands. Taking the 5,569.88 acres of hydric soils and the 3,767.88 acres of NWI wetlands (excluding Lake Winnipesaukee) gives the true estimate of wetland totals found within Alton, which is 9,337.76 acres. This is approximately 22.46% of the entire land base of Alton. If the lacustrine wetlands of Lake Winnipesaukee (11,716.41 acres) are included in this assessment then the new total of wetlands within the town is 21,054.17 acres or approximately 39.55% of the entire area of Alton (53,231 acres).

Of the 3,767.88 acres of NWI wetlands accounted for (excluding the lake), approximately 904.88 acres are located within conservation lands, which is approximately 24% of all the NWI wetlands located in Alton. Of the 5,569.88 acres of hydric soils that don't overlap with the NWI wetlands, approximately 756.79 acres of them are located within conservation lands, which is approximately 13.6% of the nonoverlapped hydric soils in Alton. The quantity of the true estimated wetlands within Alton (NWI wetlands + nonoverlapped hydric soils) that are located within conservation lands is 1,661.67 acres, which is approximately 17.80% of the true estimated wetlands within the town excluding the lacustrine wetlands of Lake Winnipesaukee.

Table 3-5: Overall Wetland Resources within Alton (excluding Lake Winnipesaukee)

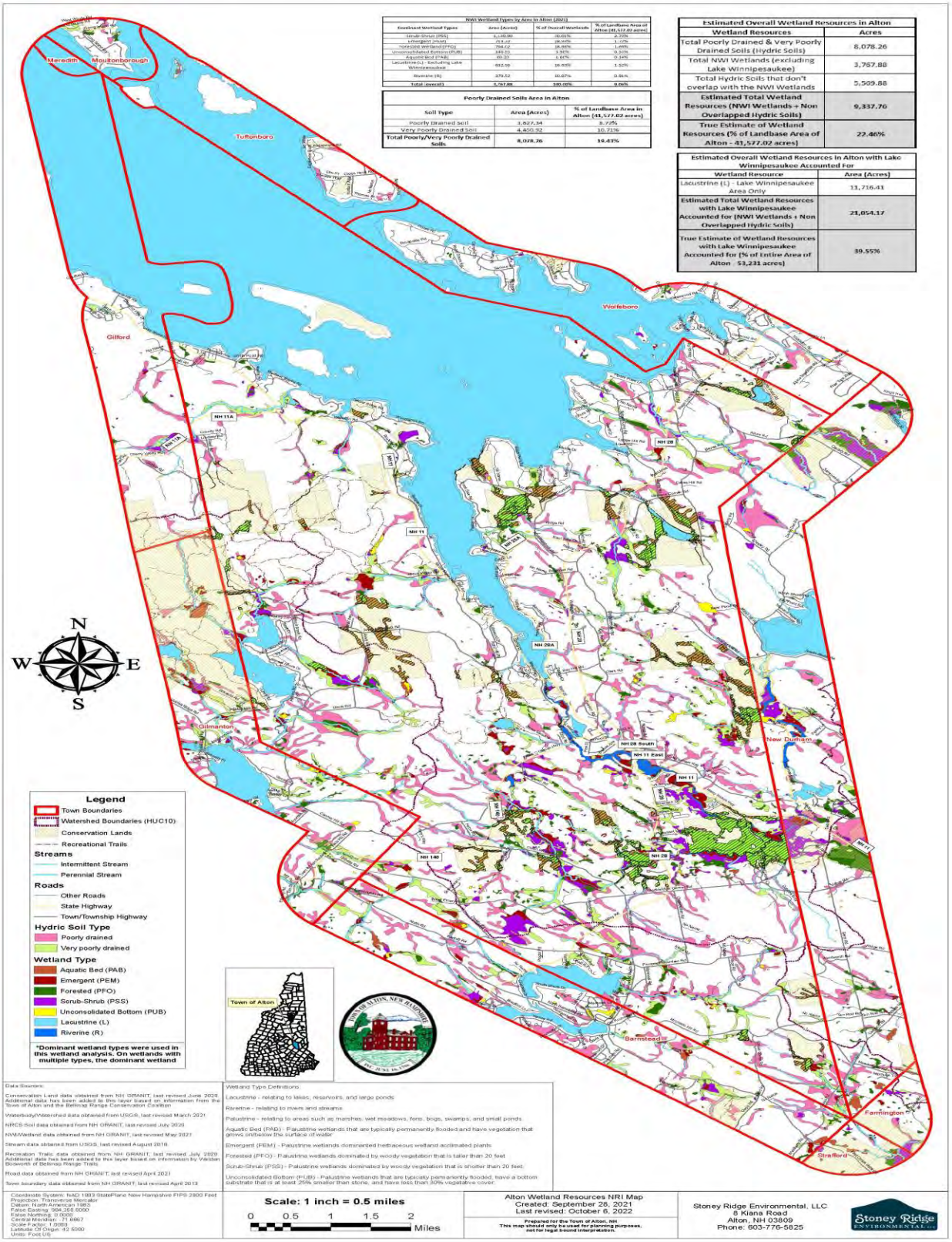
Estimated Overall Wetland Resources in Alton	
Wetland Resources	**Acres**
Total Poorly Drained & Very Poorly Drained Soils (Hydric Soils)	8,078.26
Total NWI Wetlands (excluding Lake Winnipesaukee)	3,767.88
Total Hydric Soils that don't overlap with the NWI Wetlands	5,569.88
Estimated Total Wetland Resources (NWI Wetlands + Non Overlapped Hydric Soils)	**9,337.76**
True Estimate of Wetland Resources (% of Landbase Area of Alton - 41,577.02 acres)	**22.46%**

Table 3-6: Overall Wetland Resources within Alton (including Lake Winnipesaukee)

Estimated Overall Wetland Resources in Alton with Lake Winnipesaukee Accounted For	
Wetland Resource	**Area (Acres)**
Lacustrine (L) - Lake Winnipesaukee Area Only	11,716.41
Estimated Total Wetland Resources with Lake Winnipesaukee Accounted for (NWI Wetlands + Non Overlapped Hydric Soils)	**21,054.17**
True Estimate of Wetland Resources with Lake Winnipesaukee Accounted for (% of Entire Area of Alton - 53,231 acres)	**39.55%**

To date, there are no designated Prime Wetlands within Alton. Prime Wetlands under RSA Section 482-A:15 are defined as wetlands that "because of their size, unspoiled character, fragile condition, or other relevant factors, make them of substantial significance. A prime wetland shall be at least 2 acres in size, shall not consist of a water body only, shall have at least 4 primary wetland functions, one of which shall be wildlife habitat, and shall have a width of at least 50 feet at its narrowest point."[26)] During 1984 to 1985, a wetland inventory and classification study within the town of Alton was conducted by Nancy Beckwith Rendall on behalf of the Alton Conservation Commission. Ms. Rendall used wetland soil maps, aerial photography, and ground-truthing to identify 192 wetlands within the town of Alton.[27)] Of these wetlands, 35 were considered by Ms. Rendall to be viable candidates for designation as prime wetlands.[28)] Please see Ms. Rendall's publications, "Alton's Wetlands: A User's Manual – Inventory and Classification" (October 1984) and "Alton's Wetlands: Phase II, Evaluation & Designation of Prime Wetlands" (1984-1985), to get a better understanding of the methodologies and documented wetland notes from this study. If future prime wetland designation is sought after by the town, these publications would be valuable assets in that process.

Alton Wetland Resources



Lakes & Ponds

Alton is home to a large quantity of waterbodies that are dispersed throughout the town. These waterbodies form the basis of Alton's attraction as a vacation town, and play a vital role in aspects such as providing the character of the town, enabling recreational activities (such as fishing, nature viewing, boating, etc.), supporting wildlife habitat, and supplying potable drinking water. Based on information gathered from USGS, waterbodies account for over 25% of Alton's overall area with the largest waterbody obviously being Lake Winnipesaukee. Lake Winnipesaukee accounts for approximately 11,653 acres of the waterbodies throughout Alton, and it is also the waterbody whose reference line is located at the lowest elevation, 504.32 ft (above sea level). The waterbody located at the highest elevation is Bear Pond, whose reference line is situated at 809 ft (above sea level). Some waterbodies situated in Alton also extend into other municipalities, so in actuality those waterbodies are much larger than what is listed below in Table 2-7. Waterbodies that are located in multiple municipalities include Lake Winnipesaukee, Sunset Lake, Halfmoon Lake, Merrymeeting Marsh, and Marsh Pond. All of the waterbodies within Alton aside from the unnamed ones, Mill Pond, and Merrymeeting Marsh, are listed under the "NHDES Consolidated List Of Waterbodies Subject To RSA 483-B, The Shoreland Water Quality Protection Act (SWQPA)".[29)] A waterbody under this listing denotes that within 250 ft of the indicated reference line (as assigned by the NHDES), this area is under NHDES Shoreland Protection and work within these areas will generally require a NHDES Shoreland Permit. All waterbodies with their respective acreage and associated reference lines have been noted in Table 3-7.

Table 3-7: Waterbodies within Alton

Waterbodies within Alton			
Watershed Name	**Reference Line Elevation (ft above sea level) - if applicable**	**Acreage**	**% of Alton Waterbodies**
Lake Winnipesaukee	504.32	11,653	83.74%
Unnamed Waterbodies (Combined)	N/A	1,614	11.79%
Sunset Lake	808	202	1.45%
Halfmoon Lake	640	163	1.17%
Hills Pond	809	93	0.67%
Gilman Pond	755	48	0.35%
Knights Pond	655	32	0.23%
Meadow Dam Pond	681	28	0.20%
Mill Pond	N/A	27	0.19%
Marsh Pond	590	19	0.13%
Bear Pond	890	18	0.13%
Merrymeeting Marsh	N/A	12	0.08%
Wentworth Pond	526	7	0.05%
Total		**13,916**	**100.00%**

The large quantity of waterbodies within Alton also provide necessary habitat for a variety of fish species. Fish population and species surveys have been conducted by New Hampshire Fish & Game (NHFG) since the 1980s within waterbodies and watercourses throughout the state. NHFG has conducted at least one fish survey in the following waterbodies within Alton: Bear Pond, Gilman Pond, Halfmoon Lake, Knights Pond, Lake Winnipesaukee, and Sunset Lake. A total of 16 different fish species were identified by NHFG within Alton's waterbodies and they are: Brown Bullhead, Black Crappie, Bluegill, Burbot, Eastern Chain Pickerel, Landlocked Salmon, Largemouth Bass, Lake Trout, Lake Whitefish, Rainbow Trout (hatchery born trout only have been identified), Red Breasted Sunfish, Rock Bass, Smallmouth Bass, White Perch, Yellow Bullhead, and Yellow Perch.[30),31)] According to NHFG's List of Potential Wildlife of Greatest Conservation Need (which can be viewed in Table 4-2), the Burbot and Lake Trout are considered Species of Greatest Conservation Need and the Lake Whitefish is considered a Species of Special Concern in the state and a Species of Greatest Conservation Need.[32)] All three of these species were only documented within Lake Winnipesaukee. Lake Winnipesaukee is also the waterbody with most documented fish species diversity, containing at least 13 different fish species (documented fish species can be viewed in the tables below). With Lake Winnipesaukee being the largest waterbody of all the others, having the most documented variety of fish species, and also being the only waterbody documented to have three species listed as of Greatest Conservation Need, it can be concluded that Lake Winnipesaukee is the

most important waterbody within Alton especially pertaining to the suitability and support of diverse and healthy fish populations and habitats.

*It's important to note that while the fish species discussed within this section were documented and observed by NHFG this doesn't necessarily reflect all the fish species that may be found in the respective waterbodies. Additionally, while some waterbodies are part of multiple municipalities, for the purposes of this NRI, only Alton related survey points were taken into consideration.

Table 3-8: Identified Fish Species in Bear Pond, Alton [30),31)]

Bear Pond
Identified Fish Species
Brown Bullhead
Eastern Chain Pickerel
Largemouth Bass
1 survey documented - possibly occurred during the 1980s (exact year unknown)

Table 3-9: Identified Fish Species in Gilman Pond, Alton [30),31)]

Gilman Pond
Identified Fish Species
Brown Bullhead
Black Crappie
Eastern Chain Pickerel
Largemouth Bass
1 survey documented - possibly occurred during the 1980s (exact year unknown)

Table 3-10: Identified Fish Species in Halfmoon Lake, Alton [30),31)]

Halfmoon Lake
Identified Fish Species
Brown Bullhead*
Black Crappie*
Bluegill
Eastern Chain Pickerel*
Largemouth Bass
Red Breast Sunfish**
Smallmouth Bass
White Perch
Yellow Bullhead**
Yellow Perch**
*** = only documented in old 1980s survey**
**** = only documented in 2005 survey**
2 surveys were documented, 1x possibly during 1980s (exact year unknown) * 1x in 2005

Table 3-11: Identified Fish Species in Knights Pond, Alton [30),31)]

Knights Pond
Identified Fish Species
Brown Bullhead
Largemouth Bass
1 survey documented, 1x possibly during 1980s (exact year unknown)

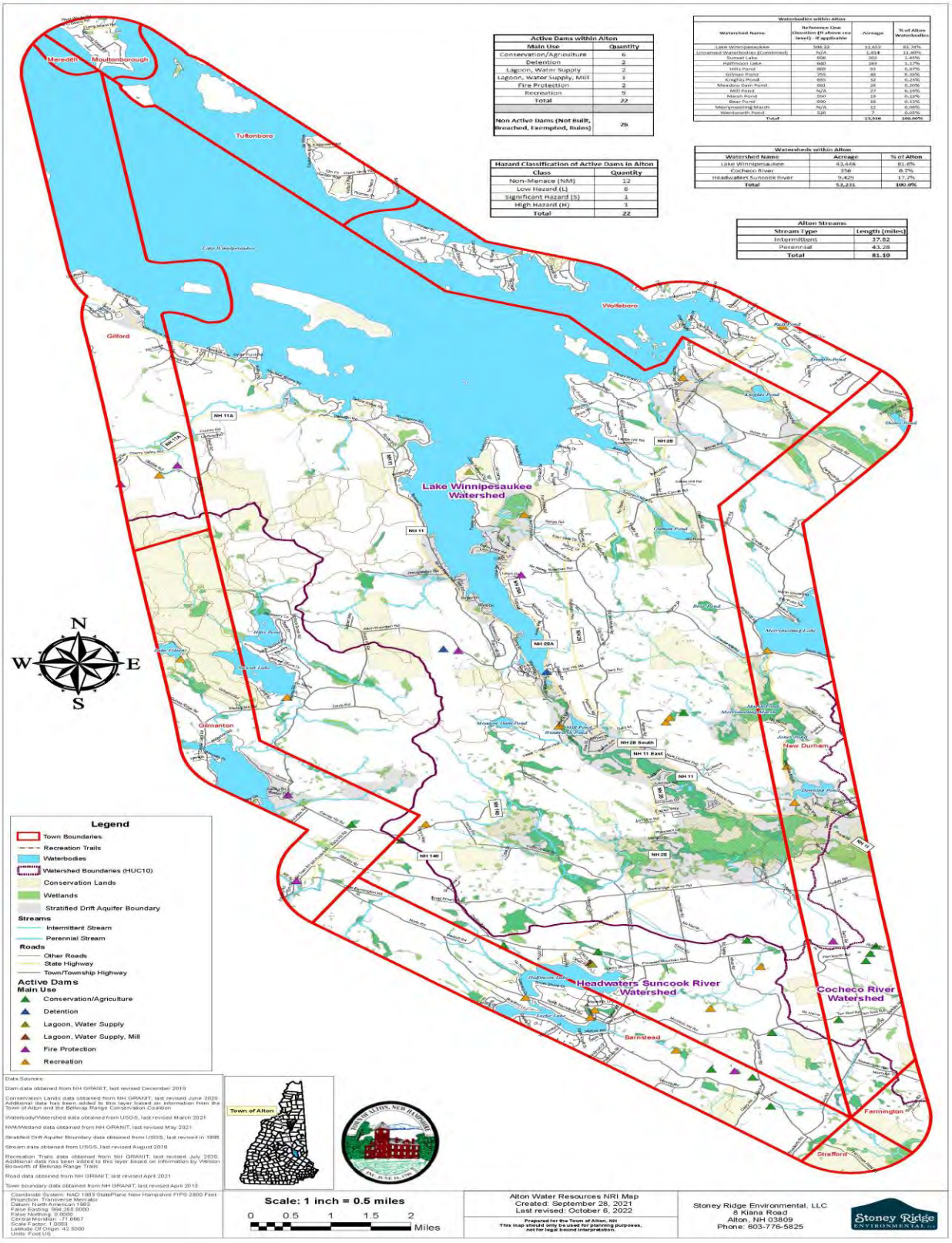
Table 3-12: Identified Fish Species in Lake Winnipesaukee, Alton [30),31)]

Lake Winnipesaukee
Identified Fish Species
Brown Bullhead*
Black Crappie*
Bluegill*
Burbot*
Landlocked Salmon*
Largemouth Bass**
Lake Trout*
Lake Whitefish***
Rainbow Trout - Hatchery Origin***
Rock Bass*
Smallmouth Bass****
White Perch*
Yellow Perch*****
*** = only documented in old 1980s survey**
**** = only documented in 1980s, 2004, & 2010 surveys**
***** = only documented in 1980s & 2014 surveys**
****** = documented in all surveys but the 2009 one**
******* = only documented in 2008 survey**
15 surveys documented, 1x possibly during 1980s (exact year unknown) & 1 survey every year since 2004 (no survey done in 2015-2016, 2018, and 2020-2022)

Table 3-13: Identified Fish Species in Sunset Lake, Alton [30),31)]

Sunset Lake
Identified Fish Species
Brown Bullhead
Eastern Chain Pickerel
Largemouth Bass
Smallmouth Bass
1 survey documented, 1x possibly during 1980s (exact year unknown)

Alton Water Resources



Rivers & Streams

Streams and rivers are another valuable water resource within the town. These water resources provide fresh drinking water to the town, nutrient cycling, stormwater drainage, wildlife habitat, and numerous recreational opportunities (fishing, boating, swimming, etc.). The USGS estimates that 81.1 miles of rivers/streams run throughout Alton with 37.82 miles attributed to perennial streams and 43.28 miles attributed to intermittent streams. Despite the large number of stream miles, there are only eight named streams that have been identified by the USGS – Beaver Brook, Coffin Brook, Frohock Brook, Hurd Brook, Merrymeeting River, Minge Brook, Watson Brook, and West Alton Brook. Cotton Brook, while not identified as a named stream by USGS, was manually listed due to its local significance. Most of these streams are classified as having a stream order between 1 and 3, however the Merrymeeting River is the only stream in Alton to have a section of it classified as a stream order of 4. Streams classified as order 4 and above also fall into NHDES Shoreland Protection[33)], thereby making the stream order 4 section of the Merrymeeting River the only stream/river with NHDES Shoreland Protection (NHDES Wetland Protection still applies to these watercourses).

Of all the watercourses found in Alton, Coffin Brook is the longest of them at approximately 7.20 miles and the Merrymeeting River coming next at approximately 5.57 miles. The two smallest of the named watercourses are Minge Brook at approximately 1.20 miles and Cotton Brook at approximately 0.70 miles. A large network of unnamed streams (as determined by USGS and excluding Cotton Brook) are located throughout Alton with an approximate total of 53.42 miles. These unnamed streams account for 65.87% of all the watercourses found within the town. Of the identified watercourses in the town, all but Frohock Brook, Coffin Brook, and Cotton Brook have direct hydrologic connections to Lake Winnipesaukee. Frohock Brook directly connects to Hills Pond, Coffin Brook directly connects to the Merrymeeting River, and Cotton Brook directly connects to Gilman Pond and Hurd Brook.

Table 3-14: Perennial Streams/Rivers within Alton

Alton Perennial Streams (with included Artificial Path segments)				
Stream/River	**Length (ft)**	**Length (miles)**	**Stream Orders**	**Primary Stream Order**
Beaver Brook	15,353.27	2.91	2	2
Coffin Brook	33,371.73	6.32	1-3	3
Frohock Brook	10,764.09	2.04	2	2
Hurd Brook	11,615.46	2.20	1-2	1
Merrymetting River	29,398.70	5.57	3-4	4
Minge Brook	6,337.02	1.20	1	1
Watson Brook	12,950.84	2.45	1-3	2
West Alton Brook	11,551.98	2.19	2	2
Cotton Brook	3,679.29	0.70	1	1
Unnamed Perennial Streams (excluding artificial path sections)	64,662.98	12.25	1-3	N/A
Total Length	**199,685.36**	**37.82**		

Table 3-15: Intermittent Streams/Rivers within Alton

Alton Intermittent Streams				
Stream/River	**Length (ft)**	**Length (miles)**	**Stream Orders**	**Primary Stream Order**
Coffin Brook	4,668.05	0.88	1	1
Frohock Brook	1,392.02	0.26	1	1
Hurd Brook	3,535.34	0.67	1	1
Watson Brook	1,501.90	0.28	1	1
Unnamed Intermittent Streams	217,406.59	41.18	1-2	N/A
Total Length	**228,503.90**	**43.28**		

Table 3-16: Overall Streams/Rivers within Alton

Alton Streams (Perennial & Intermittent Streams)				
Stream/River	**Length (ft)**	**Length (miles)**	**Stream Orders**	**Primary Stream Order**
Beaver Brook	15,353.27	2.91	2	2
Coffin Brook	38,039.78	7.20	1-3	3
Frohock Brook	12,156.11	2.30	2	2
Hurd Brook	15,150.80	2.87	1-2	1
Merrymeeting River	29,398.70	5.57	3-4	4
Minge Brook	6,337.02	1.20	1	1
Watson Brook	14,452.74	2.74	1-3	2
West Alton Brook	11,551.98	2.19	2	2
Cotton Brook	3,679.29	0.70	1	1
Unnamed Streams (excluding artificial path sections)	282,069.57	53.42	1-3	N/A
Total Length	**428,189.26**	**81.10**		
***These are the combined overall lengths of intermittent and perennial sections of designated streams/rivers**				

The streams and rivers throughout Alton also support a variety of fish species. As noted under the Lakes & Ponds section, NHFG has been conducting fish population and species surveys since the 1980s within waterbodies and streams/rivers throughout the state. NHFG has conducted at least one fish survey in the following streams/rivers within Alton – Beaver Brook, Coffin Brook, Hurd Brook, Minge Brook, Watson Brook, and West Alton Brook. There was also a survey done in 2013 within the Merrymeeting River, however this survey point was done solely in the town of New Durham. A total of 12 different fish species were identified by NHFG within Alton's streams and rivers and they are: Blacknose Dace, Brown Bullhead, Bridle Shiner, Common White Sucker, Creek Chubsucker, Common Sunfish, Eastern Brook Trout (both native and hatchery born trout have been identified), Eastern Chain Pickerel, Fallfish, Golden Shiner, Landlocked Salmon, and Largemouth Bass.[30),31)] According to NHFG's List of the Potential Wildlife of Greatest Conservation Need (which can be viewed at Table 4-2 in this report), the Eastern Brook Trout is considered a Species of Greatest Conservation Need and the Bridle Shiner is considered as a State Threatened Species and also a Species of Greatest Conservation Need.[32)] The Eastern Brook Trout was documented within Beaver Brook, Coffin Brook, Hurd Brook, Watson Brook, and West Alton Brook. Both native and hatchery born trout were identified within these watercourses except for West Alton Brook where only native born trout were found. Out of all the surveyed watercourses/waterbodies within the town of Alton, the

Bridle Shiner was only identified within Coffin Brook. Coffin Brook is also the watercourse with the most documented fish species diversity, containing at least 10 different fish species (documented fish species can be viewed in the tables below). While the Merrymeeting River survey was not done within Alton, it can be extrapolated that what was observed from the survey point in New Durham can be reflected to the portion of the river within Alton. The one survey done for the Merrymeeting didn't find a large diversity of fish or any species of concern, however it was noted by the surveyors that this river has suitable habitat for Bridle Shiners. With Coffin Brook having the largest fish species diversity and the only documented cases of Bridle Shiners, it can be concluded that Coffin Brook is the most important watercourse within the town when it comes to sustaining fish populations and habitat.

*It's important to note that while the fish species discussed within this section were documented and observed by NHFG this doesn't necessarily reflect all the fish species that may be found in the respective watercourses. Additionally, all the fish species discussed were based on survey points only taken in Alton except for the one survey point in the Merrymeeting River, which was completed in New Durham. While some of these streams/rivers are part of multiple municipalities, for the purposes of this NRI, only Alton related survey points and the one New Durham Merrymeeting River survey point were taken into consideration. With the Merrymeeting River being the second largest river/stream by length within the town, SRE felt it was important to include at least one fish survey located within it.

Table 3-17: Identified Fish Species in Beaver Brook, Alton [30),31)]

Beaver Brook
Identified Fish Species
Blacknose Dace
Common Shiner*
Common White Sucker
Creek Chub*
Eastern Brook Trout
Eastern Brook Trout - Hatchery Origin*
Fallfish
Landlocked Salmon*
Longnose Dace
*** = only documented in 2010 survey**
2 surveys were documented, 1x in 1999 & 1x in 2010

Table 3-18: Identified Fish Species in Coffin Brook, Alton [30),31)]

Coffin Brook
Identified Fish Species
Brown Bullhead*
Bridle Shiner**
Creek Chubsucker**
Common Shiner***
Common Sunfish*
Eastern Brook Trout***
Eastern Brook Trout - Hatchery Origin***
Eastern Chain Pickerel
Fallfish
Golden Shiner**
Largemouth Bass**
*** = only documented in 2005**
**** = documented in 2005 & 2014, but not 2010**
***** = only documented in 2010**
8 surveys were documented, 2x in 2005, 2x in 2010, & 4x in 2014

Table 3-19: Identified Fish Species in Hurd Brook, Alton [30),31)]

Hurd Brook
Identified Fish Species
Eastern Brook Trout
Eastern Brook Trout - Hatchery Origin
3 surveys were documented, 3x in 2010

Table 3-20: Identified Fish Species in the Merrymeeting River, New Durham (fish species found in the New Durham survey are expected to be found in Alton) [30),31)]

Merrymeeting River
Identified Fish Species
Common Sunfish
Common White Sucker
Eastern Chain Pickerel
Yellow Perch
1 survey documented, 1x in 2013 and was done within the town of New Durham

Table 3-21: Identified Fish Species in Minge Brook, Alton [30),31)]

Minge Brook
Identified Fish Species
N/A
2 surveys documented, 2x in 2010. No fish were observed in both surveys

Table 3-22: Identified Fish Species in Watson Brook, Alton [30),31)]

Watson Brook
Identified Fish Species
Blacknose Dace
Common White Sucker
Eastern Brook Trout
Eastern Brook Trout - Hatchery Origin
1 survey documented, 1x in 2010

Table 3-23: Identified Fish Species in West Alton Brook, Alton [30),31)]

West Alton Brook
Identified Fish Species
Blacknose Dace
Eastern Brook Trout
Landlocked Salmon
1 survey documented, 1x in 2010

3.3 Dams

A total of 48 dams exist in Alton, however only 22 of these are considered as active. These dams are used for a multitude of purposes that include conservation, agriculture, recreation, fire protection, detention, lagoons, water supplies, and mills. The main uses for a majority of the dams found within Alton are used for recreational purposes (9 dams in total) or conservation/agriculture purposes (6 dams in total). More than half of these dams are associated with unnamed USGS streams.

The NHDES gives each active dam a hazard classification, and below are the listed classes and their respective definition as defined by NHDES –

"Non-Menace: A dam that is not a menace because it is in a location and of a size that failure or misoperation of the dam would not result in probable loss of life or loss to property provided the dam is either:

- Less than 6 feet in height if it has a storage capacity greater than 50 acre-feet.
- Less than 25 feet in height if it has a storage capacity of 15 to 50 acre-feet.

Low Hazard: A dam that has a low hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in any of the following:

- No possible loss of life.
- Low economic loss to structures or property.
- Structural damage to a town or city road or private road accessing property other than the dam owner's that could render the road impassable or otherwise interrupt public safety services.
- The release of liquid industrial, agricultural or commercial wastes, septage or contaminated sediment if the storage capacity is less than 2 acre-feet and is located more than 250 feet from a water body or water course.
- Reversible environmental losses to environmentally sensitive sites.

Significant Hazard: A dam that has a significant hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in any of the following:

- No probable loss of lives.
- Major economic loss to structures or property.

- Structural damage to a Class I or Class II road that could render the road impassable or otherwise interrupt public safety services.
- Major environmental or public health losses, including one or more of the following:
    - Damage to a public water system, as defined by RSA 485:1-a, XV, which will take longer than 48 hours to repair.
    - The release of liquid industrial, agricultural or commercial wastes, septage, sewage or contaminated sediments if the storage capacity is 2 acre-feet or more.
    - Damage to an environmentally sensitive site that does not meet the definition of reversible environmental losses.

High Hazard: A dam that has a high hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in probable loss of human life as a result of:

- Water levels and velocities causing the structural failure of a foundation of a habitable residential structure or commercial or industrial structure, which is occupied under normal conditions.
- Water levels rising above the first floor elevation of a habitable residential structure or a commercial or industrial structure, which is occupied under normal conditions when the rise due to dam failure is greater than one foot.
- Structural damage to an interstate highway, which could render the roadway impassable or otherwise interrupt public safety services.
- The release of a quantity and concentration of material, which qualify as "hazardous waste" as defined by RSA 147-A:2 VII.
- Any other circumstance that would more likely than not cause one or more deaths"[34)]

In Alton, a majority of the active dams have a hazard classification of Non-menace or Low Hazard (a total of 20 combined). Of the remaining two active dams, one has a hazard class of significant and the other has a hazard class of high. The active dam with the significant hazard level is known as the Sunset Lake Dam and is associated with the Suncook River. The active dam with the high hazard level is known as the Alton Power Dam and is associated with the Merrymeeting River.

The identification and maintenance of dams for any municipality is an important matter for public safety. In March of 1996, a dam located at Meadow Dam Pond known as the Bergeron Dam or Meadow Pond Dam failed causing the death of one resident, property damage, and the washout of a section of NH Route 140.[35)] During the aftermath of this incident, modifications were made to the state of New Hampshire's Dam Bureau. Such modifications included increasing the number of dam inspectors for the bureau and the prohibition of the construction of privately owned dams that have no public use and that could cause downstream harm.[36)] Since this incident, there have been no other severe documented dam failures/breaches within the town of Alton.

Table 3-24: Active Dams and their main uses within Alton

Active Dams within Alton	
Main Use	**Quantity**
Conservation/Agriculture	6
Detention	2
Lagoon, Water Supply	2
Lagoon, Water Supply, Mill	1
Fire Protection	2
Recreation	9
Total	**22**
Non Active Dams (Not Built, Breached, Exempted, Ruins)	**26**

Table 3-25: Hazard Classification of Active Dams found within Alton

Hazard Classification of Active Dams in Alton	
Class	**Quantity**
Non-Menace (NM)	12
Low Hazard (L)	8
Significant Hazard (S)	1
High Hazard (H)	1
Total	**22**

3.4 Aquifers & Groundwater

Groundwater resources are a highly important component of Alton's overall water resources. Aquifers are used to identify areas of clean usable water primarily for drinking water supplies. Stratified drift aquifers are defined as "coarse-grained sand or sand and gravel deposits that contain a usable supply of water."[37] These types of aquifers underlie nearly 14% of the land base area of New Hampshire[37] and within the land base area of Alton approximately 10.4% of it is underlain by stratified drift aquifers. To determine the general water producing capability of an aquifer, the transmissivity value is assessed. "Transmissivity quantifies the ability of the entire thickness of the aquifer to transmit water" and is typically calculated in square feet per day (ft^2/day).[37] Within Alton, stratified drift aquifers with a max transmissivity rate between 0 – 1000 ft^2/day make up the majority of all aquifers in the town with a total of 3,117.6 acres or 7.5% of the land base area. Higher yielding aquifers with a max transmissivity rate between 1,001 – 2,000 ft^2/day and between 2,001 – 4,000 ft^2/day collectively make up 1,195 acres or 2.88% of the land base area of Alton. The largest concentration of stratified drift aquifers especially those that are higher yielding are found south of Lake Winnipesaukee near the general area of the Merrymeeting River. Some other notable locations where pockets of stratified drift aquifers can be found are near Knights Pond, Marsh Pond/Merrymeeting Marsh, Coffin Brook, and the western and eastern sides of Alton Bay. Currently 1,154 acres of the underlain land base of Alton where stratified drift aquifers are located are protected within conservation lands, which accounts for approximately 26.8% of all the stratified drift aquifer areas in Alton. Of these protected aquifers, 731 acres of stratified drift aquifers with a max transmissivity rate between 0 – 1,000 ft^2/day are within conservation lands and 423 acres of stratified drift aquifers with a max transmissivity rate between 1,001 – 4,000 ft^2/day are within conservation lands.

Table 3-26: Stratified Drift Aquifers & their respective acreage within Alton

Stratified Drift Aquifers Within Alton		
Max Transmissivity Rate (ft^2/day)	**Acreage**	**% of Landbase Area in Alton (41,577.02 acres)**
0 - 1,000	3,117.6	7.50%
1,001 - 2,000	1,087.3	2.62%
2,001 - 4,000	107.7	0.26%
4,000+	None	0.00%
Total	**4,312.6**	**10.37%**

To aid in the identification of additional public water supplies, the New Hampshire Department of Environmental Services (NHDES) and the Society for the Protection of New Hampshire Forests (SPNHF) conducted a study in 1999 known as the Potential Favorable Gravel

Well Analysis (PFWGA) throughout the state. In this study several buffers were created based on transportation (roads, highways, etc.), hydrology (lakes, ponds, rivers, wetlands, etc.), known/potential contamination sources, and urban features (transmission lines, railroads, pipelines, etc.).[38)] Areas located beyond these buffers, located within the stratified drift aquifer area, and capable of producing at least 75 gallons of water per minute are considered as appropriate aquifers/wells with the greatest potential to provide future water supplies for municipalities. 75 gallons per minute was selected as the minimum by the NHDES, as they deemed it as the minimum rate that would be appropriate for a municipal water supply. [38)] An additional assessment of aquifers/wells capable of producing 150 gallons of water per minute or greater was also noted, and these areas were considered as very high-yield wells. Within the town of Alton, approximately 196.38 acres of the land base is underlain by potential favorable gravels wells yielding a rate of 75 gallons per minute, and 1.37 acres of the land base is underlain by potential favorable gravel wells yielding a rate of 150 gallons per minute. The overall PFWGA area within Alton is 197.76 acres or 0.48% of the land base area of the town. All sections of these potential favorable gravel wells are located south of Lake Winnipesaukee near Wentworth Pond and the Merrymeeting River, and within the higher yielding stratified drift aquifers within Alton (aquifers with a max transmissivity rate between 1,001 – 2,000 ft^2/day or 2,001 – 4,000 ft^2/day).

Table 3-27: Favorable Gravel Well Area within Alton

Favorable Gravel Well Analysis Within Alton		
Water Production Rates (gallons/min)	**Acreage**	**% of Landbase Area in Alton (41,577.02 acres)**
75	196.38	0.472%
150	1.37	0.003%
Total	**197.76**	**0.48%**

Currently, according to data last revised in 2016 by the NHDES, Alton has 28 fully active public water supply wells. An additional 32 public water supply wells are also located within the town however these additional wells either have an inactive source (19 wells of the 32) or have both an inactive system and source (13 wells of the 32). As specified by the NHDES, an inactive system means that the well no longer meets the criteria of a public water supply well and an inactive source means that the well is no longer used as a public water supply source/entity.[39)] The fully active public water supply wells are located throughout the town with most of them being situated along the perimeter of Lake Winnipesaukee or the Merrymeeting River. Other areas where public water supply wells can be found near are Halfmoon Lake and Hills Pond/Sunset Lake. Of the 28 fully active wells within the town, 8 of them are designated as community/town systems and are located within the general proximity of either Lake

Winnipesaukee or the Merrymeeting River. To further protect certain public water supply wells, Wellhead Protection Areas (WHPA) can be defined and protected. WHPAs can be defined as "the surface and subsurface area surrounding a water well or wellfield, supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water well or wellfield."[40]. Protection area radiuses are typically calculated based on maximum daily amount of water drawn from the well or based on other existing hydrogeological information.[41] As recorded by the NHDES within 2016, a total of 4,041.3 acres of the town are within a WHPA. 3,957.6 acres of the WHPA stem from public water supply wells originating within Alton while the remaining 83.5 acres stems from public water supply wells originating within other municipalities. The WHPA for only the community/town wells is 3,633.4 acres, which is nearly 90% of all the noted WHPA within the town of Alton.

*Due to data sharing restrictions specified by the NHDES, public water supply wells and wellhead protection area data are not displayed on the Alton Groundwater Resources & Potential Contamination Sources Map.

Table 3-28: Overall Public Water Supply Wells & Wellhead Protection Areas within Alton (2016 data)

Well Information within Alton	
	Quantity
Fully Active Public Water Supply Wells	28
Active System & Inactive Source - Public Water Supply Wells	19
Inactive System & Source - Public Water Supply Wells	13
Total Public Water Supply Wells	**60**
	Acreage
Wellhead Protection Areas (for Alton Related Wells)	3,957.8
Wellhead Protection Areas (from other municipal wells extending into Alton)	83.5
Total Wellhead Protection Areas	**4,041.3**

Table 3-29: Community/Town Only Public Water Supply Wells & Wellhead Protection Areas within Alton (2016 data)

Community/Town Well Information within Alton	
	Quantity
Fully Active Community/Town Public Water Supply Wells	**8**
	Acreage
Wellhead Protection Areas (for Community/Town Wells)	**3,633.4**

To succeed in the protection of groundwater resources and other natural resources, potential and known contamination sources need to be accounted for. In this review of contamination sources, the following contamination related data sources from NHDES were used - Local Potential Contamination Sources, Underground Storage Tanks, and Aboveground Storage Tanks. The NHDES defines the used contamination variables as:

Aboveground Storage Tanks = "a tank that is a component of an aboveground storage tank system. These systems are comprised of ASTs and all connected piping that is used or is intended to be used to store or dispense oil where 90 percent or more of the total volume of the system is: above the surface of the ground or visible for inspection within an underground vault."[42)]

Local Potential Contamination Sources = "Human activities or operations upon the land surface shall be considered potential contamination sources if the activity or operation poses a reasonable risk that regulated contaminants may be introduced into the environment in such quantities as to degrade the natural groundwater quality."[43)]

Underground Contamination Sources = "a tank that is a component of an underground storage tank system. These systems are comprised of one or more USTs and the connected piping system, that is used or is intended to be used to contain a regulated substance or vapors of the regulated substance."[44)]

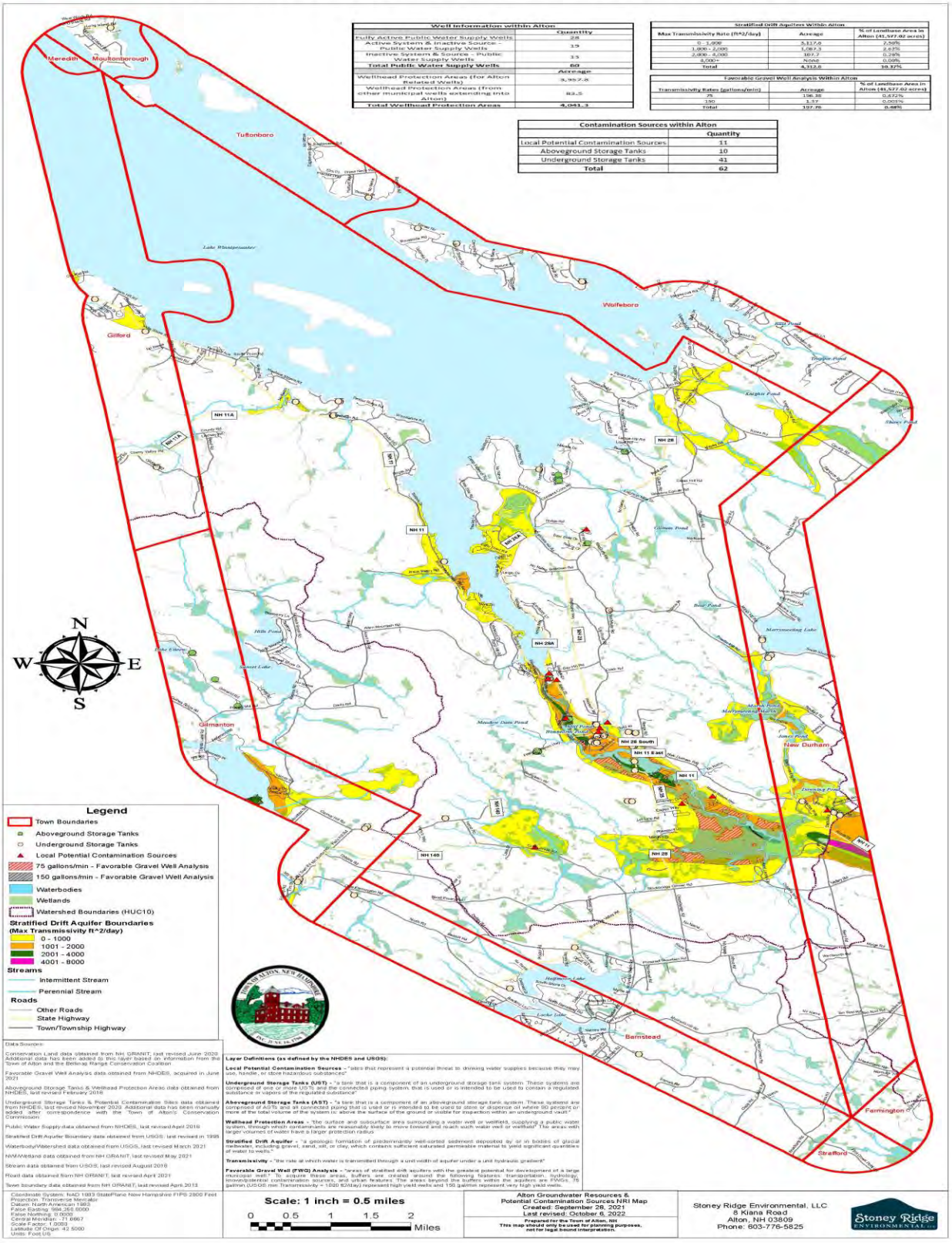
Within Alton, the NHDES has identified 8 Local Potential Contamination Sources, 10 Aboveground Storage Tanks, and 41 Underground Storage Tanks. After correspondence with the Town of Alton's Conservation Commission an additional 3 Local Potential Contamination Sources were also added to this data set for a total of 11. The added contamination sources were the current town dump off of Hurd Hill Road, the old town dump across from the Alton Highway Department (off Letter "S" Road), and the old town dump located along Coffin Brook Road. The largest concentration of all three pollutant sources resides south of Winnipesaukee near the

Merrymeeting River. None of these pollutant sources are located within conservation land areas, however some are located within the identified WHPA.

Table 3-30: NHDES identified contamination sources within Alton

Contamination Sources within Alton	
	Quantity
Local Potential Contamination Sources	11
Aboveground Storage Tanks	10
Underground Storage Tanks	41
Total	**62**

Alton Groundwater Resources & Potential Contamination Sources



3.5 Floodplains

The identification of floodplains is important to assess community/population risk, where to implement infrastructure improvements, and to determine insurance/mortgage requirements and rates.[45)] With climate change increasing the frequency of severe weather events, it's becoming ever more important to identify areas prone to flooding and to develop and manage flood retention resources. Two notable flooding events categorized as 100-year recurrence interval floods that occurred in New Hampshire were in May of 2006 and April 2007.[46)] These devasting events each caused millions of dollars of destruction and high degrees of damage to affected infrastructure. The occurrence of these events two years in a row depicts that these type of devastating flooding events might be more common, thus making it important to plan accordingly for them.

The Federal Emergency Management Agency (FEMA) publishes information in regards to floodplains for these reasons, and also displays them on Floodplain Insurance Rate Maps (FIRMs). FEMA has been recently updating the floodplain maps throughout New Hampshire, however Belknap County is the sole county remaining that requires updates to their FIRMs. The most recent data available by FEMA for towns located within Belknap County dates back to 1988 and are in the form of paper maps or digital pdfs. No known existing GIS data is available for the floodplains within Belknap County, so in order to assess the floodplains for Alton, the paper maps and digital pdfs were imported into GIS and manually aligned and digitized. Upon completion of this manual data creation, some discrepancies between this data and the current data being used for this Natural Resource Inventory were observed. Although every effort has been made to make this data as accurate as possible, some of the floodplains weren't able to align properly to the modern data files being utilized. To prevent possible data loss and potential wrong estimates those skewed areas were left as is.

In 1988 FEMA identified three designated flood related zones within Alton, and they are:

Zone A = Special flood hazard areas inundated by 100-year flood. No base flood elevations were determined for these areas.[47)]

Zone AE = Special flood hazard areas inundated by 100-year flood. Base flood elevations were identified for these areas.[47)]

Zone X = Areas that were determined to be outside 500-year flood plain.[47)]

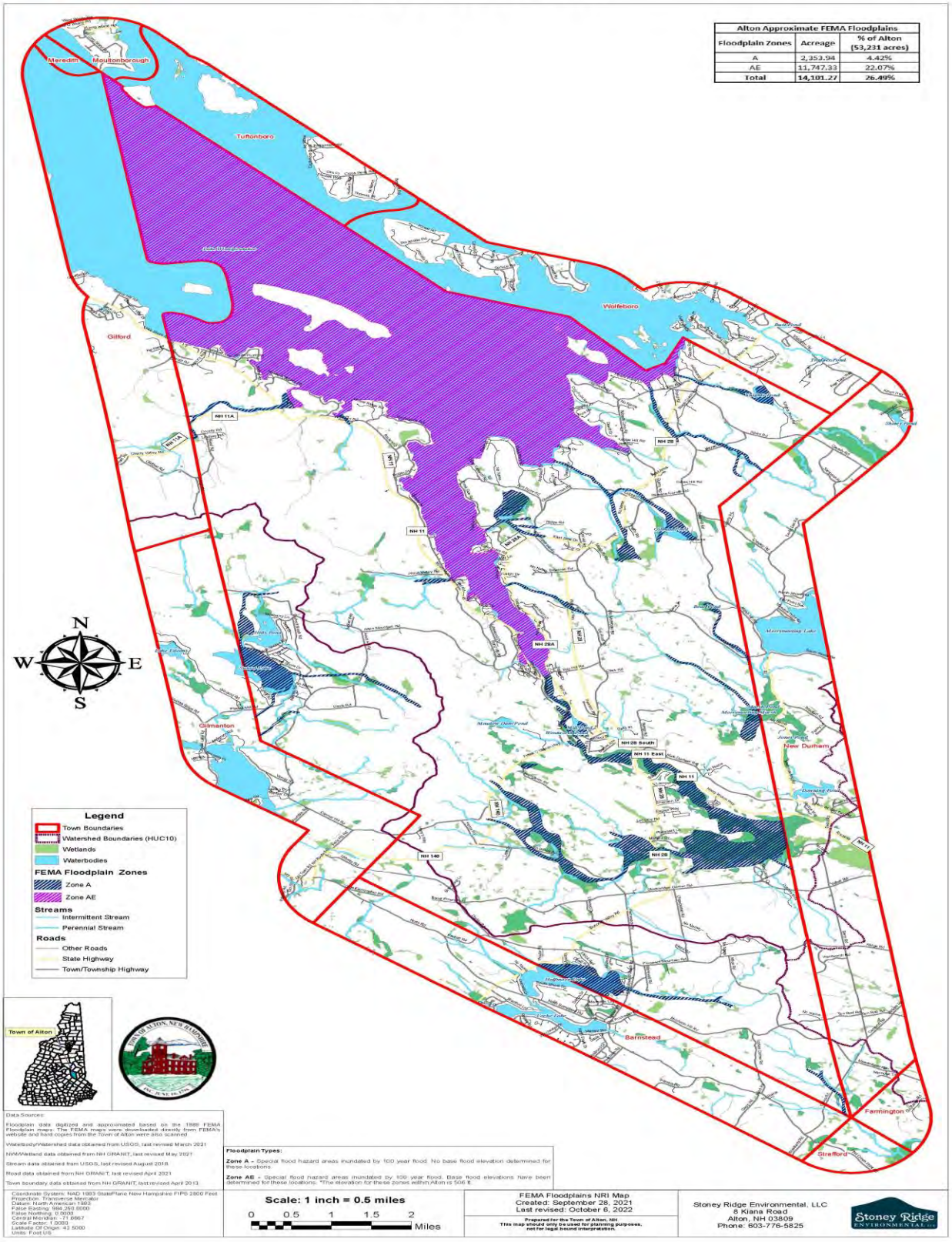
The main areas of flooding risk within Alton, are those located within Zone A or Zone AE. Zone AE is almost entirely comprised of floodplains associated with Lake Winnipesaukee and the only base elevation designated for this zone is 506 ft above sea level. The reference line of Lake Winnipesaukee is 504.32 ft, so the 1988 FEMA FIRMs identified flooding water level rise of the lake at an estimated 1.68 ft. Zone AE flood areas approximately account for 11,747.33 acres of

Alton, which is 22.07% of the overall area of the town. Approximately 2,353.94 acres of Alton are located within a Zone A flood area, and this accounts for 4.42% of the overall town area. The cumulative flood zone areas located within Alton total approximately 14,101.27 acres and this is over 25% of the entire area of the town.

Table 3-31: FEMA floodplain zones located within Alton

Alton Approximate FEMA Floodplains		
Floodplain Zones	**Acreage**	**% of Alton (53,231 acres)**
A	2,353.94	4.42%
AE	11,747.33	22.07%
Total	**14,101.27**	**26.49%**

FEMA Floodplains
Town of Alton



Section 4: Wildlife & Habitats

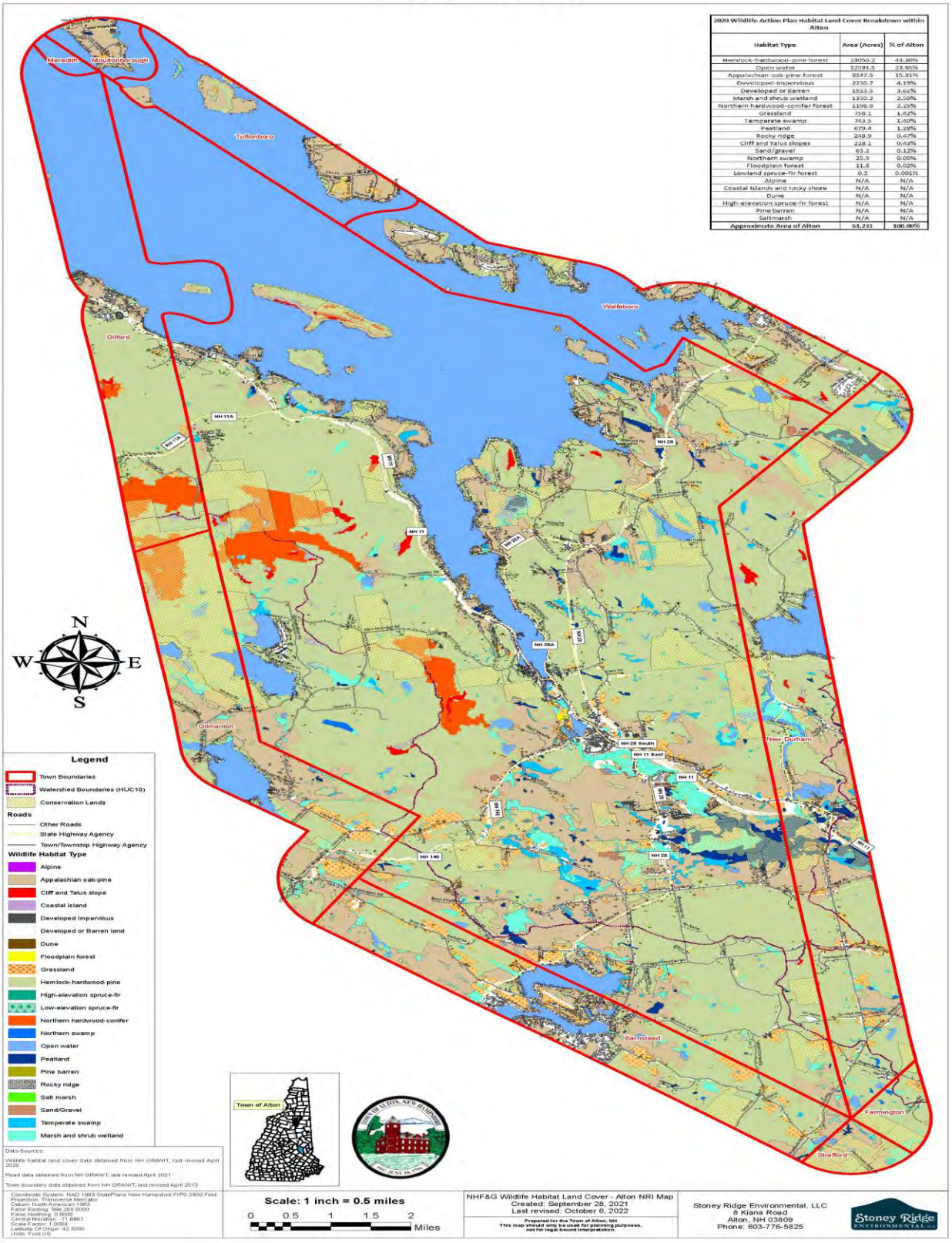
4.1 Wildlife Habitats

The town of Alton is home to a multitude of wildlife habitats, which include communities such as forests, wetlands, swamps, grasslands, rocky ridges, and open water (lakes, ponds, etc.). New Hampshire Fish & Game (NHFG) partnered with numerous organizations, agencies, universities, municipalities, scientists, professionals and volunteers, to create the New Hampshire Wildlife Action Plan (WAP) in 2005. The WAP is a resource used to identify species/habitats that are in greatest need of conservation or at the greatest risk, and to identify the various land use and anthropogenic activities that pose the greatest threats to these species/habitat. The WAP also includes over 100 recommended actions that can be utilized by stakeholders to aid in the protection and management of wildlife/habitat throughout the state of New Hampshire.[48)] The habitat types present and listed potential wildlife of greatest conservation needs have been generated for each New Hampshire town as part of the WAP project. Listed below are these breakdowns for the town of Alton. The wildlife habitat information utilized for this report is based on the 2020 version of the WAP.

Table 4-1: List of Habitat Types and their acreage within Alton

2020 Wildlife Action Plan Habitat Land Cover Breakdown within Alton		
Habitat Type	**Area (Acres)**	**% of Alton**
Hemlock-hardwood-pine forest	23050.2	43.30%
Open water	12591.5	23.65%
Appalachian-oak-pine forest	8147.5	15.31%
Developed-impervious	2230.7	4.19%
Developed or Barren	1923.5	3.61%
Marsh and shrub wetland	1330.2	2.50%
Northern hardwood-conifer forest	1198.0	2.25%
Grassland	758.1	1.42%
Temperate swamp	743.5	1.40%
Peatland	679.4	1.28%
Rocky ridge	248.9	0.47%
Cliff and Talus slopes	228.1	0.43%
Sand/gravel	63.2	0.12%
Northern swamp	25.9	0.05%
Floodplain forest	11.8	0.02%
Lowland spruce-fir forest	0.3	0.001%
Alpine	N/A	N/A
Coastal Islands and rocky shore	N/A	N/A
Dune	N/A	N/A
High-elevation spruce-fir forest	N/A	N/A
Pine barren	N/A	N/A
Saltmarsh	N/A	N/A
Approximate Area of Alton	**53,231**	**100.00%**

New Hampshire Fish & Game Wildlife Habitat Land Cover (2020 Wildlife Action Plan) Town of Alton



The three most prevalent habitat types within the Town of Alton according to the 2020 WAP are: Hemlock-Hardwood-Pine Forests (23,050.2 acres), Open Water (12,591.5 acres), and Appalachian-Oak-Pine Forests (8,147.5 acres). These three habitats alone make up approximately 82% of the area of Alton with both forest types equating to 58.61% and open water equating to 23.65%. The hemlock-hardwood-pine-forests tend to be located all throughout Alton, the Appalachian-oak-pine forests tend to be located on the southern and eastern portion of the town, and the open water is almost entirely attributed to Lake Winnipesaukee. Of the 22 different types of landcover types assessed within the WAP, 16 appeared within the Town of Alton.

Table 4-2: List of the Potential Wildlife of Greatest Conservation Need in Alton [32)]

Species Status Definitions: ST = State-Threatened, SE = State-Endangered, SC = Special Concern in NH, SGCN = Species of Greatest Conservation Need, FT = Federally-Threatened, & FE = Federally-Endangered

COMMON NAME	SCIENTIFIC NAME	RANGE	TAXONOMIC GROUP	SPECIES STATUS	Habitats
Alewife	*Alosa pseudoharengus*	Localized	Fish	SC, SGCN	Large Warmwater Rivers, Warmwater Lakes and Ponds, Warmwater Rivers and Streams
American Black Duck	*Anas rubripes*	Statewide	Birds	SGCN	Lakes and Ponds, Rivers and Streams, Marsh and Shrub Wetlands, Northern Swamps, Peatlands, Temperate Swamps
American Bumble Bee	*Bombus pensylvanicus*	Statewide	Bumble Bees	SGCN	Developed Habitats, Grasslands, Shrublands
American Eel	*Anguilla rostrata*	Localized	Fish	SC, SGCN	Coldwater Rivers and Streams, Lakes and Ponds with Coldwater Habitats, Large Warmwater Rivers, Warmwater Lakes and Ponds, Warmwater Rivers and Streams
American Kestrel	*Falco sparverius*	Statewide	Birds	SC, SGCN	Developed Habitats, Grasslands, Shrublands
American Water Shrew (Eastern)	*Sorex palustris albibarbis*	Statewide	Mammals	SGCN	Northern Swamps
American Woodcock	*Scolopax minor*	Statewide	Birds	SGCN	Appalachian Oak-Pine Forest, Hemlock Hardwood Pine Forest, Marsh and Shrub Wetlands, Northern Swamps, Shrublands, Temperate Swamps

COMMON NAME	SCIENTIFIC NAME	RANGE	TAXONOMIC GROUP	SPECIES STATUS	Habitats
Bald Eagle	*Haliaeetus leucocephalus*	Statewide	Birds	SC, SGCN	Appalachian Oak-Pine Forest, Floodplain Habitats, Hemlock Hardwood Pine Forest, High Elevation Spruce-Fir Forest, Lakes and Ponds, Rivers and Streams, Lowland Spruce-Fir Forest, Marsh and Shrub Wetlands, Northern Hardwood-Conifer Forest
Bank Swallow	*Riparia riparia*	Statewide	Birds	SC, SGCN	Coldwater Rivers and Streams, Grasslands, Lakes and Ponds with Coldwater Habitats, Large Warmwater Rivers, Marsh and Shrub Wetlands, Warmwater Rivers and Streams
Big Brown Bat	*Eptesicus fuscus*	Statewide	Mammals	SC, SGCN	Appalachian Oak-Pine Forest, Caves and Mines, Floodplain Habitats, Hemlock Hardwood Pine Forest, Lowland Spruce-Fir Forest, Northern Hardwood-Conifer Forest, Northern Swamps, Temperate Swamps
Black-billed Cuckoo	*Coccyzus erythropthalmus*	Statewide	Birds	SGCN	Appalachian Oak-Pine Forest, Hemlock Hardwood Pine Forest, Pine Barrens, Shrublands
Blanding's Turtle	*Emydoidea blandingii*	Throughout	Amphibians and Reptiles	SE, SGCN	Floodplain Habitats, Marsh and Shrub Wetlands, Peatlands, Temperate Swamps, Vernal Pools
Blue-Spotted/Jefferson Salamander	*Ambystoma pop. 3*	Statewide	Amphibians and Reptiles	SC, SGCN	Appalachian Oak-Pine Forest, Floodplain Habitats, Hemlock Hardwood Pine Forest, Marsh and Shrub Wetlands, Northern Hardwood-Conifer Forest, Northern Swamps, Peatlands, Temperate Swamps, Vernal Pools
Blueback Herring	*Alosa aestivalis*	Localized	Fish	SC, SGCN	Estuarine, Marine, Warmwater Lakes and Ponds, Warmwater Rivers and Streams
Bobolink	*Dolichonyx oryzivorus*	Statewide	Birds	SGCN	Grasslands
Bridle Shiner	*Notropis bifrenatus*	Localized	Fish	ST, SGCN	Lakes and Ponds with Coldwater Habitats, Warmwater Lakes and Ponds, Warmwater Rivers and Streams
Brook Floater	*Alasmidonta varicosa*	Localized	Freshwater Mussels	SE, SGCN	Large Warmwater Rivers, Warmwater Rivers and Streams
Brown Thrasher	*Toxostoma rufum*	Statewide	Birds	SGCN	Pine Barrens, Shrublands
Burbot (Freshwater Cusk)	*Lota lota*	Localized	Fish	SGCN	Coldwater Rivers and Streams, Lakes and Ponds with Coldwater Habitats
Canada Warbler	*Cardellina canadensis*	Statewide	Birds	SGCN	Hemlock Hardwood Pine Forest, Lowland Spruce-Fir Forest, Northern Hardwood-Conifer Forest, Northern Swamps, Temperate Swamps
Chimney Swift	*Chaetura pelagica*	Statewide	Birds	SGCN	Appalachian Oak-Pine Forest, Developed Habitats, Hemlock Hardwood Pine Forest, Lowland Spruce-Fir Forest, Northern Hardwood-Conifer Forest

COMMON NAME	SCIENTIFIC NAME	RANGE	TAXONOMIC GROUP	SPECIES STATUS	Habitats
Common Loon	*Gavia immer*	Town	Birds	ST, SGCN	Lakes and Ponds with Coldwater Habitats, Large Warmwater Rivers, Warmwater Lakes and Ponds, Warmwater Rivers and Streams
Creeper	*Strophitus undulatus*	Statewide	Freshwater Mussels	SGCN	Coldwater Rivers and Streams, Lakes and Ponds with Coldwater Habitats, Large Warmwater Rivers, Warmwater Lakes and Ponds, Warmwater Rivers and Streams
Eastern Box Turtle	*Terrapene carolina*	Localized	Amphibians and Reptiles	SE, SGCN	Appalachian Oak-Pine Forest, Grasslands, Hemlock Hardwood Pine Forest, Marsh and Shrub Wetlands, Shrublands, Temperate Swamps
Eastern Brook Trout	*Salvelinus fontinalis*	Localized	Fish	SGCN	Coldwater Rivers and Streams, Lakes and Ponds with Coldwater Habitats
Eastern Pearlshell	*Margaritifera margaritifera*	Statewide	Freshwater Mussels	SGCN	Coldwater Rivers and Streams
Eastern Red Bat	*Lasiurus borealis*	Statewide	Mammals	SC, SCGN	Appalachian Oak-Pine Forest, Floodplain Habitats, Hemlock Hardwood Pine Forest, Lowland Spruce-Fir Forest, Northern Hardwood-Conifer Forest, Northern Swamps, Temperate Swamps
Eastern Ribbon Snake	*Thamnophis sauritus*	Throughout	Amphibians and Reptiles	SGCN	Floodplain Habitats, Marsh and Shrub Wetlands, Peatlands, Vernal Pools
Eastern Towhee	*Pipilo erythrophthalmus*	Statewide	Birds	SGCN	Appalachian Oak-Pine Forest, Peatlands, Pine Barrens, Rocky Ridge, Cliff, and Talus, Rocky Ridge, Cliff, and Talus, Shrublands
Field Sparrow	*Spizella pusilla*	Statewide	Birds	SGCN	Pine Barrens, Shrublands
Fowler's Toad	*Anaxyrus fowleri*	Localized	Amphibians and Reptiles	ST, SGCN	Appalachian Oak-Pine Forest, Dunes, Large Warmwater Rivers, Marsh and Shrub Wetlands, Pine Barrens, Shrublands, Vernal Pools, Warmwater Lakes and Ponds, Warmwater Rivers and Streams
Golden Eagle	*Aquila chrysaetos*	Migrant	Birds	SE, SGCN	Appalachian Oak-Pine Forest, Hemlock Hardwood Pine Forest, High Elevation Spruce-Fir Forest, Lowland Spruce-Fir Forest, Northern Hardwood-Conifer Forest, Rocky Ridge, Cliff, and Talus
Hoary Bat	*Lasiurus cinereus*	Statewide	Mammals	SC, SGCN	Appalachian Oak-Pine Forest, Floodplain Habitats, Hemlock Hardwood Pine Forest, Lowland Spruce-Fir Forest, Northern Hardwood-Conifer Forest, Northern Swamps, Temperate Swamps
Lake Trout	*Salvelinus namaycush*	Localized	Fish	SGCN	Lakes and Ponds with Coldwater Habitats
Lake Whitefish	*Coregonus clupeaformis*	Localized	Fish	SC, SGCN	Lakes and Ponds with Coldwater Habitats

COMMON NAME	SCIENTIFIC NAME	RANGE	TAXONOMIC GROUP	SPECIES STATUS	Habitats
Little Brown Myotis	*Myotis lucifugus*	Statewide	Mammals	SE, SGCN	Appalachian Oak-Pine Forest, Caves and Mines, Hemlock Hardwood Pine Forest, Lowland Spruce-Fir Forest, Northern Hardwood-Conifer Forest, Northern Swamps, Pine Barrens, Temperate Swamps
Long-tailed Shrew	*Sorex dispar*	Statewide	Mammals	SC, SGCN	High Elevation Spruce-Fir Forest, Northern Hardwood-Conifer Forest
Marsh Wren	*Cistothorus palustris*	Throughout	Birds	SGCN	Marsh and Shrub Wetlands, Salt Marsh
Monarch Butterfly	*Danaus plexippus*	Statewide	Butterflies and Moths	SC	Developed Habitats, Grasslands
Moose	*Alces alces*	Localized	Mammals	SGCN	Appalachian Oak-Pine Forest, Floodplain Habitats, Hemlock Hardwood Pine Forest, High Elevation Spruce-Fir Forest, Lowland Spruce-Fir Forest, Marsh and Shrub Wetlands, Northern Hardwood-Conifer Forest, Swamps, Shrublands, Lakes and Ponds
Moose	*Alces alces*	Statewide	Mammals	SGCN	Appalachian Oak-Pine Forest, Floodplain Habitats, Hemlock Hardwood Pine Forest, High Elevation Spruce-Fir Forest, Lowland Spruce-Fir Forest, Marsh and Shrub Wetlands, Northern Hardwood-Conifer Forest, Swamps, Shrublands, Lakes and Ponds
Northern Black Racer	*Coluber constrictor constrictor*	Throughout	Amphibians and Reptiles	ST, SGCN	Appalachian Oak-Pine Forest, Grasslands, Hemlock Hardwood Pine Forest, Rocky Ridge, Cliff, and Talus, Shrublands
Northern Bog Lemming	*Synaptomys borealis sphagnicola*	Localized	Mammals	SC, SGCN	High Elevation Spruce-Fir Forest, Lowland Spruce-Fir Forest, Northern Hardwood-Conifer Forest
Northern Goshawk	*Accipiter gentilis*	Throughout	Birds	SGCN	Appalachian Oak-Pine Forest, Hemlock Hardwood Pine Forest, Lowland Spruce-Fir Forest, Northern Hardwood-Conifer Forest
Northern Leopard Frog	*Lithobates pipiens*	Localized	Amphibians and Reptiles	SC, SGCN	Coldwater Rivers and Streams, Floodplain Habitats, Grasslands, Lakes and Ponds with Coldwater Habitats, Large Warmwater Rivers, Marsh and Shrub Wetlands, Shrublands, Warmwater Rivers and Streams
Northern Long-eared Bat	*Myotis septentrionalis*	Statewide	Mammals	FT, SE, SGCN	Appalachian Oak-Pine Forest, Caves and Mines, Hemlock Hardwood Pine Forest, Lowland Spruce-Fir Forest, Northern Hardwood-Conifer Forest
Olive-sided Flycatcher	*Contopus cooperi*	Throughout	Birds	SC, SGCN	Lowland Spruce-Fir Forest, Marsh and Shrub Wetlands, Northern Hardwood-Conifer Forest, Northern Swamps, Peatlands, Temperate Swamps
Prairie Warbler	*Setophaga discolor*	Throughout	Birds	SGCN	Pine Barrens, Shrublands

COMMON NAME	SCIENTIFIC NAME	RANGE	TAXONOMIC GROUP	SPECIES STATUS	Habitats
Purple Finch	*Haemorhous purpureus*	Statewide	Birds	SGCN	Appalachian Oak-Pine Forest, Floodplain Habitats, Hemlock Hardwood Pine Forest, High Elevation Spruce-Fir Forest, Lowland Spruce-Fir Forest, Northern Hardwood-Conifer Forest, Northern Swamps
Redfin Pickerel	*Esox americanus americanus*	Localized	Fish	SC, SGCN	Warmwater Lakes and Ponds, Warmwater Rivers and Streams
Rock Vole	*Microtus chrotorrhinus*	Statewide	Mammals	SGCN	High Elevation Spruce-Fir Forest, Northern Hardwood-Conifer Forest
Ruffed Grouse	*Bonsai umbrellas*	Statewide	Birds	SGCN	Appalachian Oak-Pine Forest, Grasslands, Hemlock Hardwood Pine Forest, Lowland Spruce-Fir Forest, Marsh and Shrub Wetlands, Northern Hardwood-Conifer Forest, Shrublands
Rusty-patched Bumble Bee	*Bombus affinis*	Statewide	Bumble Bees	FE, SE, SGCN	Developed Habitats, Grasslands
Scarlet Tanager	*Piranga olivacea*	Statewide	Birds	SGCN	Appalachian Oak-Pine Forest, Hemlock Hardwood Pine Forest, Northern Hardwood-Conifer Forest
Silver-haired Bat	*Lasionycteris noctivagans*	Statewide	Mammals	SC, SGCN	Appalachian Oak-Pine Forest, Floodplain Habitats, Hemlock Hardwood Pine Forest, Lowland Spruce-Fir Forest, Northern Hardwood-Conifer Forest, Northern Swamps, Temperate Swamps
Slimy Sculpin	*Cottus cognatus*	Localized	Fish	SGCN	Coldwater Rivers and Streams, Lakes and Ponds with Coldwater Habitats
Smooth Green Snake	*Opheodrys vernalis*	Throughout	Amphibians and Reptiles	SC, SGCN	Grasslands, Marsh and Shrub Wetlands, Peatlands, Rocky Ridge, Cliff, and Talus, Rocky Ridge, Cliff, and Talus, Shrublands
Southern Bog Lemming	*Synaptomys cooperi*	Statewide	Mammals	SGCN	Northern Hardwood-Conifer Forest
Spotted Turtle	*Clemmys guttata*	Throughout	Amphibians and Reptiles	ST, SGCN	Floodplain Habitats, Marsh and Shrub Wetlands, Peatlands, Temperate Swamps, Vernal Pools
Triangle Floater	*Alasmidonta undulata*	Statewide	Freshwater Mussels	SGCN	Large Warmwater Rivers, Warmwater Lakes and Ponds, Warmwater Rivers and Streams
Tricolored Bat	*Perimyotis subflavus*	Statewide	Mammals	SE, SGCN	Appalachian Oak-Pine Forest, Caves and Mines, Floodplain Habitats, Hemlock Hardwood Pine Forest, Lowland Spruce-Fir Forest, Northern Hardwood-Conifer Forest, Northern Swamps, Temperate Swamps
Veery	*Catharus fuscescens*	Statewide	Birds	SGCN	Appalachian Oak-Pine Forest, Floodplain Habitats, Hemlock Hardwood Pine Forest, Northern Hardwood-Conifer Forest, Northern Swamps, Temperate Swamps
Vesper Sparrow	*Pooecetes gramineus*	Town	Birds	SC, SGCN	Grasslands, Pine Barrens

COMMON NAME	SCIENTIFIC NAME	RANGE	TAXONOMIC GROUP	SPECIES STATUS	Habitats
Wood Thrush	*Hylocichla mustelina*	Statewide	Birds	SGCN	Appalachian Oak-Pine Forest, Floodplain Habitats, Hemlock Hardwood Pine Forest, Northern Hardwood-Conifer Forest
Wood Turtle	*Glyptemys insculpta*	Statewide	Amphibians and Reptiles	SC, SGCN	Coldwater Rivers and Streams, Floodplain Habitats, Grasslands, Shrublands, Warmwater Rivers and Streams
Yellow-banded Bumble Bee	*Bombus terricola*	Statewide	Bumble Bees	SGCN	Developed Habitats, Grasslands, Shrublands
Yellow Bumble Bee	*Bombus fervidus*	Statewide	Bumble Bees	SGCN	Developed Habitats, Grasslands

Table 4-3: List of Rare Plants, Rare Animals, and Exemplary Natural Communities within Alton as recorded by the NH Natural Heritage Bureau in July of 2020 [49)]

****Note that the Bald Eagle is currently no longer federally listed***

NH Natural Heritage Bureau

Town Flag	Species or Community Name	Listed? US	Listed? NH	~ reports last 20 yrs Town	~ reports last 20 yrs State
Alton					
	Natural Communities - Terrestrial				
~	*- Appalachian oak - pine rocky ridge*	--	--	Historical	13
	Natural Communities - Palustrine				
***	*- Alder - lake sedge intermediate fen*	--	--	1	2
***	*- Highbush blueberry - mountain holly wooded fen*	--	--	1	3
**	*- Medium level fen system*	--	--	1	51
	Plants				
~	Bailey's sedge - *Carex baileyi*	--	T	Historical	12
~	blunt-leaved bedstraw - *Galium obtusum* ssp. *obtusum*	--	E	Historical	2
*	clustered sedge - *Carex cumulata*	--	T	1	20
~	flat-stem pondweed - *Potamogeton zosteriformis*	--	E	Historical	12
~	green rockcress - *Boechera missouriensis*	--	T	Historical	14
~	mossy-cup oak - *Quercus macrocarpa*	--	E	Historical	2
~	peat moss - *Sphagnum contortum*	--	T	Historical	10
~	peat moss - *Sphagnum riparium*	--	T	Historical	4
~	rock muhly - *Muhlenbergia sobolifera*	--	E	Historical	6
****	small whorled pogonia - *Isotria medeoloides*	T	T	6	56
	Vertebrates - Birds				
**	Bald Eagle - *Haliaeetus leucocephalus*	T	SC	4	140
**	Common Loon - *Gavia immer*	--	T	3	339
~	Purple Martin - *Progne subis*	--	T	Historical	22
**	Vesper Sparrow - *Pooecetes gramineus*	--	SC	1	20
	Vertebrates - Reptiles				
**	Smooth Green Snake - *Opheodrys vernalis*	--	SC	1	85
*	Spotted Turtle - *Clemmys guttata*	--	T	1	165
	Vertebrates - Fish				
****	Bridle Shiner - *Notropis bifrenatus*	--	T	1	36

Listed? E = Endangered T = Threatened SC = Special concern

Flags
**** = Highest importance
*** = Extremely high importance
** = Very high importance
* = High importance
~ = Historical Record

These flags are based on a combination of (1) how rare the species or community is and (2) how large or healthy its examples are in that town. Please contact the Natural Heritage Bureau at (603) 271-2215 to learn more about approaches to setting priorities.

July 2020

Table 4-2 is also based on the findings from the 2020 WAP, and it depicts 67 species that are in greatest conservation need. The species listed within this table may not necessarily have been identified within the Town of Alton, but according to the NHFG these species have the potential to be located here due to known and predicted distribution and behaviors.[48)] Table 4-3 shows a list of documented sightings of specific rare plants, rare animals, and rare exemplary natural communities within the Town of Alton as recorded by the NH Natural Heritage Bureau (NHB) in 2020. Any sighting listed as "Historical" indicates that a documented sighting of a certain species was last recorded over 20 years ago. The rarest species with the highest importance and/or the most recent sightings according to the NHB are the Bridle Shiner

(*Notropis bifrenatus* – highest importance with 1 sighting), the Bald Eagle (*Haliaeetus leuccocephalus* – 4 sightings), the Common Loon (*Gavia immer* – 3 sightings), and the small whorled pogonia (*Isotria medeoloides* – highest importance with 6 sightings).[49)] Within the state of New Hampshire these species aside from the Bald Eagle, are listed as Threatened (the Bald Eagle is categorized as Special Concern within the State). The U.S. conservation status for the Bald Eagle within Table 4-3 is listed incorrectly and in fact there shouldn't be any status for it here. After numerous successful reintroduction efforts and the banning of the insecticide, Dichloro-Diphenyl-Trichloroethane (DDT), bald eagle populations were able to successfully propagate enough where their federal status was removed in 2007.[50)] The small whorled pogonia is properly categorized as federally threatened and it is the only species publicly documented by the NHB within Alton to have a federal conservation status.

4.2 Natural Heritage Bureau (NHB) Data Check

A NHB Data Check for rare species and exemplary communities was also conducted for the town. To publicize the results from this data check, specific location points of documented rare species/communities were not shown as per correspondence with NHB. A generalized element of occurrence hexagon approach by NHB was performed so this data can be released publicly with this NRI. This hexagon approach essentially splits the town into numerous evenly sized hexagons (approximately 1,280 acres each), and each of these hexagons are given element of occurrence rankings based on the quantity of documented species and exemplary communities documented within them. A ranking value of 1 for example represents that one rare species or exemplary community was documented within a 1,280 acre hexagon. The higher the ranking value, the more rare species/communities were documented, and therefore being of higher significance in respect to wildlife and habitat.

A total of 40 hexagons with an element of occurrence ranking of at least 1 were noted within or partially within the town of Alton. A total of 7 significant element of occurrence ranking hexagons with a value of 4 and higher appear within the 40 overall hexagon total. There are five Rank 4 element of occurrence hexagons, which appear to be dispersed near the Merrymeeting River/Marsh and near Lake Winnipesaukee and Gilman Pond. The three rank 4 hexagons near the Lake Winnipesaukee/Gilman Pond area primarily feature small whorled pogonia with lower documented cases of species such as the Common Loon and two species of peat moss (*Sphagnum riparium & Sphagnum contortum*). Clustered sedge is also documented in one of these rank 4 hexagons, however its sited location is within New Durham. The two rank 4 hexagons near the Merrymeeting River/Marsh feature small whorled pogonia and the bald eagle within Alton. Additionally, the same two hexagons feature flat-stemmed pondweed, Blanding's turtle, and inland Atlantic white cedar swamps, all of which were sited in New Durham. There is one rank 5 hexagon, which is located near the Merrymeeting River by the New Durham border. This hexagon is located entirely within Alton, and features Spotted Turtles, Bridle Shiners, Alder – lake sedge intermediate fens, Medium level fen systems, and Highbush blueberry – mountain holly wooded fens. There is one rank 7 hexagon (the highest rank value within Alton), and it is also located near the Merrymeeting River by the New Durham border. This hexagon is located majorly in New Durham with a section of it being located in Alton. The documented features within the Alton section of this hexagon are Spotted Turtles and Medium level fen systems. The other features which are found nearby within New Durham include Blanding's Turtles, Wood Turtles, Arctic Bur-reeds, and Inland Atlantic white cedar swamps.

This NHB Data Check information aligns well with the information listed in Table 4-3 except for two species. The noted mossy-cup oak according to the Data Check was documented near the Alton-Gilmanton border, with the Data Check stating it was originally spotted in Gilmanton. The table omits Blanding's Turtle (*Emydoidea blandingii*), which was documented

within Alton in 2020. It's likely the info listed in Table 4-3 was recorded and published prior to these Blanding's Turtle sightings.

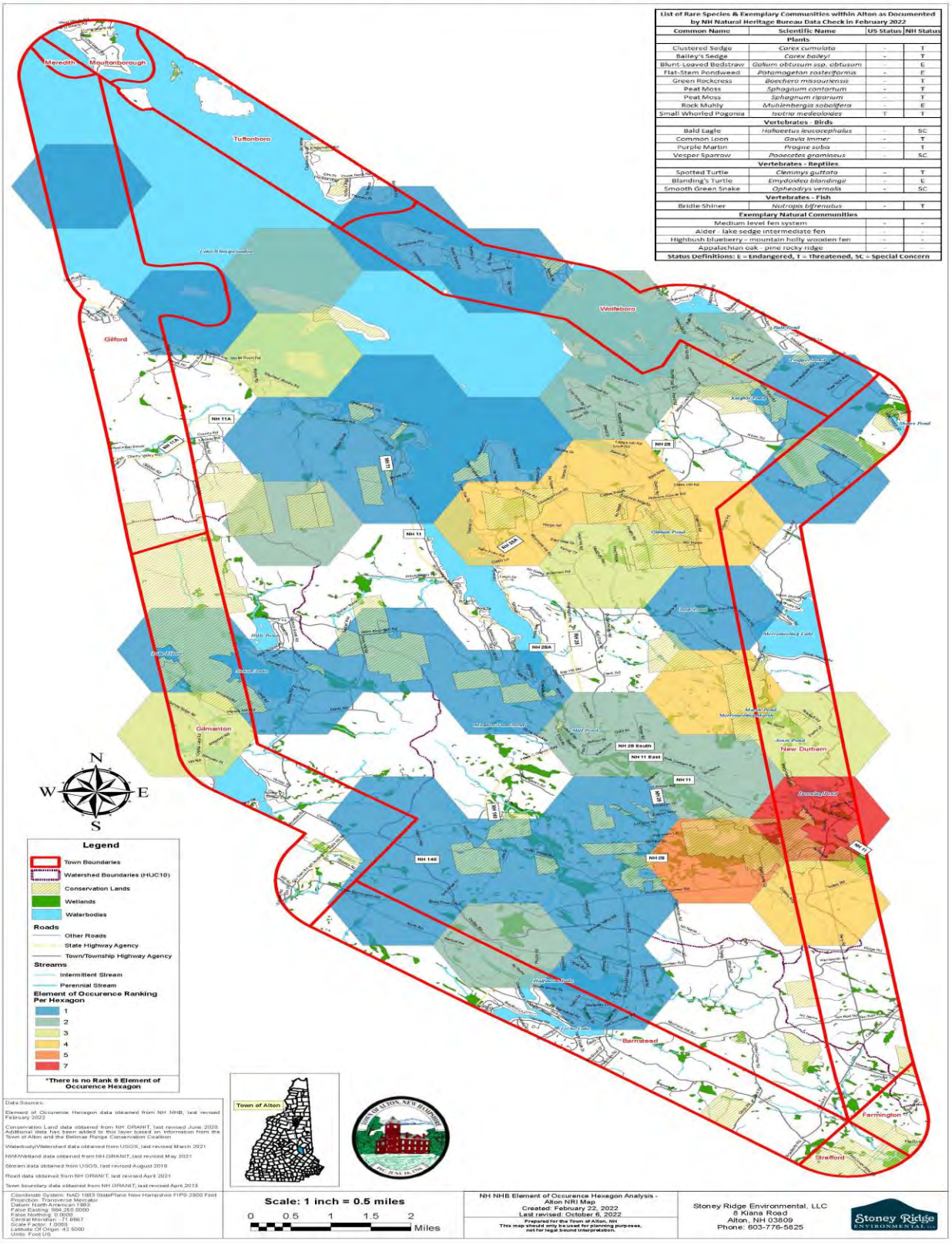
Below are the general locations of several noteworthy species and communities within and in close proximity to Alton:

- *Bald Eagle = throughout Lake Winnipesaukee and near the Merrymeeting River/Marsh*
- *Blanding's Turtle = Merrymeeting River/Marsh & near Halfmoon Lake*
- *Bridle Shiner = Coffin Brook & Merrymeeting River*
- *Common Loon = Halfmoon Lake, Sunset Lake, and Lake Winnipesaukee*
- *Small Whorled Pogonia = Merrymeeting River/Marsh & East of Lake Winnipesaukee/Alton Bay near Knights Pond, Gilman Pond, and Bear Pond*
- *Smooth Green Snake = Between Hills Pond & Lake Winnipesaukee*
- *Spotted Turtle = Merrymeeting River/Marsh*
- *Vesper Sparrow = Sunset Lake*
- *Alder – Lake Sedge Intermediate Fen Palustrine Community = Merrymeeting River/Marsh*
- *Appalachian Oak – Pine Rocky Ridge Terrestrial Community = Eastern portion of Lake Winnipesaukee*
- *Highbush Blueberry – Mountain Holly Wooded Fen Palustrine Community = Merrymeeting River/Marsh*
- *Medium level Fen System Palustrine Community = Merrymeeting River/Marsh*

Based on the listed locations noted above and the overall NHD Data, it can be inferred that the Merrymeeting River/Marsh and Lake Winnipesaukee are two of the most significant features within Alton in relation to wildlife/community habitat and sustainability. These features have some of the highest sightings of rare species and exemplary communities and accordingly have some of the higher ranked elements of occurrence hexagons near them. The Merrymeeting River/Marsh complex is highly important as all three of the exemplary palustrine communities are located here. Lake Winnipesaukee and its general surrounding area is highly important as the only documented exemplary terrestrial community is located here as well as some of the highest document counts of species such as Bald Eagles, Common Loons, and Small Whorled Pogonia.

*It’s important to note that while the species and natural communities discussed within this section were documented by NHB this doesn’t necessarily reflect all the rare species and exemplary communities that may be found throughout Alton. It is possible that other rare species and communities are present within Alton and haven’t been officially documented yet.

New Hampshire Natural Heritage Bureau
Element of Occurence Hexagon Analysis



4.3 Highest Ranked Habitats

Another component of the WAP project is Highest Ranked Habitat, which is an assessment done used to identify wildlife habitat of high value and quality throughout the state of New Hampshire. The protection of these highest ranked wildlife habitats are vital for the future population health of common and rare wildlife species. New Hampshire Fish & Game (NHFG) break highest ranked habitats into three different categories. These categories and how they were evaluated are listed below -

Highest Ranked in the State (1) - includes the top 15% of all terrestrial and wetland habitats (excludes rare habitats: alpine, dune, coastal islands and rocky shores, and salt marshes). Highest ranked aquatic habitat is a 100-meter buffer of Highest Ranked rivers and streams, plus 200-meter buffer of the top 50 most intact lakes and ponds in each temperature class.[48)]

Highest Ranked Habitat in Biological Region (2) - the state was divided into biological regions. Terrestrial habitat was evaluated based on ecoregions created by the Nature Conservancy and wetland habitats were evaluated based on watersheds from the NHDES Aquatic Resource Mitigation Resources. Highest Ranked Habitat in the Biological Region includes the top 30 % of all terrestrial and wetland habitats (excludes aquatic habitats (ranked only statewide) and excludes 100% of high elevation spruce-fir and floodplain habitats based on their ecological importance and rarity).[48)]

Supporting Landscapes (3) - higher ranked habitats will most likely deteriorate if the surrounding area is degraded. This ranked area, consists of the remainder of the top 50% of all habitats in the biological region, and top-ranked forest blocks identified by The Nature Conservancy.[48)]

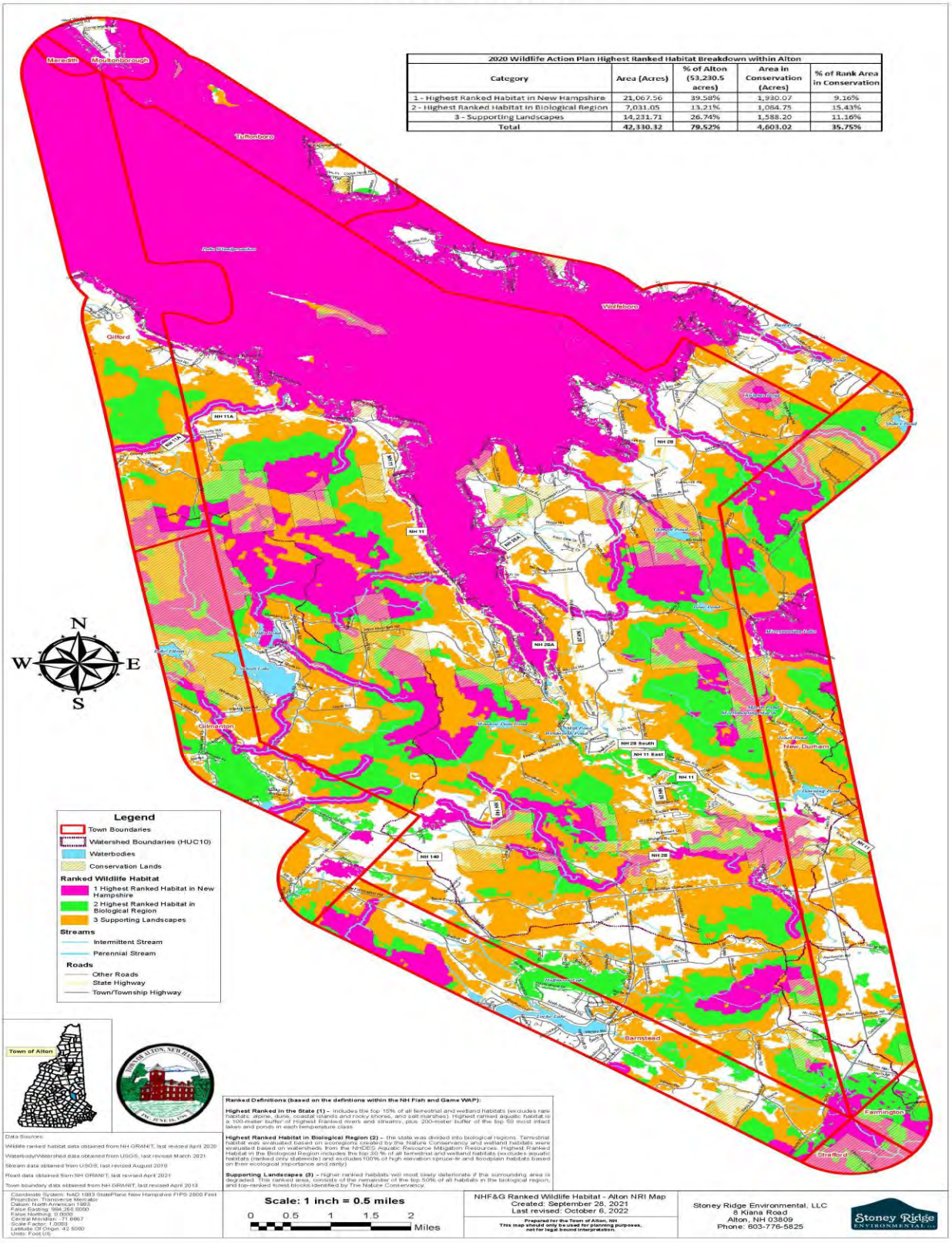
NHFG determined that approximately 28,098.61 acres of Alton or approximately 52.79% of the area of the town is either listed under the categories of Highest Ranked Habitat in New Hampshire or High Ranked Habitat in Biological Region. The remain ranking tier of Supporting Landscapes was approximated at 14,231.71 acres of Alton or 26.74% of the overall area of the town. Areas listed as any of the listed categories of the Highest Ranked Habitat study totals at 42,330.32 acres or 79.52% of the town. One of the main reasons for this large quantity of high ranked/supporting habitat is due to Lake Winnipesaukee. All of Winnipesaukee according to the WAP study is designated under Highest Ranked Habitat in New Hampshire. Approximately

4,603.02 acres of highest ranked habitat/supporting landscapes are located within conservation lands or 10.87% of the overall quantity of highest ranked habitat/supporting landscapes within Alton.

Table 4-4: Highest Ranked Habitat Coverage within the Town of Alton

Wildlife Action Plan Highest Ranked Habitat Breakdown				
Category	**Area (Acres)**	**% of Alton**	**Area in Conservation (Acres)**	**% of Rank**
1 - Highest Ranked Habitat in New Hampshire	21,067.56	39.58%	1,930.07	9.16%
2 - Highest Ranked Habitat in Biological Region	7,031.05	13.21%	1,084.75	15.43%
3 - Supporting Landscapes	14,231.71	26.74%	1,588.20	11.16%
Total	**42,330.32**	**79.52%**	**4,603.02**	**10.87%**

New Hampshire Fish & Game Ranked Wildlife Habitat (2020 Wildlife Action Plan) Town of Alton



Section 5: Conservation Lands & Open Space

5.1 Conservation Land

The town of Alton has been proactively creating and linking conservation lands. There are a total of 83 individual pieces of land that are currently under conservation in the town, and a total of 5,578 acres of the town are under protection. This acreage accounts for nearly 13.4% of the land base area of Alton (or 10.5% of the overall land/lake town area), which is an increase from the assessment done for the 2002 Natural Resource Inventory which approximated 3,175 acres in the town (7.8% of the land base or 6% of the overall land/lake town area). The distribution of conservation lands in 2002 showed a majority of these protected lands situated along the central and northeastern portions of the town. Currently, the distribution of conservation lands appear situated evenly throughout Alton. More recent conservation areas that include the Evelyn H. & Albert D. Morse, Sr. Preserve (ID#'s: 2 & 13), the Hertel Conservation Area (ID# 1) and the expansion of Mount Major State Forest protections (Jensen Conservation Area – ID# 16 & Mount Major Reservation – ID#'s 25, 26, 36, 44, and 46) have rapidly increased the overall conservation of the western portion of Alton. The largest known individual conservation property within Alton is the Hertel Conservation Area, which is comprised of 479.09 acres of land. Additional major conservation area has been added to central/eastern portions of the town that include the expansion of protections around the Merrymeeting River and the inclusion of the Stockbridge Forest Conservation Area. Other notable areas in Alton that remain well protected under conservation include Knights Pond, Gilman Pond, and Marsh Pond. The entire border of both Gilman Pond and Knights Pond are surrounded by areas under conservation protection.

There are two areas adjacent to the Morse Preserve that will also be officially protected as conservation land in the Fall of 2022. Both of these areas connect to the Morse Preserve Conservation Areas with one being located on the northern side and extending to Jesus Valley Road (approximately 260 acres under Conservation Easement) and the other being located on the southern side connecting the Morse Preserve with the Alton Bay State Forest (approximately 222 acres under Fee Ownership). These upcoming additions will increase the total area of conservation lands in Alton to 6,060 acres. This updated acreage will account for nearly 14.6% of the land base area of Alton (or 11.4% of the overall land/lake town area).

There are three protection types that the conservation lands throughout Alton are categorized as, and they are:

Conservation Easement – "a legal agreement between a landowner and a conservation partner or government entity that limits and restricts future uses of a parcel of land. A conservation easement typically allows continued sustainable use of the land for agriculture and forestry but does not allow residential or commercial development"[51)]

Fee Ownership – "is traditional ownership of all of the property interests in a parcel. Fee ownership may be acquired by gift or purchase. In this type of exchange, the landowner gives up all of his/her rights and responsibilities for the land to the town or conservation partner." [51)]

Reverter Clause – A grantor gives real property (land) to a grantee based on an agreement such as designating said land to be used for a specific purpose. If the land is not used for its agreed upon purpose then ownership will revert back to the grantor. In the case of conservation, the land must be kept under conservation and if it will not then the land will shift ownership from the party currently maintaining the land to the original owner.[52)]

Of these three protection type options, Fee Ownerships are the dominant type of conservation land within Alton, which account for 3,787.7 acres (4,009.7 acres with the upcoming additions). Conservation Easements are the next largest protection type, and they account for 1,702.4 acres of Alton (1,962.4 acres with the upcoming additions). The final type, Reverter Clause, only accounts for 87.9 acres in the town, and there is only one conservation property with this classification – Camp Kabeyun. The primary party/agency that manages the most conservation land within Alton is Society for the Protection of New Hampshire Forests (SPNHF), who manage approximately 2,019.1 acres in the town – approximately 36.2% of all conservation lands in the town (approximately 2,501.1 acres in the town with the upcoming additions, which will be approximately 41.3% of all conservation lands in the town).

Table 5-1: Conservation Land Protection Type Area in Alton

Current Alton Conservation Lands Acreage		
Protection Type	**Acreage**	**% of Landbase Area in Alton (41,577.02 acres)**
Conservation Easement	1,702.4	4.1%
Fee Ownership	3,787.7	9.1%
Reverter Clause	87.9	0.2%
Total	**5,578.0**	**13.4%**
Upcoming Alton Conservation Land Additions		
Conservation Easement	260.0	0.6%
Fee Ownership	222.0	0.5%
Updated Alton Conservation Land Acreage (w/ Upcoming Additions)		
Conservation Easement	1,962.4	4.7%
Fee Ownership	4,009.7	9.6%
Reverter Clause	87.9	0.2%
Total	**6,060.0**	**14.6%**
*Two new areas near the Morse Preserve land will be officially listed as conservation lands around October 2022		

Alton Conservation Lands

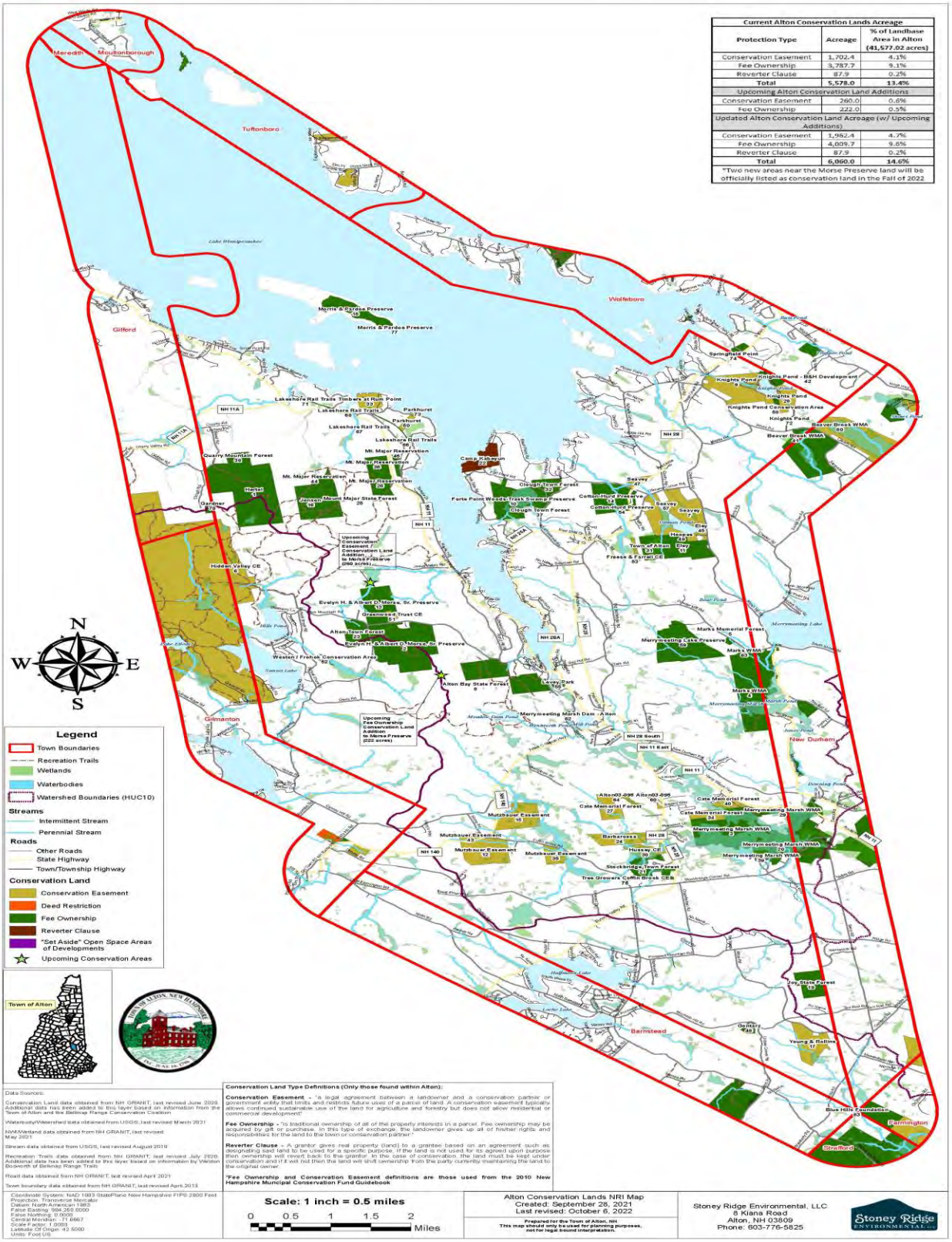


Table 5-2: Conservation Lands of Alton

ID#	Conservation Area Name	Acres	Type of Protection	Primary Agency Type	Primary Owner/Holder	Secondary Owner 1	Secondary Owner 2
1	Hertel	479.09	Fee Ownership	Private	Society for the Protection of NH Forests (SPNHF)	Lakes Region Conservation Trust	Land and Community Heritage Investment Program (LCHIP)
2	Evelyn H. & Albert D. Morse, Sr. Preserve	380.03	Fee Ownership	Private	Society for the Protection of NH Forests (SPNHF)		
3	Merrymeeting Marsh WMA	303.86	Fee Ownership	State	NH Fish & Game (NHFG)		
4	Marks WMA	282.92	Fee Ownership	State	NH Fish & Game (NHFG)		
-	Upcoming Morse Preserve Northern Addition	260.00	Conservation Easement	Private	Society for the Protection of NH Forests (SPNHF)	Town of Alton	
5	Marks Memorial Forest	241.10	Fee Ownership	Private	Society for the Protection of NH Forests (SPNHF)		
6	Hidden Valley CE	234.88	Conservation Easement	State	NH Fish & Game (NHFG)		
7	Seavey	228.16	Conservation Easement	Municipal/County	Town of Alton	NH Office of State Planning	
-	Upcoming Morse Preserve Southern Addition	222.00	Fee Ownership	Private	Society for the Protection of NH Forests (SPNHF)		
8	Alton Bay State Forest	202.57	Fee Ownership	State	NH Dept. of Resources & Economic Dev. (NHDRED)		
9	Knights Pond	189.40	Conservation Easement	State	NH Fish & Game (NHFG)		
10	Forte Point Woods-Trask Swamp Preserve	170.04	Fee Ownership	Private	Lakes Region Conservation Trust		
11	Eley	161.29	Fee Ownership	Municipal/County	Town of Alton	NH Office of State Planning	
12	Mutzbauer (B) / Baker - Mutzbauer Easement	155.73	Conservation Easement	Private	Society for the Protection of NH Forests (SPNHF)		
13	Evelyn H. & Albert D. Morse, Sr. Preserve	149.07	Fee Ownership	Private	Society for the Protection of NH Forests (SPNHF)		
14	Cotton-Hurd Preserve	145.19	Fee Ownership	Private	Lakes Region Conservation Trust		

ID#	Conservation Area Name	Acres	Type of Protection	Primary Agency Type	Primary Owner/Holder	Secondary Owner 1	Secondary Owner 2
15	Mutzbauer (D) / Drew - Mutzbauer Easement	133.04	Conservation Easement	Private	Society for the Protection of NH Forests (SPNHF)		
16	Jensen	131.17	Fee Ownership	Private	Society for the Protection of NH Forests (SPNHF)	Lakes Region Conservation Trust	Land and Community Heritage Investment Program (LCHIP)
17	Young & Rollins	128.29	Conservation Easement	Private	Society for the Protection of NH Forests (SPNHF)	Town of Alton	
18	Rattlesnake Island #1 - Morris & Pardoe Preserve	107.40	Fee Ownership	Private	Lakes Region Conservation Trust		
19	Joy State Forest	97.72	Fee Ownership	State	NH Dept. of Resources & Economic Dev. (NHDRED)		
20	Holmes - Merrymeeting Marsh WMA	90.31	Fee Ownership	State	NH Fish & Game (NHFG)		
21	Stockbridge Town Forest	87.94	Fee Ownership	Municipal/County	Town of Alton		
22	Camp Kabeyun	87.87	Reverter Clause	Private	Audubon Society of New Hampshire		
23	Alton Town Forest	86.37	Fee Ownership	Municipal/County	Town of Alton		
24	Barbarossa	86.23	Conservation Easement	Municipal/County	Town of Alton	Society for the Protection of NH Forests (SPNHF)	NH Office of State Planning
25	Mount Major State Forest	73.23	Fee Ownership	State	NH Dept. of Resources & Economic Dev. (NHDRED)		
26	Roberts Tract - Mt. Major Reservation	69.70	Fee Ownership	Private	Society for the Protection of NH Forests (SPNHF)	Lakes Region Conservation Trust	Land and Community Heritage Investment Program (LCHIP)
27	Cate II - Cate Memorial Forest	67.93	Conservation Easement	Private	New England Forestry Foundation	New England Forestry Foundation	
28	Knights Pond	59.46	Conservation Easement	State	NH Fish & Game (NHFG)		
29	Merrymeeting Marsh WMA	56.25	Fee Ownership	State	NH Fish & Game (NHFG)		
30	Hussey CE	55.89	Conservation Easement	Municipal/County	Town of Alton		

ID#	Conservation Area Name	Acres	Type of Protection	Primary Agency Type	Primary Owner/Holder	Secondary Owner 1	Secondary Owner 2
31	Town of Alton	55.41	Fee Ownership	Municipal/County	Town of Alton		
32	Clough Town Forest	55.36	Fee Ownership	Municipal/County	Town of Alton		
33	Timbers at Rum Point	54.78	Conservation Easement	Municipal/County	Town of Alton		
34	Cate I - Cate Memorial Forest	52.51	Conservation Easement	Private	New England Forestry Foundation	New England Forestry Foundation	
35	Mutzbauer (E) / Ejarque - Mutzbauer Easement	48.14	Conservation Easement	Private	Society for the Protection of NH Forests (SPNHF)		
36	Roberts Tract - Mt. Major Reservation	46.70	Fee Ownership	Private	Society for the Protection of NH Forests (SPNHF)		
37	Clough Town Forest	43.72	Fee Ownership	Municipal/County	Town of Alton		
38	Gregoire Addition - Quarry Mountain Forest	36.95	Fee Ownership	Private	Society for the Protection of NH Forests (SPNHF)		
39	Merrymeeting Marsh WMA	34.35	Fee Ownership	State	NH Fish & Game (NHFG)		
40	Cate I - Cate Memorial Forest	32.39	Conservation Easement	Private	New England Forestry Foundation	New England Forestry Foundation	
41	Tree Growers Tract - Beaver Brook WMA	32.02	Fee Ownership	State	NH Fish & Game (NHFG)		
42	Knights Pond – B&H Development	30.43	Fee Ownership	Private	Lakes Region Conservation Trust		
43	Mutzbauer (A) / Mutzbauer & Pfund - Mutzbauer Easement	24.73	Conservation Easement	Private	Society for the Protection of NH Forests (SPNHF)		
44	Rollins Parcel - Mt. Major Reservation	20.48	Fee Ownership	Private	Society for the Protection of NH Forests (SPNHF)		
45	Eley	19.73	Conservation Easement	Municipal/County	Town of Alton	NH Office of State Planning	
46	Roberts Tract - Mt. Major Reservation	18.94	Fee Ownership	State	Society for the Protection of NH Forests (SPNHF)		
47	Seavey	18.58	Conservation Easement	Municipal/County	Town of Alton	NH Office of State Planning	
48	Gontarz	16.63	Fee Ownership	Municipal/County	Town of Alton		
49	Hoopes	14.88	Conservation Easement	Municipal/County	Town of Alton	NH Office of State Planning	

ID#	Conservation Area Name	Acres	Type of Protection	Primary Agency Type	Primary Owner/Holder	Secondary Owner 1	Secondary Owner 2
50	Parkhurst	14.65	Conservation Easement	Municipal/County	Town of Alton	Lakes Region Conservation Trust	
51	Greenwood Trust CE	14.25	Conservation Easement	Private	Society for the Protection of NH Forests (SPNHF)		
52	Westen / Frohok Conservation Area	13.52	Fee Ownership	Municipal/County	Town of Alton		
53	Freese & Farrell CE	12.16	Conservation Easement	Municipal/County	N/A		
54	Cotton-Hurd Preserve	10.77	Fee Ownership	Private	Lakes Region Conservation Trust		
55	Levey Park	10.06	Fee Ownership	Municipal/County	Town of Alton	Society for the Protection of NH Forests (SPNHF)	
56	Piper, Gaskell + Graves	9.46	Conservation Easement	Private	Lakes Region Conservation Trust	Society for the Protection of NH Forests (SPNHF)	
57	Seavey	8.69	Conservation Easement	Municipal/County	Town of Alton	NH Office of State Planning	
58	Knights Pond Conservation Area	7.96	Fee Ownership	Private	Lakes Region Conservation Trust		
59	Merrymeeting Lake Preserve	7.82	Fee Ownership	Private	The Nature Conservancy		
60	Alton03-096	7.42	Conservation Easement	Municipal/County	Town of Alton		
61	Mutzbauer (C) / Drew - Mutzbauer Easement	7.33	Conservation Easement	Private	Society for the Protection of NH Forests (SPNHF)		
62	Merrymeeting Marsh Dam - Alton	5.89	Fee Ownership	State	NH Fish & Game (NHFG)		
63	Marks WMA	5.76	Fee Ownership	State	NH Fish & Game (NHFG)		
64	Alton03-096	5.50	Conservation Easement	Municipal/County	Town of Alton		
65	Alton03-096	5.27	Conservation Easement	Municipal/County	Town of Alton		
66	Lakeshore Rail Trails	5.23	Fee Ownership	Municipal/County	Town of Alton		
67	Lakeshore Rail Trails	5.08	Fee Ownership	Municipal/County	Town of Alton		
68	Lakeshore Rail Trails	4.23	Fee Ownership	Municipal/County	Town of Alton		
69	Alton03-096	3.05	Conservation Easement	Municipal/County	Town of Alton		

ID#	Conservation Area Name	Acres	Type of Protection	Primary Agency Type	Primary Owner/Holder	Secondary Owner 1	Secondary Owner 2
70	Seavey	2.62	Conservation Easement	Municipal/County	Town of Alton	NH Office of State Planning	
71	Lakeshore Rail Trails	2.56	Fee Ownership	Municipal/County	Town of Alton		
72	Knights Pond	2.52	Conservation Easement	State	NH Fish & Game (NHFG)		
73	Parkhurst	2.34	Conservation Easement	Municipal/County	Town of Alton	Lakes Region Conservation Trust	
74	Springfield Point	2.02	Fee Ownership	Private	Lakes Region Conservation Trust		
75	Alton03-096	1.36	Conservation Easement	Municipal/County	Town of Alton		
76	Tree Growers Coffin Brook CE	0.96	Conservation Easement	Municipal/County	Town of Alton		
77	Rattlesnake Island #2 - Morris & Pardoe Preserve	0.39	Fee Ownership	Private	Lakes Region Conservation Trust		
78	Powdermill Fish Hatchery	0.13	Fee Ownership	State	NH Fish & Game (NHFG)		
79	Gardner	0.06	Fee Ownership	Municipal/County	Town of Gilford	Town of Gilford	
80	Beaver Brook CE/WMA	0.01	Conservation Easement	State	NH Fish & Game (NHFG)		
81	New Durham Town Forest	<0.01	Fee Ownership	Municipal/County	Town of New Durham	GRANTOR	
82	New Durham Town Forest	<0.01	Fee Ownership	Municipal/County	Town of New Durham	GRANTOR	
83	Blue Hills Foundation	<0.01	Fee Ownership	Private	Blue Hills Foundation	New England Forestry Foundation	
Current Total Conservation Acres within Alton		**5,577.94**	**Current Total % of Alton under Conservation (Landbase Area = 41,577.02 acres)**				**13.42%**
Upcoming Total Conservation Acres within Alton		**6,059.94**	**Upcoming Total % of Alton under Conservation (Landbase Area = 41,577.02 acres)**				**14.58%**

5.2 Open Space & Unfragmented Lands

Unfragmented open space blocks are generally undeveloped areas of land where little to no roads pass through. These blocks can include land types such as agriculture lands, forests, open water (lakes, ponds, etc.), and wetlands. These blocks are highly important for wildlife as it provides habitat with a buffer from most anthropogenic activities, typically fosters good water resource quality, and promotes safe wildlife migration/hunting corridors. Other benefits beyond wildlife include providing the town's rural lakeside aesthetic and enabling people with numerous recreational opportunities such as boating, fishing, hiking, hunting, and snowmobiling.

The methodology used to estimate the unfragmented open space blocks within Alton, was done based on correspondence with and the approaches by the University of New Hampshire (UNH) Cooperative Extension. The UNH Cooperative Extension published the "Natural Resources Inventories: A Guide for New Hampshire Communities and Conservation Groups (NH NRI Guide)" in the 1990's and updated it several times in 2001 and 2016 Natural Resource Inventory Guide.[53)] The unfragmented open space block estimation is done based on the most recent (2016) update of this guide, and it entails creating a 500ft. buffer around all NHDOT Class 1 – 5 roads, and then cutting out this buffer from the town's boundary polygon. All NHDOT Class 6 and private roads have been excluded from this buffer as its assumed that there is a minimal amount of development and road traffic along these roads.

Table 5-3: List of NHDOT road class definitions [54)]

NHDOT Road Classifications	
Class 1	Primary Highways owned and maintained by the state
Class 2	Secondary Highways, including: State-Aid Secondary Highways (IIa) and Secondary Highways owned and maintained by municipalities (IIb)
Class 3	Recreational Roads
Class 4	Roads in Urban Compact Areas
Class 5	Local Roads
Class 6	Non-maintained Local Roads
Class 7	Federal Roads

The analysis of unfragmented open space areas within Alton revealed there to be a total of 50 unique blocks that are considered unfragmented – this excludes the block that contains Lake Winnipesaukee as per correspondence with the Town of Alton's Conservation Commission. Of these blocks, 31 are under 250ac in size, 9 are between 250ac and 500ac, 1 is between 500ac and 1,000ac, 5 are between 1,000ac and 1,500ac, 2 are between 1,500ac and 2,500ac, and 3 are greater than 2,500ac. The largest of the blocks would technically be the one encompassing Lake Winnipesaukee, which totals 13,461.1 acres, however the largest block after that is the Belknap Mountains block, which totals 5,556.50 acres. After excluding the lake, the total area of all the blocks greater than 500ac is 22,841.30 acres, which is approximately 54.94% of the town of Alton's land base area (approximately 41,577.02 acres). The overall total of unfragmented open space areas without the lake within Alton is approximately 27,646.70 acres, which is approximately 63.96% of the town's land base area. Nearly two thirds of the town's land base area is considered part of an unfragmented block. If the Lake Winnipesaukee block is included in the overall total of unfragmented open space area, the updated value would be 41,107.80 acres or approximately 77.22% of the overall area of Alton. This means that technically three quarters of the overall area of the town is located within an unfragmented block.

When comparing the unaltered area block sizes between this year's and those from 2002, the acreage from this year's had larger values in every instance. The largest difference occurs in the Rocky/Alton Mountain block, which had a nearly 500 acre increase in comparison to that from 2002. This size difference could have occurred due to the updated road and town data being utilized for this NRI and utilization of the latest ESRI ArcMap software (10.8.1). The road data used in this analysis was last updated in April of 2021, and due to current technologies in surveying and spatial analysis it can be assumed that this most recent data is more accurate compared to the road data used last time, which was last revised in October of 1995. Additional road class information especially for class 6 roads were manually entered into the road dataset based on information from the Town of Alton's 2020 Annual Report. As another note, this unfragmented space analysis was done based solely on the area of Alton. Some unfragmented open space blocks would technically be larger if town boundaries weren't taken into consideration – example blocks include #1 Belknap Mountains and #3 Marsh Pond/Upper Merrymeeting.

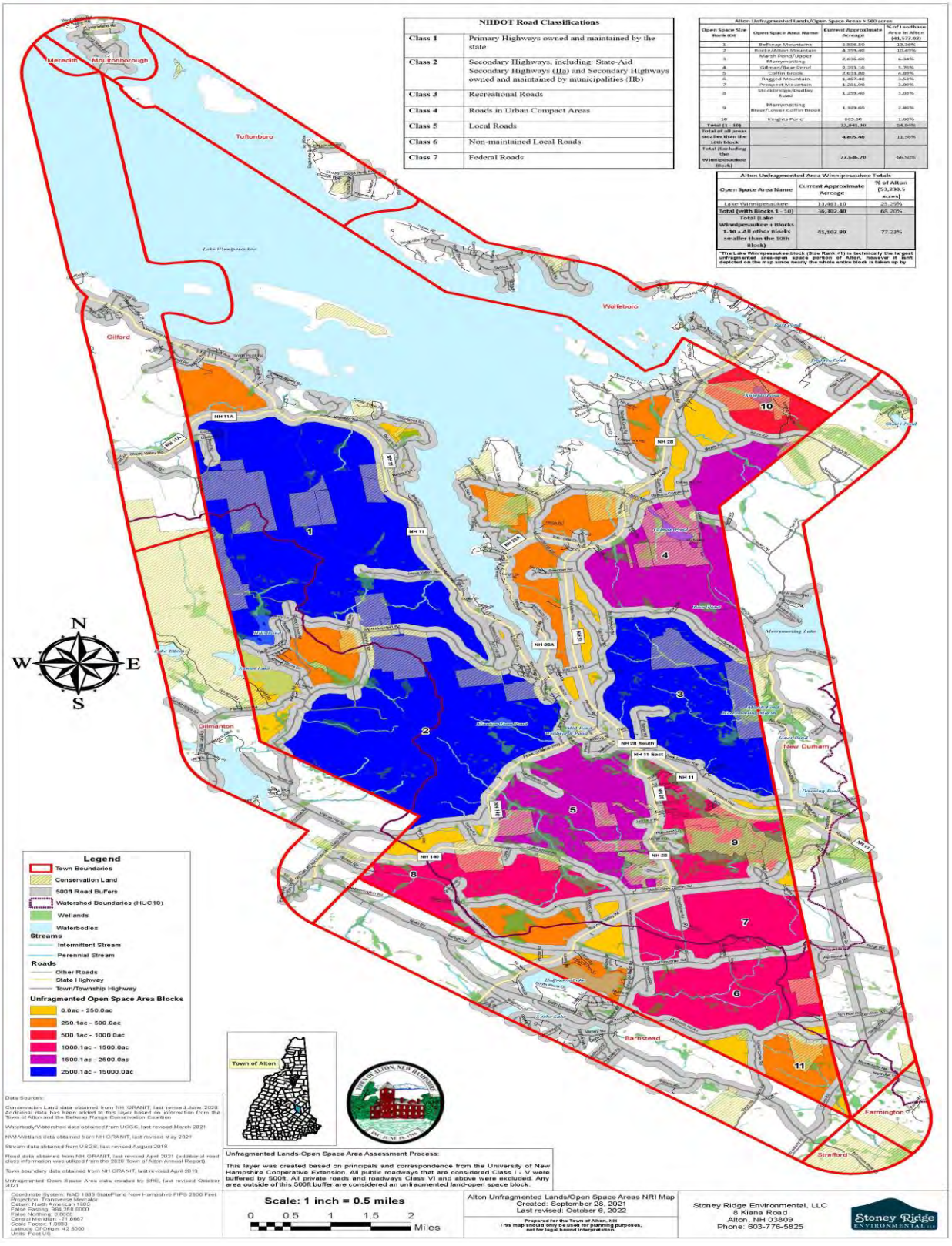
Table 5-4: Lake Winnipesaukee Unfragmented Open Space Area Only

Alton Unfragmented Area Winnipesaukee Totals		
Open Space Area Name	**Current Approximate Acreage**	**% of Alton (53,230.5 acres)**
Lake Winnipesaukee	13,461.10	25.29%
Total (with Blocks 1 - 10)	**36,302.40**	68.20%
Total (Overall)	**41,107.80**	77.23%

Table 5-5: List of Unfragmented Open Space Areas > 500 acres (2020 & 2002 comparison)

Alton Unfragmented Lands/Open Space Areas > 500 acres										
Open Space Size Rank ID#	Open Space Area Name	Current Approximate Acreage	Previous Approximate Acreage	Current % of Alton Land Base Area (41,577.02 acres)	Previous % of Alton Land Base Area (41,577.02 acres)	Current Conservation Land Acreage	Previous Conservation Land Acreage	Current % of Area Protected	Previous % of Area Protected	Natural Resources
*	Lake Winnipesaukee	13,461.10	N/A	N/A	N/A	255.96	N/A	1.90%	N/A	Lake Winnipesaukee, islands
1	Belknap Mountains	5,556.50	5,244.00	13.36%	12.61%	1,103.40	275.00	19.86%	5.24%	Mountains, forests, Hills Pond
2	Rocky/Alton Mountain	4,359.40	3,874.00	10.49%	9.32%	415.43	210.00	9.53%	5.42%	Mountains, forests, pond, headwaters of Coffin and Frohock Brook
3	Marsh Pond/Upper Merrymetting	2,636.60	2,438.00	6.34%	5.86%	520.08	522.00	19.73%	21.41%	Marsh Pond, small aquifer, wetlands, Merrymeeting
4	Gilman/Bear Pond	2,393.10	1,609.00	5.76%	3.87%	475.51	407.00	19.87%	25.30%	Gilman and Bear Pond, forests, endangered species, wetlands
5	Coffin Brook	2,033.80	1,963.00	4.89%	4.72%	287.53	236.00	14.14%	12.02%	Coffin Brook, numerous wetlands, productive soils, aquifer
6	Ragged Mountain	1,467.40	1,315.00	3.53%	3.16%	96.72	0.00	6.59%	0.00%	Ragged Mountain, brooks, wetlands, forests
7	Prospect Mountain	1,281.90	1,230.00	3.08%	2.96%	0.00	0.00	0.00%	0.00%	Agriculture lands, forests, brooks, wetlands
8	Stockbridge/Dudley Road	1,259.40	1,111.00	3.03%	2.67%	145.55	200.00	11.56%	18.00%	Coffin Brook, wetlands, productive soils
9	Merrymetting River/Lower Coffin Brook	1,189.60	1,041.00	2.86%	2.50%	513.28	339.00	43.15%	32.56%	Merrymetting, Coffin Brook, largest wetland complex and aquifer, wildlife habitat
10	Knights Pond	663.60	601.00	1.60%	1.45%	277.75	306.00	41.86%	50.92%	Knights Pond, wetlands, forest aquifer
Total (1 - 10) *Excludes Lake Winnipesaukee Block	-	**22,841.30**	**20,426.00**	**54.94%**	**49.13%**	**3,835.25**	**2,495.00**	16.79%	12.21%	-
Total (1 - 10) *Includes Lake Winnipesaukee Block	-	**36,302.40**	**20,426.00**	**54.94%**	**49.13%**	**4,091.22**	**2,495.00**	**11.27%**	**12.21%**	-
Total (All areas smaller than the 10th block)	-	**4,805.40**	N/A	**9.03%**	N/A	**484.90**	N/A	**10.09%**	N/A	
Total (Overall) *Excluding Lake Winnipesaukee Block	-	**27,646.70**	N/A	**63.96%**	N/A	**4,320.16**	N/A	**15.63%**	N/A	-
Total (Overall) *Including Lake Winnipesaukee Block	-	**41,107.80**	N/A	**63.96%**	N/A	**4,576.12**	N/A	**11.13%**	N/A	-

Alton Unfragmented Lands/Open Space Areas



Lake Winnipesaukee (approximately 13,461.1 acres)

The Lake Winnipesaukee block is technically the largest area of unfragmented open space within Alton. The area is comprised of Lake Winnipesaukee and several of the islands on the lake such as Rattlesnake Island, Barndoor Island, and Sleepers Island. A majority of the area within this block is considered open water. Approximately 255.96 acres of this area is under conservation protection. These protected conservation lands include: Morris & Pardoe Preserve, Timbers at Rum Point, Camp Kabeyun, Seavey, and the Clough Town Forest. These areas of conservation account for 1.9% of this unfragmented open space block. During the 2002 Natural Resource Inventory, this block was not counted in the final unfragmented open space area analysis. In the main analysis of unfragmented blocks this area has been excluded based on correspondence with the Town of Alton's Conservation Commission.

#1 Belknap Mountains - West Alton (approximately 5,556.5 acres)

The Belknap Mountains block located in West Alton is the largest area of unfragmented open space within Alton excluding the lake. This block is bordered by the following roads: to the east is NH Route 11, to the south is Alton Mountain Road, to the west Griswold Road (Gilmanton) and Glidden Road (Gilford), and to the north is NH Route 11A. If looking beyond the Town of Alton's boundary, then this block would extend further into the towns of Gilmanton and Gilford. This area contains Hills Pond, streams that connect to this pond and Lake Winnipesaukee, wetlands, and one of the steepest areas in all of Alton. Approximately 1,103.40 acres of this area is under conservation protection. These protected conservation lands include: Hidden Valley CE, Greenwood Trust CE, Mount Major Reservation, Quarry Mountain Forest, Hertel Area, Jensen Area, Mount Major State Forest, and the Evelyn H. & Albert D. Morse Senior Preserve. These areas of conservation account for approximately 19.86% of this overall block. From 2002 Natural Resource Inventory, approximately 275 acres (5.24% of previous count) of this block was protected under conservation. 828.4 acres of additional protected areas have been added to this open space section since 2002. The amount of land under conservation protection within this block will be increasing in the Fall of 2022 with an addition to the northern side of the Morse Preserve Conservation area (~ 260 acres). Land habitat types within this area include rocky ridges, cliff and talus slopes, Appalachian-oak forests, northern-hardwood conifer forests, hemlock-hardwood-pine forests and a small section of peatland. Due to the scenic and natural terrain located here, this unfragmented space is home to highest amount of recreational trails within the Town of Alton.

#2 Rocky/Alton Mountain/Upper Coffin Brook (approximately 4,359.4 acres)

The Rocky/Alton Mountain block is the second largest area of unfragmented open space within Alton. This block is bordered by the following roads: to the east is Main Street and Mount Major Highway, to the south is Halls Hill Road and NH Route 140, to the west is Avery Hill Road and Mountain Road (Gilmanton), and to the north is Avery Hill Road and Alton Mountain

Road. This area contains Meadow Dam Pond, sections of several streams such as Frohock Brook and Coffin Brook, small sections of wetlands, and also steep sections (not as much as what's located in the Belknap Mountains block). Approximately 415.43 acres of this area is under conservation protection (accounts for 9.53% of this area). The areas of conservation within this block include: Alton Bay State Forest and the Evelyn H. & Albert D. Morse Senior Preserve. During the 2002 Natural Resource Inventory, approximately 210 acres of this block was under conservation, which accounted for 5.42% of this block from the previous count. An approximate increase of 205.43 acres in conservation lands has occurred within this block from 2002 till 2021. The amount of land under conservation protection within this block will be increasing in the Fall of 2022 with an addition to the southern side of the Morse Preserve Conservation area (~ 222 acres). Land cover types found within this area include rocky ridges, cliff and talus slopes, Appalachian-oak-pine forests, northern-hardwood conifer forests, hemlock-hardwood-pine forests, grasslands, and sections of peatland and northern swamp. This unfragmented area space is home to the second largest amount of recreational hiking and snowmobile trails within Alton.

#3 Marsh Pond/Upper Merrymeeting (approximately 2,636.6 acres)

The Marsh Pond/Upper Merrymeeting block is the third largest section of unfragmented open space within Alton. This area is bordered by the following roads: to the east is Merrymeeting Road (New Durham), to the south is Range Road, New Durham Road, and NH Route 11, to the west is NH Route 28 and Old Wolfeboro Road, and to the north is Powder Mill Road. This area contains sections of the Upper Merrymeeting River and the Merrymeeting Marsh/Pond. Other resources that are within this area include numerous wetlands, sections of peatland and temperate swamp, grasslands Appalachian oak-pine forests, Hemlock-hardwood-pine forests, and relatively steep areas of land. Approximately 520.08 acres of this area is under conservation protection. The protected conservation lands within this block include: Marks Memorial Forest and Marks Wildlife Management Area. These conservation areas account for approximately 19.73% of this overall block. From the 2002 Natural Resource Inventory, approximately 522 acres of this block was protected under conservation, and this accounted for 21.41% of the previous count. While the percent of conservation within this year's analysis and the 2002 analysis differ by nearly 2%, the actual change in conservation area is nearly the same. The percent differences are mainly from the overall acreage values calculated for this block, and the difference most likely stems from using the most recent data available.

#4 Gilman/Bear Pond (approximately 2,393.1 acres)

The Gilman/Bear Pond block is considered the fourth largest area of unfragmented space found within the Town of Alton. This block is bordered by the following roadways: to the east is Sampson Road (New Durham), Chelsey Road (New Durham), Merrymeeting Road (New Durham), and Marsh Hill Road (New Durham), to the south is Powder Mill Road, to the west is NH Route 28 and Old Wolfeboro Road, and to the north is Gilmans Corner Road, Drew Hill Road, Hayes Road, and Rines Road. Watercourses/bodies such as Gilman Pond, Bear Pond,

Hurd Brook, and Beaver Brook can be found within this open space block. This area is home to land habitat types such as wetlands, sections of temperate swamps and peatlands, some areas of steep rocky ridges, Appalachian oak-pine forests, and hemlock-hardwood-pine forests. The dominant habitat type appears to be hemlock-hardwood-pine forests. This area plays an important role to the Town of Alton as it houses numerous sections of favorable and viable habitat for the small-whorled pogonia as alluded to by the U.S. Fish & Wildlife Service.[55)] Approximately 475.51 acres of this area is protected under conservation. These protected lands within this block include: Town of Alton Conservation Area (CA), Seavey CA, Eley CA, and the Hoopes CA. These conservation areas account for approximately 19.87% of this overall block. From the 2002 Natural Resource Inventory, approximately 407 acres of this block was protected under conservation (approximately 25.30% of the previous count). The amount of conservation area within this block area has increased overall by approximately 68.51 acres.

This block area increased from 1,609 acres in 2002 to 2,393.10 acres in this current assessment. In 2002, this block area was considered the sixth largest unfragmented space area. The reason for these changes comes as a result of the data utilized with the roadways. The roadway data used for this Natural Resource Inventory is based on GIS files acquired by NH GRANIT and from documented information from the 2020 Town Report (specifically the Alton Highway Department section). With the combined use of these data sources, SRE found that this block extends further on the northern side compared to the 2002 analysis. With this additional area, the Gilman/Bear Pond block has had the most significant increase in size compared to all the other blocks.

#5 Coffin Brook (approximately 2,033.8 acres)

The Coffin Brook block is the fifth largest one of all the open space blocks. This area is bordered by the following roads: to the east is NH Route 28, to the south is Stockbridge Corner Road, to the west is Coffin Brook Road and NH Route 140, and to the north is Main Street and NH Route 140. Portions of the Merrymeeting River and Coffin Brook are present in this area as well as numerous wetlands associated with these watercourses. Land habitat found within this open area block includes wetlands, temperate swamp, peatlands, sand/gravel areas, Appalachian oak-pine forests, hemlock-hardwood-pine forests, and small sections of grasslands. This area is dominated by Appalachian oak-pine forests. Approximately 287.53 acres of this area is under conservation protection. The protected conservation lands within this block include: Cate Memorial Forest, Mutzbauer Easement, Barbarossa Conservation Area (CE), and the Alton 03-096 CE. These conservation areas account for approximately 14.14% of this overall block. From the 2002 Natural Resource Inventory, approximately 236 acres of this block was protected under conservation, and this accounted for 12.02% of the previous count. Between 2002 and this current Natural Resource Inventory analysis, there has been additional 51.53 acres of conservation area added to this open space block.

#6 Ragged Mountain (approximately 1,467.4 acres)

The Ragged Mountain block is the sixth largest of the open space unfragmented areas. This area is bordered by the following roads: to the east is Ragged Mountain Road (New Durham) and Berry Road (New Durham), to the south is Muchado Hill Road, to the west is Hollywood Beach Road and Stonewall Road, and to the north is Prospect Mountain Road. Streams connected to Half Moon Lake cross through the area and various small wetlands are also present here. Land cover types that can be found here include sections of peatland, sections of rocky ridges, Appalachian oak-pine forests and hemlock-hardwood-pine forests. The dominant land cover type within this block is hemlock-hardwood-pine forests. There is only one piece of land under conservation within this block, and it is known as the Joy State Forest. This forest is approximately 96.72 acres and it accounts for 6.59% of the entire block. During the 2002 Natural Resource Inventory, no land was under conservation within this area.

#7 Prospect Mountain (approximately 1,281.9 acres)

The Prospect Mountain block is the seventh largest of the open space unfragmented areas. This area is bordered by the following roadways: to the east is Berry Road (New Durham), to the south is Prospect Mountain Road, to the west is Hamwoods Road, and to the north is Stockbridge Corner Road and Valley Road (New Durham). This area has some sections of intermittent streams within it and very few wetlands. Out of the eleven largest open space unfragmented areas, the Prospect Mountain one has the least amount of wetlands. Hemlock-hardwood-pine forest is the land cover type that nearly encompasses the whole entire block. Based on information that was ground truth by SRE, this area is also home to open ledge habitat and some of the largest areas of agriculture found throughout Alton. No area is under conservation within this block, and this was the same outcome in 2002 as well. Lands within this block should be prioritized for future conservation efforts.

#8 Stockbridge and Dudley Road (approximately 1,259.4 acres)

The Stockbridge & Dudley Road block is the eight largest open space unfragmented area. This section is bordered by the following roads: to the east is Coffin Brook Road and Stockbridge Road, to the south is Stockbridge Corner Road, Dudley Road, and Bartlett Road, to the west is Tibbets Road and Old Farmington Road, and to the north is NH Route 140 and Coffin Brook Road. A section of Coffin Brook passes through this area, and as well as a few other smaller unnamed streams. Numerous wetlands can also be found here, with the largest concentration being found near Coffin Brook. Land cover types that can be located here include wetlands, temperate swamps, peatlands, small sections of grasslands, hemlock-hardwood-pine forests, and Appalachian-oak-pine forests. The dominant land cover type within this area is hemlock-hardwood-pine forest. There are two sections of land protected under conservation, and they are both under the Mutzbauer Easement (Mutzbauer (E) / Ejarque Land and the Mutzbauer (B) / Baker Land). Approximately 145.55 acres of this area is under conservation, and this accounts for 11.56% of the whole entire block. In 2002, the previously accounted conservation area was 200 acres, which accounted for 18% of the previous acreage for this block. This block

increased in size compared to 2002 analysis, however the amount of conservation area encompassed in this block decreased by 54.45 acres. This size difference as mentioned previously is most likely due to the utilization of the most up-to-date road data.

#9 Merrymeeting River/Lower Coffin Brook (approximately 1,189.6 acres)

The Merrymeeting River/Lower Coffin Brook open space is the ninth largest of the open area blocks. It is bordered by the following roadways: to the east is NH Route 11 and Stockbridge Corner Road, to the south is Stockbridge Corner Road, to the west is NH Route 28, and to the north is NH Route 11. The block encompasses large sections of the Merrymeeting River and Coffin Brook, and also has the largest concentration of wetlands out of all the other unfragmented blocks. Land cover types found here include wetlands, peatlands, temperate swamps, Appalachian oak-pine forests, and a small section of hemlock-hardwood-pine forests. The wetlands and peatlands are the land cover types that dominate within this area. Several pieces of conservation land can be found here, and those areas are the Cate Memorial Forest and the Merrymeeting Marsh Wildlife Management Area. Approximately 513.28 acres of this block are protected under conservation, which accounts for 43.15% of the whole block. In 2002, this area had approximately 339 acres under conservation which counted as 32.56% of this block from that year's acreage count. From 2002 till 2021, a total of 174.28 additional acres of land have been protected under conservation. This area has the greatest percentage of its land under conservation compared to the other top ten largest open space blocks.

#10 Knights Pond (approximately 663.6 acres)

The Knights Pond block is the tenth largest of the open space unfragmented areas. This area is bordered by the following roads: to the south is Rines Road, to the west is Stage Coach Road, and to the north is NH Route 28 and Winnipesaukee Drive (Wolfeboro). This block contains Knights Pond and two streams associated with the pond. One of these streams connects from Lake Winnipesaukee into Knights Pond. Some wetlands are also present here, and they are primarily associated with Knights Pond. A majority of the land cover within this area is dominated by hemlock-hardwood-pine forests. Other smaller land cover types present include Appalachian oak-pine forests, wetlands, peatlands, rocky ridges with associated cliff/talus slopes, and sand and gravel areas. Numerous sections of conservations lands are found within this block and a majority of them stem from the Knight's Pond Conservation Area. An individual property under conservation protection is known as Piper, Gaskell & Graves. The whole entire border of Knights Pond is protected with these conservation lands. Approximately 277.75 acres of land in this block is under conservation protection and this accounts for 41.86% of this area. In 2002, approximately 306 acres of this area was classified as conservation protection areas, and this accounted for 50.92% of the original acreage count. According to the calculations, the 2002 value of conservation lands was 28.25 acres larger than what was currently determined. This acreage difference could stem from the observed road buffer changes from the use of the most recently updated data.

Section 6: Agriculture & Forestry

6.1 Important Agricultural Soils & Active Farmlands

Important Agriculture Soil Type Definitions (as noted by the Natural Resources Conservation Service (NRCS) & the Unite States Department of Agriculture (USDA))

Prime farmland: "Is considered soil/land that meets the following criteria:

- Soils that have an aquic or udic moisture regime and sufficient available water capacity within a depth of 40 inches to produce the commonly grown cultivated crops adapted to New Hampshire in 7 or more years out of 10.

- Soils that are in the frigid or mesic temperature regime.
- Soils that have a pH between 4.5 and 8.4 in all horizons within a depth of 40 inches.
- Soils that have either no water table or have a water table that is maintained at a sufficient depth during the cropping season to allow cultivated crops common to New Hampshire to be grown.
- Soils that have a saturation extract less than 4 mmhoc/cm and the exchangeable sodium percentage is less than 15 in all horizons within a depth of 40 inches.
- Soils that are not frequently flooded during the growing season (less than a 50% chance in any year or the soil floods less than 50 years out of 100.)
- The product of the erodibility factor times the percent slope is less than 2.0 and the product of soil erodibility and the climate factor does not exceed 60.
- Soils that have a permeability rate of at least 0.06 inches per hour in the upper 20 inches.
- Soils, that have less than 10% of the upper 6 inches consisting of, rock fragments larger than 3 inches in diameter."[56)]

Farmland of State Importance (New Hampshire): "Land that is not prime or unique but is considered farmland of statewide importance for the production of food, feed, fiber, forage and oilseed crops. Criteria for defining and delineating farmland of statewide importance are determined by a state committee chaired by the Commissioner, New Hampshire Department of Agriculture, Markets and Food, with members representing the University of New Hampshire Cooperative Extension, New Hampshire Association of Conservation Districts and the New Hampshire Office of State Planning. The NRCS State Soil Scientist serves on this committee in an advisory capacity. The original criteria were established on June 20, 1983. It was updated on December 7, 2000. Soils of statewide importance are soils that are not prime or unique and:

- Have slopes of less than 15 percent
- Are not stony, very stony or bouldery

- Are not somewhat poorly, poorly or very poorly drained
- Includes soil complexes comprised of less than 30% shallow soils and rock outcrop and slopes do not exceed 8%.
- Are not excessively drained soils developed in stratified glacial drift, generally having low available water holding capacity."[56)]

Farmland of Local Importance (Belknap County): "Farmland of local importance is farmland that is not prime, unique or of statewide importance, but has local significance for the production of food, feed, fiber and forage. Criteria for the identification and delineation of local farmland is determined on a county-wide basis by the individual County Conservation District Boards. The original criteria were established on June 20, 1983. Updates are noted according to the county initiating the update. The criteria for soils of local importance within Belknap County is as follows:

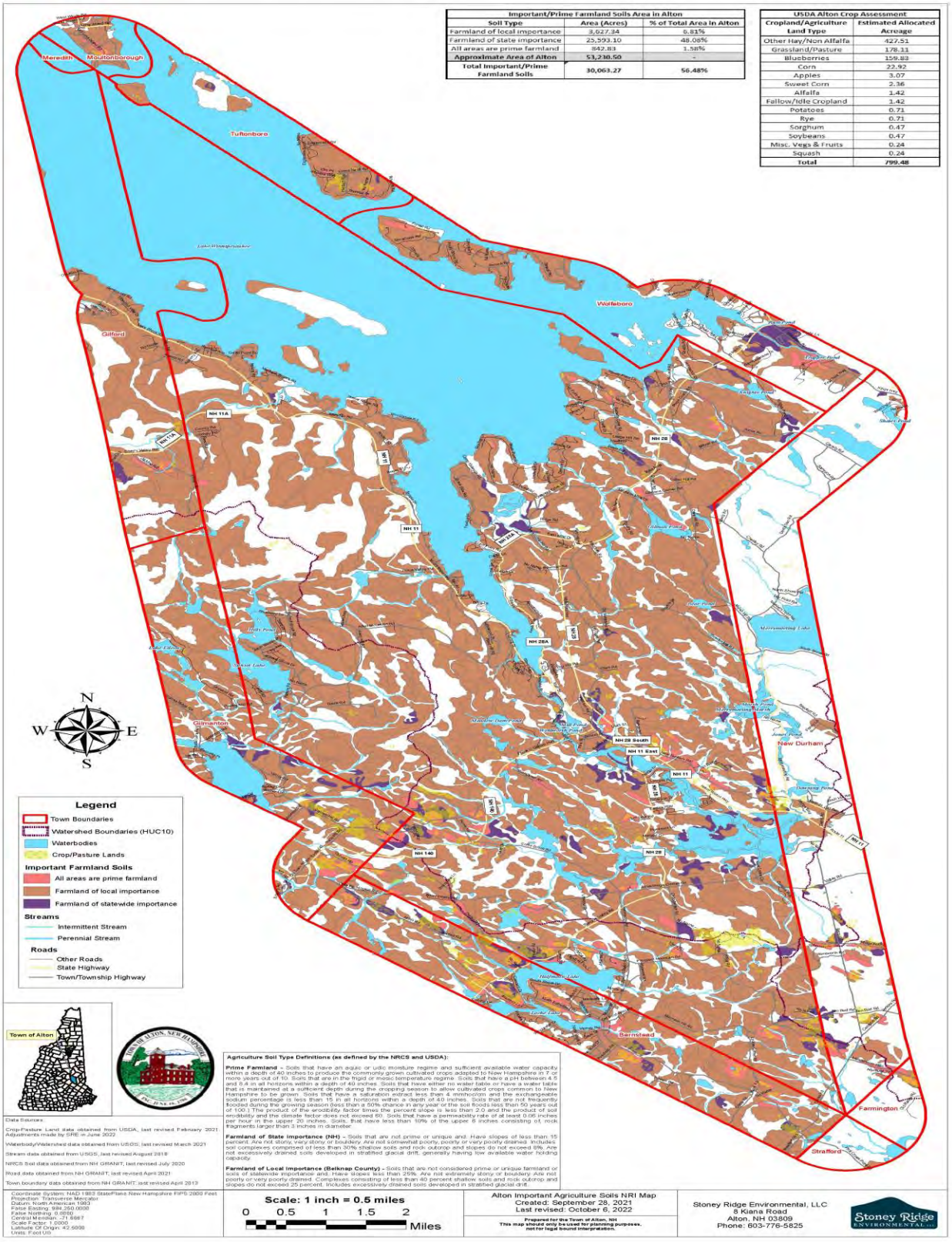
- Have slopes less than 25%
- Are not extremely stony or bouldery
- Are not poorly or very poorly drained
- Complexes consisting of less than 40 percent shallow soils and rock outcrop and slopes do not exceed 25 percent.
- Includes excessively drained soils developed in stratified glacial drift.
- Soils that meet all of the above and are not considered prime or unique farmland or soils of statewide importance"[56)]

The NRCS – formerly known as the Soil Conservation Service – has considered an approximate total of 842.83 acres in Alton as prime farmland. This comprises of 1.6% of the whole area of Alton. The significant concentrations of these prime farmland soils are situated at the following locations: 1) near Route 11 between the border of the town of New Durham and Wentworth Pond and 2) near Route 140 where Coffin Brook Road intersects with it.

Table 6-1: Important Agriculture/Farmland Types within Alton

Important/Prime Farmland Soils Area in Alton		
Soil Type	**Area (Acres)**	**% of Total Area in Alton**
Farmland of local importance	3,627.34	6.81%
Farmland of state importance	25,593.10	48.08%
All areas are prime farmland	842.83	1.58%
Approximate Area of Alton	**53,230.50**	**-**
Total Important/Prime Farmland Soils	**30,063.27**	**56.48%**

Alton Important Agriculture Soils



List of all Prime Farmland Soil Types:

1) **Gilmanton** fine sandy loam, 3 to 8 percent slopes (383.08 acres)
2) **Metacomet** fine sandy loam, 3 to 8 percent slopes (330.49 acres)
3) **Peru** fine sandy loam, 3 to 8 percent slopes (62.65 acres)
4) **Skerry** fine sandy loam, 3 to 8 percent slopes (36.43 acres)
5) **Peru** fine sandy loam, 0 to 3 percent slopes (9.93 acres)
6) **Becket** fine sandy loam, 3 to 8 percent slopes (9.76 acres)
7) **Canterbury** fine sandy loam, 3 to 8 percent slopes (9.38 acres)
8) **Paxton** fine sandy loam, 3 to 8 percent slopes (0.66 acres)
9) **Woodbridge** fine sandy loam, 3 to 8 percent slopes (0.44 acres)

The dominant prime farmland soil types within Alton are Gilmanton fine sandy loam, 3 to 8 percent slopes (383.08 acres) and Metacomet fine sandy loam, 3 to 8 percent slopes (330.49 acres). The Gilmanton soil can be found in the general southwestern portion of the town around the NH Route 140 and NH Route 28 with some specific outcrops close to Halfmoon Lake. The Metacomet soil can found in the general southern portion of the town with the largest outcropping being located near the Merrymeeting River and NH Route 11.

The USDA under the National Agricultural Statistics Service (NASS) also captures and documents crop related data throughout the US with the use of satellite imagery. Imagery is utilized from numerous satellites during the growing season to create cropland maps and to estimate the coverage of crops.[57)] According to the data captured in 2020 and published in 2021 and additional ground truthing information by SRE, approximately 799.48 acres of land within Alton is categorized as cropland/pasture land. The three crops with the largest dedicated estimated area are: Non-Alfalfa Hay (427.51 acres), Grassland/Pasture (178.11 acres), and Blueberries (159.83 acres). The general location of the largest concentrations of Non-Alfalfa Hay areas include near Halls Hill Road and Dudley Road. Some of the largest areas of Grassland/Pasture land can be found near Halls Hill Road, Muchado Hill Road, and Lot Line Road. The largest designated area for Blueberries is located near Prospect Mountain.

Table 6-2: USDA NASS Cropland Analysis within Alton

USDA Alton Crop Assessment	
Cropland/Agriculture Land Type	**Estimated Allocated Acreage**
Other Hay/Non Alfalfa	427.51
Grassland/Pasture	178.11
Blueberries	159.83
Corn	22.92
Apples	3.07
Sweet Corn	2.36
Fallow/Idle Cropland	1.42
Alfalfa	1.42
Potatoes	0.71
Rye	0.71
Soybeans	0.47
Sorghum	0.47
Misc. Vegs & Fruits	0.24
Squash	0.24
Total	**799.48**

6.2 Forest Soils & Forestry

Important Forest Soil Definitions for Belknap County (as noted by the NRCS & the USDA)

Group IA – "The successional trends on these soils are toward stands of shade tolerant hardwood, i.e., beech and sugar maple. Successional stands frequently contain a variety of hardwoods such as beech, sugar maple, red maple, white birch, yellow birch, aspen, white ash, and northern red oak in varying combinations with red and white spruce, balsam fir, hemlock, and occasionally white pine. Hardwood competition is severe on these soils. Softwood regeneration is usually dependent upon persistent hardwood control efforts. This group consists of the deeper, loamy textured, moderately well, and well-drained soils. Generally, these soils are more fertile and have the most favorable soil moisture relationships."[56)]

Group IB – "Soils in this group have successional trends toward a climax of tolerant hardwoods, predominantly beech. Successional stands, especially those which are heavily cutover, are commonly composed of a variety of hardwood species such as red maple, aspen, paper birch, yellow birch, sugar maple, and beech, in combinations with red spruce, balsam fir, and hemlock. The soils in this group are generally sandy or loamy over sandy textures and slightly less fertile than those in group IA. These soils are moderately well and well drained. Soil moisture is adequate for good tree growth but may not be quite as abundant as in group IA soils. Hardwood competition is moderate to severe on these soils. Successful softwood regeneration is dependent upon hardwood control."[56)]

Group IC – "Because these soils are highly responsive to softwood production, especially white pine, they are ideally suited for forest management. The soils in this group are outwash sands and gravels. Soil drainage is somewhat excessively to excessively drained and moderately well drained. Soil moisture is adequate for good softwood growth but is limited for hardwoods. Hardwood competition is moderate to slight on these soils. Due to less hardwood competition, these soils are ideally suited for softwood production. With modest levels of management, white pine can be maintained and reproduced on these soils. Successional trends on these coarse textured, somewhat droughty and less fertile soils are toward stands of shade tolerant softwoods, i.e., red spruce and hemlock. Balsam fir is a persistent component in many stands but is shorter lived than red spruce and hemlock. White pine, red maple, aspen, and paper birch are common in early and mid-successional stands."[56)]

Group IIA – "This diverse group includes many of the same soils as in groups IA and IB. However, these mapping units have been separated because of physical limitations which make forest management more difficult and costly, i.e., steep slopes, bedrock outcrops, erosive textures, surface boulders, and extreme rockiness. Due to the diverse nature of this group, it is not possible to generalize about successional trends or to identify special management

opportunities. Usually, productivity of these soils is not greatly affected by their physical limitations. However, management activities such as tree planting, thinning, and harvesting are more difficult and more costly."[56)]

Group IIB – "Productivity of these poorly drained soils is generally less than soils in other groups. Due to abundant natural reproduction in northern New Hampshire, these soils are generally desirable for production of spruce and balsam fir, especially pulpwood. Red maple cordwood stands or slow-growing hemlock sawtimber are common in more southerly areas. However, due to poor soil drainage, forest management is somewhat limited. Severe windthrow hazard limits partial cutting, frost action threatens survival of planted seedlings, and harvesting is generally restricted to periods when the ground is frozen. Successional trends are toward climax stands of shade tolerant softwoods, i.e., spruce in the north and hemlock further south. Balsam fir is a persistent component in stands in northern New Hampshire and red maple is common on these soils further south. The soils in this group are poorly drained. The seasonal high-water table is generally within 12 inches of the surface."[56)]

Not Classified – "Several mapping units in the survey are either so variable or have such a limited potential for commercial production of forest products they have not been considered. Often an onsite visit would be required to evaluate the situation."[56)]

Alton is home to numerous pockets of favorable forest soils. Forest soil types listed as Group IA and Group IB are generally considered ideal for hardwood trees (maples, birches, beeches, etc.), and soil types listed as Group IC are considered ideal for softwood trees (pines, hemlocks, spruces, etc.).[56)] Over 60% of the soils found within the land base area of Alton are categorized as either Group IA & IB, and over 4% are categorized as Group IC. Nearly 9% of the soils found within the land base area of Alton are categorized as Not Classified. This 9% includes only the Not Classified ones that don't overlap with waterbodies, the Not Classified would be much higher if the waterbody overlapped ones were accounted for. Soils are categorized as Not Classified due to potential factors such as the soil being too variable with their characteristics or the soil was considered as not favorable for commercial production.[36] There is potential for soils within this Not Classified category to be considered favorable for commercial forest production, however additional research would need to be conducted first. Group IA and IB forest soils can be found throughout all of Alton, while Group IC forest soils can be found primarily near the proximity of the Merrymeeting River.

Alton Important Forest Soils

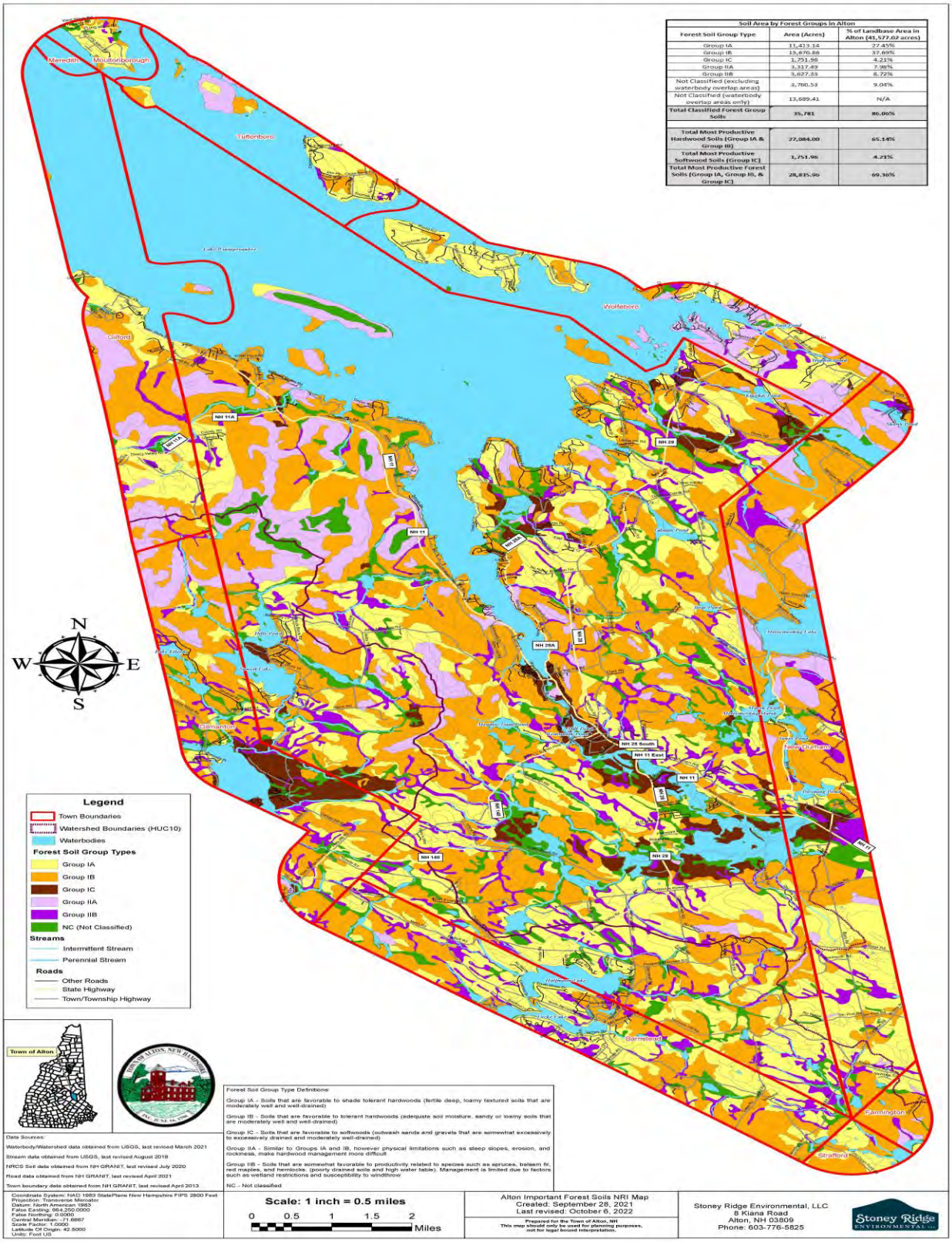


Table 6-3: Forest Soil Group Distribution within Alton

Soil Area by Forest Groups in Alton		
Forest Soil Group Type	**Area (Acres)**	**% of Landbase Area in Alton (41,577.02 acres)**
Group IA	11,413.14	27.45%
Group IB	15,670.86	37.69%
Group IC	1,751.96	4.21%
Group IIA	3,317.49	7.98%
Group IIB	3,627.33	8.72%
Not Classified (excluding waterbody overlap areas)	3,760.53	9.04%
Not Classified (waterbody overlap areas only)	13,689.41	N/A
Total Classified Forest Group Soils	**35,781**	**86.06%**
Total Most Productive Hardwood Soils (Group IA & Group IB)	**27,084.00**	**65.14%**
Total Most Productive Softwood Soils (Group IC)	**1,751.96**	**4.21%**
Total Most Productive Forest Soils (Group IA, Group IB, & Group IC)	**28,835.96**	**69.36%**

Group IA - List of the Top 5 Soil Types with the largest concentrations:

1) **Skerry fine sandy loam**, 0 to 8 percent slopes, very stony (1,713.02 acres)
2) **Skerry fine sandy loam**, 8 to 15 percent slopes, very stony (1,685.00 acres)
3) **Metacomet fine sandy loam**, 3 to 8 percent slopes, very stony (1,492.86 acres)
4) **Metacomet fine sandy loam**, 8 to 15 percent slopes, very stony (659.28 acres)
5) **Gilmanton fine sandy loam**, 3 to 8 percent slopes, very stony (650.92 acres)

Group IB - List of the Top 5 Soil Types with the largest concentrations:

1) **Tunbridge-Lyman-Becket complex**, 8 to 15 percent slopes, very stony (3,378.37 acres)
2) **Tunbridge-Lyman-Becket complex**, 15 to 25 percent slopes, very stony (3,344.35 acres)
3) **Tunbridge-Lyman-Becket complex**, 0 to 8 percent slopes, very stony (1,709.13 acres)
4) **Monadnock fine sandy loam**, 15 to 25 percent slopes, very stony (1,284.02 acres)
5) **Monadnock-Becket-Skerry complex**, 8 to 15 percent slopes, very stony (1,047.17 acres)

Group IC - List of the Top 5 Soil Types with the largest concentrations:

1) **Croghan loamy fine sand**, 0 to 8 percent slopes, wooded (583.30 acres)
2) **Boscawen fine sandy loam**, 3 to 8 percent slopes (226.39 acres)
3) **Adams loamy sand,** 15 to 60 percent slopes, wooded (172.51 acres)
4) **Champlain loamy fine sand**, 3 to 8 percent slopes (146.87 acres)
5) **Adams loamy sand**, 8 to 15 percent slopes, wooded (139.00 acres)

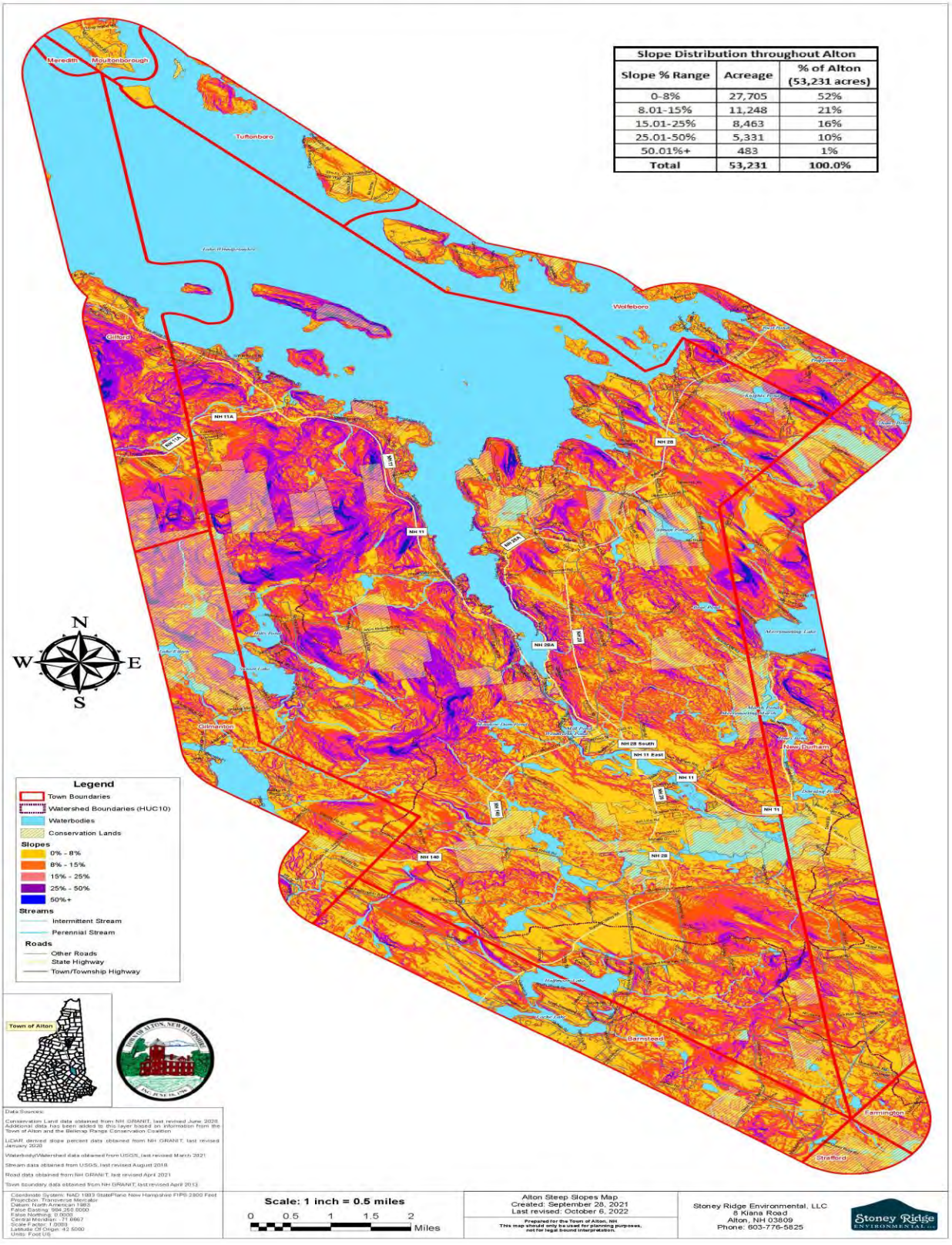
Section 7: Steep Slopes

Steep slopes are important components to a landscape as they not only impose restrictions on development but also add to the natural beauty of a community. Steep slopes can typically be considered slopes that have percentage of 15 or greater. A slope percent is calculated based on the elevation increase over a horizontal distance of 100 feet.[58)] Areas located in Alton that have some of the highest slope percentages can be found near Knights Pond, West of NH Route 11 (near Lake Winnipesaukee), and Halls Hill Pond. The overall largest concentration of steep slope within Alton is found in the general Northwestern portion of the town – specifically north of Meadow Dam Pond and to the west of Lake Winnipesaukee. The amount of area within the town that has a slope percentage of 15% or lower is 38,953 acres or approximately 73% of all of Alton. The remaining 14,277 acres (27% of all of Alton) are areas that have a slope percentage greater than 15%.

Table 7-1: Steep Slopes within Alton

Slope Distribution throughout Alton		
Slope % Range	**Acreage**	**% of Alton**
0 - 8%	27,705	52%
8.01 - 15%	11,248	21%
15.01 - 25%	8,463	16%
25.01 - 50%	5,331	10%
50.01%+	483	1%
Total	**53,231**	**100.0%**

Alton Steep Slopes



Section 8: Scenic/Recreation Resources

8.1 Recreation Resources

Alton is home to many breathtaking resources such as Lake Winnipesaukee, Mount Major, and a multitude of recreational trails that traverse through conservation lands and parks. There are a plethora of scenic sights to view and recreational activities to do within the town. Activities include hiking, boating, bird watching, swimming, and more. The largest concentration of water related activities is located around Lake Winnipesaukee. Throughout the town there are a total of three public beaches:

1) Alton Town Beach (off of Eastside Drive and adjacent to Harmony Park)
2) Roberts Cove Road Beach (off Roberts Cove Road near Basin Road)
3) West Alton Public Beach/Riley Road Beach (off of Mount Major Highway near Riley Road)

All three of the public beaches are associated with Lake Winnipesaukee, and the largest of them all is the Alton Town Beach, which is situated in Alton Bay. There are additional public water access areas throughout the town, aside from the three beaches. On Lake Winnipesaukee, there are three more public access water areas:

4) Echo Point Boat Ramp (off NH Route 28, near the intersection of Echo Point Road and Sawmill Brook Road)
5) Alton Public Boat Ramp & Docks (adjacent to western portion of Alton Bay near Railroad Square Park, off of NH Route 11)
6) Downing's Landing (off NH Route 11 near the point of Alton Bay, nearby to Alton Town Beach)

Lake Winnipesaukee has the most public water access locations within Alton out of all the other waterbodies/watercourses. The only other waterbody/watercourse to have more than one public water access point aside from Lake Winnipesaukee is the Merrymeeting River, which features 2 public access points. The Merrymeeting River and the other remaining public water access areas along with their locations are noted below:

7) Gilman Pond Conservation Area (at Gilman Pond closer towards the Gilmans Corner Road portion of the conservation area)
8) Bear Pond Walk-in (at Bear Pond, off of Bear Pond Road)

9) Jones Field Park (at Merrymeeting River, part of Jones Field Park and off of Jones Field Road)

10) Halfmoon Lake Town Boat Launch (at Halfmoon Lake, off of NH Route 28 near the Barnstead/Alton boundary)

11) Knight's Pond Walk-in (at Knight's Pond, off a trail adjacent to Knights Pond Road)

12) Liberty Tree Park (at Merrymeeting River, part of Liberty Tree Park and off NH Route 140 and across from Letter "S" Road)

13) Blueberry Lane Boat Launch (at Hills Pond, located at the end of Blueberry Lane) - allows access for non-motorized boats

Table 8-1: Public Water Access Locations in Alton and additional recreation notes

Public Water Access Locations in Alton						
Site Name	**Waterbody**	**Boating Allowed**	**Fishing Allowed**	**Swimming Allowed**	**Picnic Area**	**Restrooms Available**
Gilman Pond Conservation Area	Gilman Pond	Yes	Yes	No	No	No
Echo Point Boat Ramp	Lake Winnipesaukee	Yes	No	No	No	No
Bear Pond Walk-in	Bear Pond	-	-	-	-	-
Alton Public Boat Ramp & Docks	Lake Winnipesaukee	Yes	Yes	Yes	Yes	Yes
Jones Field Park	Merrymeeting River	Yes	Yes	No	Yes	No
Halfmoon Lake Town Boat Launch	Halfmoon Lake	Yes	Yes	No	No	No
Knight's Pond Walk-in	Knight's Pond	No	Yes	No	No	No
Alton Town Beach/Harmony Park	Lake Winnipesaukee	No	No	Yes	Yes	Yes
Liberty Tree Park	Merrymeeting River	Yes	Yes	No	Yes	No
West Alton Public Beach/Riley Road Beach	Lake Winnipesaukee	No	Yes	Yes	No	No
Downing's Landing	Lake Winnipesaukee	Yes	No	No	No	Yes
Robert's Cove Road Beach	Lake Winnipesaukee	-	-	Yes	-	-
Blueberry Lane Boat Launch	Hills Pond	Yes	-	-	-	-

Alton is also home to numerous parks and scenic recreational areas that provide access to hiking trails, picnic areas, playgrounds, sporting fields, fishing areas, and more. Below is a list of notable parks and recreational conservation areas based on information gathered from Alton's Parks and Recreation Department[59)] and the Alton Conservation Commission:

1) Jones Field Recreation Area – located off of Jones Field Road and Letter "S" Road (across from the Alton Highway Department), features baseball fields, public water access to the Merrymeeting River, picnic areas and a playground

2) Railroad Square Park – located off NH Route 11 (Mount Major Highway) near southwestern section of Alton Bay, features swim/boat docks, boat launch, and picnic areas.

3) Harmony Park – located on the other side of the bay from Railroad Square, off of NH Route 28 near the southeastern section of Alton Bay, is in close proximity to Alton Town Beach and features a picnic area and fishing access.

4) B & M Railroad Park – located between Old Wolfeboro Road and NH Route 28 (behind the town hall), close proximity to Ginny Douglas Park and the Monument Square Historic District, features picnic areas, trails, boardwalk area, playground, and historical train car and building.

5) Liberty Tree Park – located off of NH Route 140 across from its intersection with Letter "S" Road, features public water access to the Merrymeeting River, numerous sporting courts (basketball, tennis, etc.), skateboard park, playground, and picnic areas.

6) Gilman Pond Conservation Area – located around the general proximity of Gilman Pond, nearby to Gilmans Corner Road and Drew Hill Road, features public water access to Gilman Pond, hiking trails, and fishing areas.

7) Knight's Pond Conservation Area – located around the general proximity of Knight's Pond, nearby to Knights Pond Road and Rines Road, features public water access to Knight's Pond, fishing areas, hiking trails, and snowshoeing accessibility.

8) Cotton-Hurd Brook Woodland Preserve – located off of NH Route 28 and Chestnut Cove Road, features numerous hiking trails, rock caves, and Hurd Brook.

9) Levey Park – located off NH Route 11 between East Side Drive and Barr Road, adjacent to Merrymeeting River, features walking trails, picnic areas, snowshoeing/cross country skiing accessibility, and bird watching.

10) Trask Swamp & Fort Point Woods Conservation Area – located off of Trask Side Road/Fort Point Road, features hiking trails, snowshoeing accessibility, and scenic overlooks of wetlands.

11) Ginny Douglas Park – located between NH Route 11 and Old Wolfeboro Road, features benches, small gazebo, and landscaping.

12) Morse Preserve/Pine Mountain – located near Avery Hill Road and Alton Mountain Road, features extensive hiking trail networks. This conservation area will be officially expanded in the Fall of 2022.

13) Mount Major – located west off of NH Route 11 by the Alton Bay area, features extensive hiking trail networks and snowmobile trails.

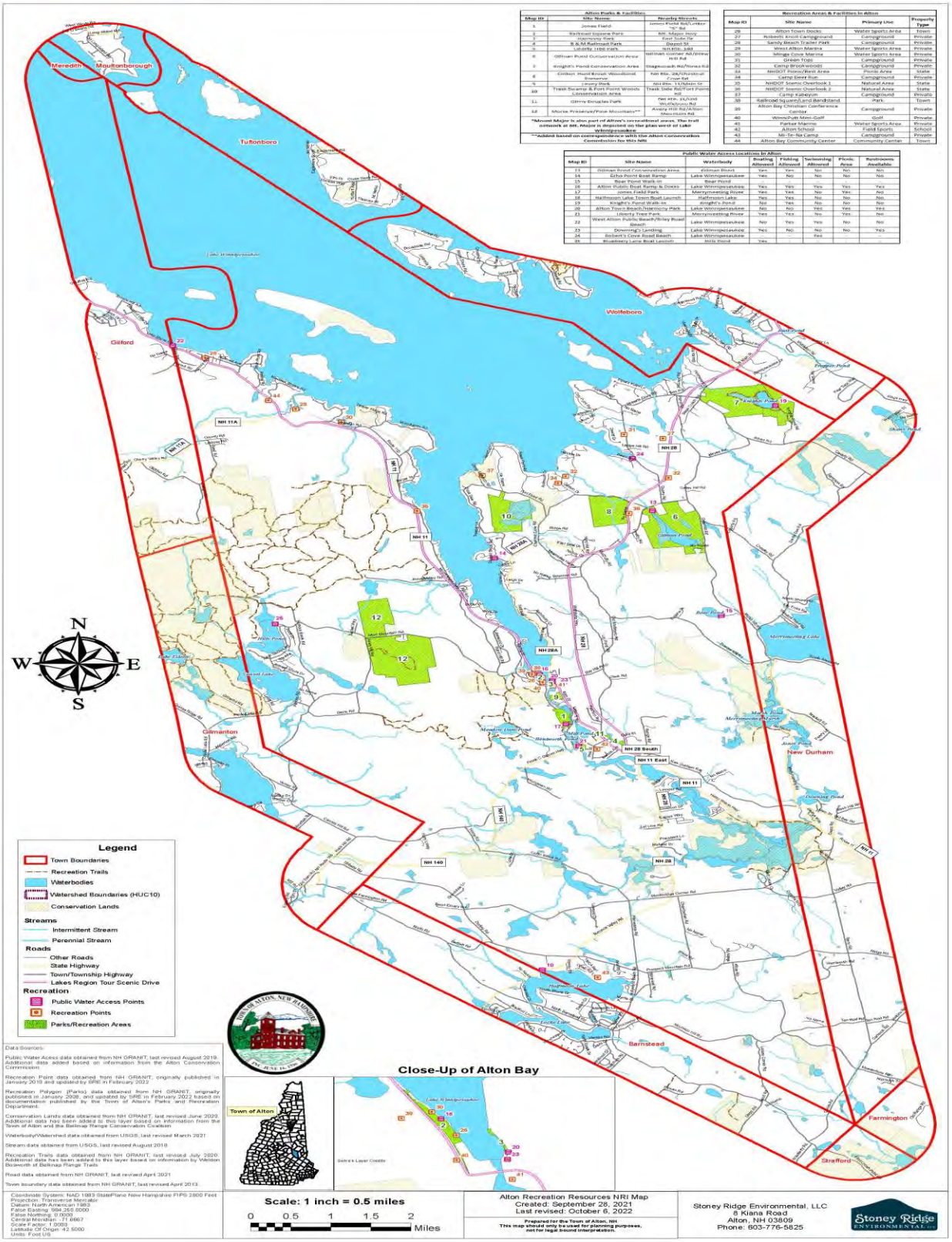
Another notable scenic recreation resource in town is the designated Lakes Region Tour Scenic Drive/Byway. This drive extends nearly 97 miles in total cutting across approximately 14 different towns in the region.[60)] The drive essentially wraps around Lake Winnipesaukee, and starts near the Alton Traffic Circle. The extent of the scenic drive within Alton is approximately 20 miles, and follows NH Route 11 or NH Route 28 starting near the Alton Traffic Circle and continuing into Gilford (NH Route 11) and Wolfeboro (NH Route 28).

Other additional recreational resources found within Alton such as campgrounds, watersport areas, and natural areas can be seen in the Table 8-2 below and the associated Recreation Resources Map.

Table 8-2: Recreation Areas & Facilities within Alton

Recreation Areas & Facilities in Alton			
Map ID	**Site Name**	**Primary Use**	**Property Type**
26	Alton Town Docks	Water Sports Area	Town
27	Roberts Knoll Campground	Campground	Private
28	Sandy Beach Trailer Park	Campground	Private
29	West Alton Marina	Water Sports Area	Private
30	Minge Cove Marina	Water Sports Area	Private
31	Green Tops	Campground	Private
32	Camp Brookwoods	Campground	Private
33	NHDOT Picnic/Rest Area	Picnic Area	State
34	Camp Deer Run	Campground	Private
35	NHDOT Scenic Overlook 1	Natural Area	State
36	NHDOT Scenic Overlook 2	Natural Area	State
37	Camp Kabeyun	Campground	Private
38	Railroad Square/Land Bandstand	Park	Town
39	Alton Bay Christian Conference Center	Campground	Private
40	WinniPutt Mini-Golf	Golf	Private
41	Parker Marine	Water Sports Area	Private
42	Alton School	Field Sports	School
43	Mi-Te-Na Camp	Campground	Private
44	Alton Bay Community Center	Community Center	Town

Alton Recreation Resources



8.2 Scenic Resources

There are many scenic and breathtaking views dispersed throughout Alton and this is attributed to the town's landform characteristics and being home to so many significant natural and historical resources. In 2008, a Scenic Resource Inventory study was conducted by the Lakes Region Planning Commission (LRPC) and Thomas Kokx Associates (TKA) on behalf of the town. In this study, the LRPC/TKA in collaboration with the Planning Board, Selectboard, Conservation Commission, Town Planner, and interested individuals formed a committee and identified important viewpoints and valuable viewsheds throughout the general Alton area. A total of 78 of these significant locations are identified in Table 8-3 below and within the Scenic Resources Map. A 79th significant location, where the Morse Preserve/Pine Mountain is located, was added to this list as part of correspondence with the Alton's Conservation Commission for this NRI.

Table 8-3: Important Viewpoints/Viewsheds within the General Alton Area

ID#	Name	View Direction From	View Direction To	Additional Notes
1	Rattlesnake Island C	N	E	
2	Rattlesnake Island B	S	SW	
3	Rattlesnake Island A	NE	SE	
4	Town Line Beach	NW	NE	
5	Reed Rd	NE	NE	
6	East Quarry Mt.	NE	SE	
7	Straightback Mountain	N	N	360
8	Jesus Valley Road	SE	SW	Marsh
9	Hills Pond	NW	NE	From island
10	Alton Mountain Road	N	E	
11	Sunset Lake	NW	NE	From water
12	Avery Hill Road	NW	NW	Marsh view
13	Open Land	NW	SE	Cleared land
14	NH Route 11 Overlook	N	E	
15	Town Docks	NE	NE	
16	Leavy Park	NW	N	
17	From the McDuffy residence	W	NW	c. 1793
18	Ridge Road	W	N	
19	Evans Hill	NE	E	LRCT land
20	Trask Swamp			(LRCT) - no direction
21	St. Katherine's	E	S	Marsh view

ID#	Name	View Direction From	View Direction To	Additional Notes
22	NH Route 11	NW	N	
23	Gilman's Corner Road	SE	SE	Pond
24	Drew Hill Rd	W	W	Old Homestead/Pond
25	East Alton Church	NW	NE	c. 1810
26	Knight's Pond			No direction
27	Varney Islands (Loon Sanctuary)			No direction
28	S.S. Mount Washington	SW	NW	View of Belkanps
29	Off Powder Mill Road	NW	N	
30	Drew Hill Road 2	SW	NW	
31	Bear Hill Pond			No direction
32	New Durham T/L	SW	NW	Across water
33	Moore Farm			No direction
34	Kent Locke Circle	N	N	Merrymeeting Marsh
35	Off NH Route 28	SW	NW	Hussey Easement
36	Coffin Brooke Road	S	S	Coffin Brook
37	Mount Bet			Location
38	Bartlett Road/ Dudley Road			no direction given
39	Grand View Road	NE	SE	
40	NH Route 28	E	S	Halfmoon Lake
41	Halfmoon Lake	N	E	From the water
42	Prospect Mountain Road	SW	NW	
43	Chamberlain Road	SW	NW	
44	Prospect Mountain	0	360	360 view
45	Africa Road	SW	NW	
46	First Freewill Church	NW	NE	ca. 1820
47	Off Muchado Road	SE	SE	
48	Meaderboro Road	SE	SW	
49	Muchado Hill Road	S	S	Wetland
50	Five Town Point			Location
51	Halls Hill Road N	N	E	
52	Halls Hill Road S	S	SW	
53	NH Route 140	NW	N	
54	Crystal Lake	NW	W	In Barnstead
55	NH Route 140	E	S	Overlooking water
56	NH Route 140 at Youngstown Road	E	SE	Overlooking swamp
57	NH Route 140	NE	SE	
58	Old White			Location
59	Alton Family Practice			Location

ID#	Name	View Direction From	View Direction To	Additional Notes
60	Dame House			Location
61	Stone Bridge			Location
62	Fire House			Location
63	Letter S Road	NE	SE	
64	House			Location
65	Congregational Meeting House			Location
66	Baptist Meeting House			Location
67	White Lodge			Location
68	House			Location
69	Fire House?			Location
70	Mount Major	NE	SE	Popular vista
71	West Quarry Mountain	N	?	
72	West Quarry Mountain	S	?	
73	Mount Shannon	NE	?	In Gilmanton
74	Rand Mountain	SE	?	In Gilford
75	Mount Klem	NW	SE	In Gilford
76	Mount Klem	NE	S	In Gilford
77	Clay Point	SW	NW	View of Gunstock MT.
78	Merrymeeting Marsh			Location
79	Morse Preserve/Pine Mountain			

In addition to identifying the 78 important viewpoints/viewsheds within Alton, this 2008 study also conducted a viewshed analysis of the entire town (the 79th viewpoint/viewshed was added for this NRI, and wasn't part of the original 2008 study). This viewshed analysis was created to recognize the areas of Alton that are visible from multiple locations within the town, and rank these areas from least visibly accessible to most. To perform this analysis, 41 documented locations throughout the general Alton area were first established as reference points. Based on these point locations, terrain data was used in tandem with the ArcGIS Viewshed Analysis Tool to identify how many times a 10 meter x 10 meter area was visible from the points. Depending on how many visible 10 meter x 10 meter areas overlapped with one another from the different reference points this would increase visibility ranking of an area. The greater the overlap then the higher the visibility ranking for an area.

The findings from this study showed that some of the most visible and important scenic resources are:

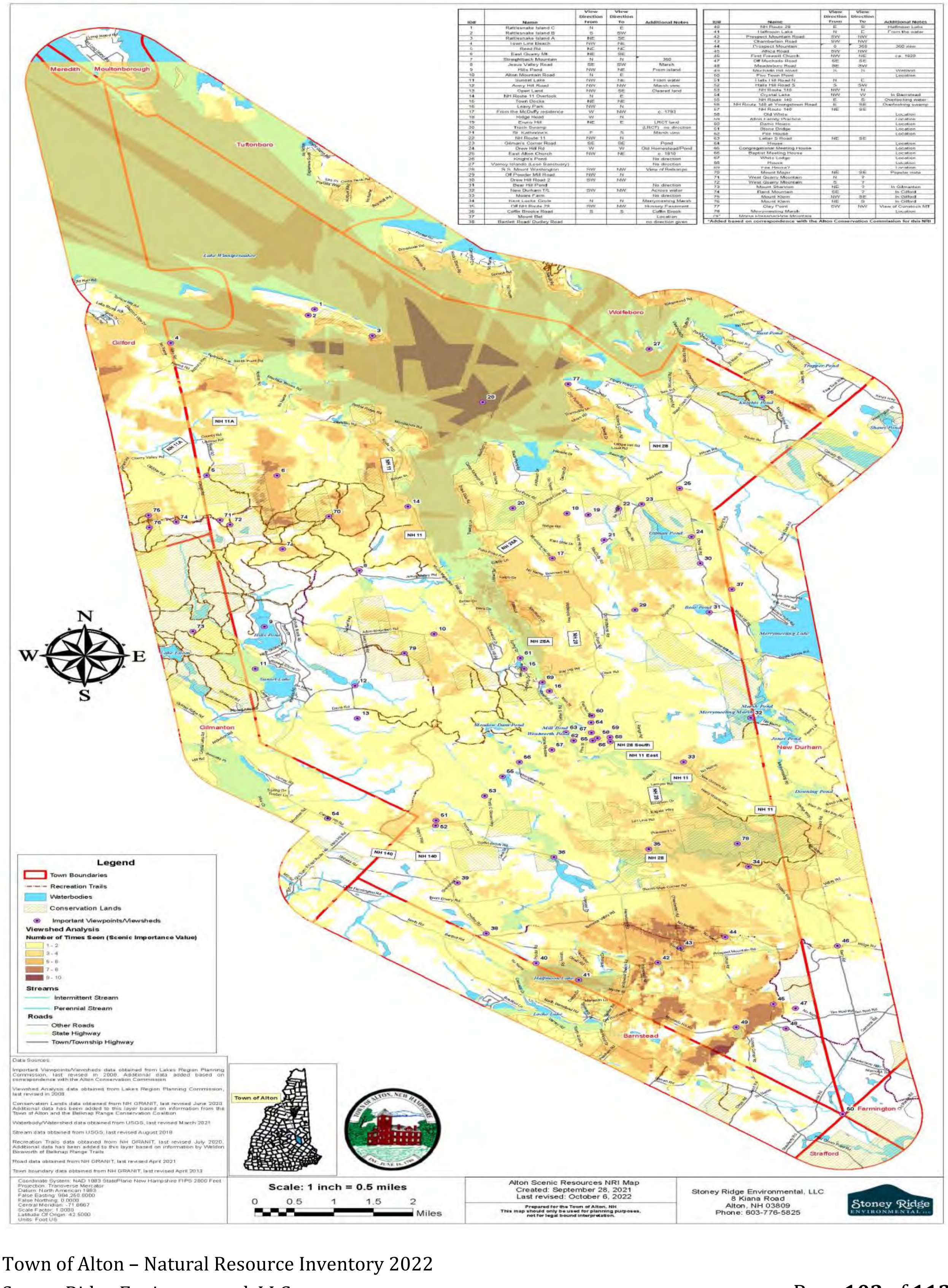
- Prospect Mountain – north and south of Prospect Mountain Road

- Lake Winnipesaukee – especially along the upper portion of the lake within Alton towards Gilford and Wolfeboro
- Mount Major – west of the Alton Bay area

The area with the highest visibility score (number of times seen) was the general Prospect Mountain Area. The area with largest continuous high visibility was the upper area of Lake Winnipesaukee. The next large pocket with a high visibility score was the general Mount Major area west of Alton Bay. The high scenic value of these three resources is understandable due to aspects such as the grand scale of these features and the general terrain of the areas (Mount Major being one of the steepest areas in Alton and Lake Winnipesaukee being one of the lowest). Out of the three identified most important scenic areas of Alton, the Mount Major region has the most land area of it under conservation. Lake Winnipesaukee doesn't have any identified conservation land itself due to it being a waterbody, but there are areas along its perimeter that are under conservation. Additionally, NHDES shoreland and wetland rules are in affect to aid in the protection of the Lake. The Prospect Mountain area has the least amount of land under conservation. With Prospect Mountain being one of three sections of Alton with the highest visibility score, the area should be assessed for future conservation land protection, which is similarly noted under Section 5.2 (Open Space & Unfragmented Lands).

*Data/methodology referenced within this section has come from the 2008 Town of Alton, New Hampshire Scenic Resource Inventory study/report developed by the Lakes Region Planning Commission and Thomas Kokx Associates.[61)]

Alton Scenic Resources



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2	Rattlesnake Island B	S	SW	
3	Rattlesnake Island A	NE	SE	
4	Town Line Beach	NW	NE	
5	Reed Rd	NE	NE	
6	East Quarry Mt	NE	SE	
7	Straightback Mountain	N	N	360
8	Jesus Valley Road	SE	SW	Marsh
9	Hills Pond	NW	NE	From island
10	Alton Mountain Road	N	E	
11	Sunset Lake	NW	NE	From water
12	Avery Hill Road	NW	NW	Marsh view
13	Open Land	NW	SE	Cleared land
14	NH Route 11 Overlook	N	E	
15	Town Docks	NE	NE	
16	Leavy Park	NW	N	
17	From the McDuffy residence	W	NW	c. 1793
18	Ridge Head	W	N	
19	Evans Hill	NE	E	LRCT land
20	Trask Swamp			(LRCT) no direction
21	St. Katherine's	E	S	Marsh view
22	NH Route 11	NW	N	
23	Gilman's Corner Road	SE	SE	Pond
24	Drew Hill Rd	W	W	Old Homestead/Pond
25	East Alton Church	NW	NE	c. 1810
26	Knight's Pond			No direction
27	Varney Islands (Loon Sanctuary)			No direction
28	S.S. Mount Washington	SW	NW	View of Belknaps
29	Off Powder Mill Road	NW	N	
30	Drew Hill Road 2	SW	NW	
31	Bear Hill Pond			No direction
32	New Durham T/L	SW	NW	Across water
33	Moore Farm			No direction
34	Kent Locke Circle	N	N	Merrymeeting Marsh
35	Off NH Route 28	SW	NW	Hersey Easement
36	Coffin Brooke Road	S	S	Coffin Brook
37	Mount Bet			Location
38	Bartlett Road/ Dudley Road			no direction given

ID#	Name	View Direction From	View Direction To	Additional Notes
40	NH Route 28	E	S	Halfmoon Lake
41	Halfmoon Lake	N	E	From the water
42	Prospect Mountain Road	SW	NW	
43	Chamberlain Road	SW	NW	
44	Prospect Mountain	0	360	360 view
45	Africa Road	SW	NW	
46	First Freewill Church	NW	NE	ca. 1920
47	Off Muchado Road	SE	SE	
48	Meaderboro Road	SE	SW	
49	Muchado Hill Road	S	S	Wetland
50	Five Town Point			Location
51	Halls Hill Road N	N	E	
52	Halls Hill Road S	S	SW	
53	NH Route 140	NW	N	
54	Crystal Lake	NW	W	In Barnstead
55	NH Route 140	E	S	Overlooking water
56	NH Route 140 at Youngstown Road	E	SE	Overlooking swamp
57	NH Route 140	NE	SE	
58	Old White			Location
59	Alton Family Practice			Location
60	Damo House			Location
61	Stone Bridge			Location
62	Fire House			Location
63	Letter S Road	NE	SE	
64	House			Location
65	Congregational Meeting House			Location
66	Baptist Meeting House			Location
67	White Lodge			Location
68	House			Location
69	Fee House?			Location
70	Mount Major	NE	SE	Popular vista
71	West Quarry Mountain	N	?	
72	West Quarry Mountain	S	?	
73	Mount Shannon	NE	?	In Gilmanton
74	Rand Mountain	SE	?	In Gilford
75	Mount Klem	NW	SE	In Gilford
76	Mount Klem	NE	S	In Gilford
77	Clay Point	SW	NW	View of Gunstock MT
78	Merrymeeting Marsh			Location
79*	[illegible]/Pine Mountain			

*Added based on correspondence with the Alton Conservation Commission for this NRI

Citations:

1) Rockwood, P. A., Town of Alton (2013). The History of Alton. https://www.alton.nh.gov/site-page/history-alton-nh

2) Fogg, A. (1875) The Statistics and Gazetteer of New-Hampshire, Seventh Edition http://gedcomindex.com/Reference/New_Hampshire_1875/052.html

3) Fisher III., A. (1970s) History of Alton Part I: The War Years 1774 – 1783

4) Fisher III., A. (1970s) History of Alton Part II: 1800 – 1830

5) Fisher III., A. (1970s) History of Alton Part III: 1840 and on and Geneology

6) Ruell, D. (1983) National Register of Historic Places Inventory – Nomination Form: Alton Bay Railroad Station https://npgallery.nps.gov/NRHP/GetAsset/NRHP/83001124_text

7) Ruell, D. (1990) National Register of Historic Places – Registration Form: First Congregational Church https://npgallery.nps.gov/NRHP/GetAsset/NRHP/90000386_text

8) Peverley, J. (1977) National Register of Historic Places Inventory – Nomination Form: First Freewill Baptist Church https://npgallery.nps.gov/NRHP/GetAsset/NRHP/78000209_text

9) Ruell, D. (1990) National Register of Historic Places – Registration Form: Second Free Baptist Church https://npgallery.nps.gov/NRHP/GetAsset/NRHP/90000387_text

10) Ruell, D. (1984) National Register of Historic Places – Nomination Form: Monument Square Historic District https://npgallery.nps.gov/NRHP/GetAsset/aaadebe7-37f3-4270-8790-d8cb8a0d8f5a

11) New Hampshire Division of Historical Resources. (2022). New Hampshire State Register of Historic Places Photographs & Descriptions. https://www.nh.gov/nhdhr/programs/state_reg_list_details.htm#letters

12) Complex Systems Research Center, University of New Hampshire (Data Created: 1992, January 1 & Last Revised On: 2013, April 11). New Hampshire Political Boundaries at 1:24,000 scale. NH GRANIT. https://granit.unh.edu/data/metadata?file=pb%2Fnh%2Fpb.html

13) U.S. Census Bureau (2020) QuickFacts: Alton town, Belknap County, New Hampshire. https://www.census.gov/quickfacts/fact/table/altontownbelknapcountynewhampshire/POP010220#POP010220.

14) Kitch, M. (2020, April 21). Seasonal visitor influx worries New Hampshire's northern counties. Concord Monitor. https://www.concordmonitor.com/Seasonal-visitor-influx-worries-New-Hampshire-s-northern-counties-33998850

15) Multi-Resolution Land Characteristics Consortium (2019). National Land Cover Database (NLCD) 2019 Land Cover Metadata. https://www.mrlc.gov/downloads/sciweb1/shared/mrlc/metadata/nlcd_2019_land_cover_l48_20210604.xml

16) Town of Alton (2016). Town of Alton, New Hampshire - 2016 Annual Town Report.

17) Town of Alton (2017). Town of Alton, New Hampshire - 2017 Annual Town Report.

18) Town of Alton (2018). Town of Alton, New Hampshire - 2018 Annual Town Report.

19) Town of Alton (2019). Town of Alton, New Hampshire - 2019 Annual Town Report.

20) Town of Alton (2020). Town of Alton, New Hampshire - 2020 Annual Town Report.

21) Water Science School. (2019). Watersheds and Drainage Basins. https://www.usgs.gov/special-topics/water-science-school/science/watersheds-and-drainage-basins#overview

22) Natural Resources Conservation Service. (2007). Watersheds, Hydrologic Units, Hydrologic Unit Codes, Watershed Approach, and Rapid Watershed Assessments. https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1042207.pdf

23) New Hampshire Department of Environmental Services. (Section last revised 2012) Title L Water Management and Protection – Chapter 482-A Fill And Dredge In Wetlands – Section 482-A:2 Definitions.

24) Davis, D. (2004). Wetlands Overview. United States Environmental Protection Agency https://www.epa.gov/sites/default/files/2021-01/documents/wetlands_overview.pdf

25) United States Fish & Wildlife Service (Data Created: 1997 & Last Revised On: 2021, May 1). National Wetlands Inventory - New Hampshire Metadata. NH GRANIT. https://granit.unh.edu/data/metadata?file=nwi/nh/nwi.html

26) New Hampshire Department of Environmental Services. (Section last revised 2012) Title L Water Management and Protection – Chapter 482-A Fill And Dredge In Wetlands – Section 482-A:15 Local Option; Prime Wetlands.

27) Rendall, N. B. (1984). Alton's Wetlands: A User's Manual - Inventory & Classification.

28) Rendall, N. B. (1984-1985). Alton's Wetlands: Phase II – Evaluation & Designation of Prime Wetlands.

29) New Hampshire Department of Environmental Services. (2020). NHDES Consolidated List of waterbodies subject to RSA 483, The Shoreland Water Quality Protection Act

(SWQPA). https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/2020-01/consolidated-list.pdf

30) New Hampshire Fish & Game Department (Data Last Revised In 2021). New Hampshire Fish Survey Map. https://nhfg.maps.arcgis.com/apps/MapJournal/index.html?appid=d6549e90155b441fa0e29bdc44eebc2b#

31) New Hampshire Fish & Game Department (2019). Angler's Guide to Freshwater Fishing in New Hampshire. https://www.wildlife.state.nh.us/fishing/documents/nh-freshwater-fishing-guide.pdf

32) New Hampshire Fish & Game Department (Data Last Revised in 2017). Species of Greatest Conservation Need List by Habitat (in Alton)

33) New Hampshire Department of Environmental Services. (Section last revised 2017) Title L Water Management and Protection – Chapter 483-B Shoreland Water Quality Protection Act – Section 483-B:4 Definitions.

34) New Hampshire Department of Environmental Services. (2020). Classification of Dams in New Hampshire. *Environmental Fact Sheet DB-15*. https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/2020-01/db-15.pdf

35) Tragedy Hits Alton As Bergeron Pond Dam Bursts. (1996, April). Main Street. https://img1.wsimg.com/blobby/go/dca6487c-8eb9-47d1-a289-a963273b79f7/downloads/Vol12_4%20Main%20St%20Apr%201996.pdf?ver=1616164660568

36) Lalli, J., &; Kisluk, J. (2022, March). Alton dam collapse of March 1996. WMUR. https://www.wmur.com/article/alton-dam-collapse-march-1996-archive/31409185

37) United States Geologic Survey. (1995). Ground-Water Resources in New Hampshire: Stratified-Drift Aquifers. https://pubs.usgs.gov/wri/wrir_95-4100/pdf/wrir_95-4100.pdf

38) New Hampshire Department of Environmental Services. (2010). A Guide to Identifying Potentially Favorable Areas to Protect Future Municipal Wells in Stratified-Drift Aquifers. https://www.granthamnh.net/vertical/sites/%7B8E4EE0D6-AAA5-4E63-B5FA-19873AF96E35%7D/uploads/SPNHF_FGWA_Guide-June_2010Update.pdf

39) New Hampshire Department of Environmental Services (2016). Public Water Supplies Metadata.

40) New Hampshire Department of Environmental Services. (Section last revised 2014) Title L Water Management and Protection – Chapter 485-C Groundwater Protection Act – Section 483-C:2 Definitions.

41) New Hampshire Department of Environmental Services. (2020). Wellhead Protection Tips for Small Public Water Systems. *Environmental Fact Sheet DWGB-12-10*. https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/2020-01/dwgb-12-10.pdf

42) New Hampshire Department of Environmental Services. (Section last revised 2014) New Hampshire Code of Administrative Rules – Chapter Env-Or-300 Aboveground Petroleum Storage Facilities - Part Env-Or 302:Defintions

43) New Hampshire Department of Environmental Services. (Section last revised 1991) Title L Water Management and Protection – Chapter 485-C Groundwater Protection Act – Section 483-C:7 Potential Contamination Sources.

44) New Hampshire Department of Environmental Services. (Section last revised 2018) New Hampshire Code of Administrative Rules – Chapter Env-Or-400 Underground Storage Tank Facilities- Part Env-Or 402:Defintions

45) Federal Emergency Management Agency. (2021). Flood maps. Retrieved from https://www.fema.gov/flood-maps#:~:text=Flood%20maps%20help%20mortgage%20lenders,reduce%20or%20manage%20your%20risk.

46) Sexton, A. (2017, April 16). 10 years ago, NH dealt with its second 100-year flood within 11 months. WMUR. https://www.wmur.com/article/10-years-ago-nh-dealt-with-its-second-100-year-flood-within-11-months/9277435

47) Federal Emergency Management Agency. (1988). Town of Alton, New Hampshire Flood Insurance Rate Map – Panels 10, 15, 20, 30, & 35.

48) New Hampshire Fish & Game Department. (2015). New Hampshire Wildlife Action Plan 2015 Revised Edition.

49) New Hampshire Natural Heritage Bureau (2020). Rare Plants, Rare Animals, and Exemplary Natural Communities in New Hampshire Towns https://www.nh.gov/nhdfl/documents/town-lists.pdf

50) New Hampshire Fish & Game Department. (2015). New Hampshire Wildlife Action Plan 2015 Revised Edition - Appendix A Birds-215 (Bald Eagle).

51) Taylor, D., &; Andrews, C. (2010). The New Hampshire Municipal Conservation Fund Guidebook. Society for the Protection of New Hampshire Forest.

52) West's Encyclopedia of American Law, edition 2. Copyright 2008 The Gale Group, Inc. All rights reserved.

53) UNH Cooperative Extension, & Stone, A. (2016). Natural Resources Inventories: A Guide for New Hampshire Communities and Conservation Groups (NH NRI Guide). https://extension.unh.edu/nhnriguide

54) New Hampshire Department of Transportation. (2018). Roadway Data Inventory User Guide.

55) U.S. Fish & Wildlife Service, & Racey, M. (2012). Unraveling the Mystery of One of Our Rarest Orchids. https://www.fws.gov/endangered/map/ESA_success_stories/NH/NH_story2/index.html

56) Natural Resources Conservation Service, & United States Department of Agriculture. (2013). New Hampshire Soil Data Dictionary.

57) United States Department of Agriculture (USDA), & National Agricultural Statistics Services (NASS) (2021). 2020 New Hampshire Cropland Data Layer Metadata.

58) New Hampshire Department of Environmental Services. (2008). Innovative Land Use Planning Techniques - A Handbook for Sustainable Development.

59) Town of Alton – Parks & Recreation Department (2018). Alton Parks and Facilities https://www.alton.nh.gov/forms/parks/Alton%20Parks%20and%20Facilities.pdf

60) New Hampshire Lakes Region Tourism Association (2016). Scenic Drives - Lake Region Tour. https://www.lakesregion.org/play/scenic-drives-historic-walks/lakes-region-tour/

61) Lakes Region Planning Commission & Thomas Kokx Associates (2008). Town of Alton, New Hampshire Scenic Resource Inventory

Plan GIS/SHP File References:

1) NH Political Boundaries (last revised April 2013)
Originated by: Complex Systems Research Center, University of New Hampshire
Data/Map Creation Originally Started in: January 1953
Data Obtained from: NH GRANIT

2) Belknap Parcels (last revised March 2021)
Originated by: New Hampshire Department of Revenue Administration
Data Obtained from: NH GRANIT

3) Watershed Boundaries & Waterbodies – National Hydrography Dataset (last revised March 2021)
Originated by: United States Geological Survey (USGS) - National Geospatial Program
Data/Map Creation Originally Started in: 1988
Data Obtained from: USGS

4) Streams/Rivers – National Hydrography Dataset Plus (last revised August 2018)
Originated by: USGS
Data Obtained from: USGS

5) Public Roads (last revised June 2021)
Originated by: New Hampshire Department of Transportation – Bureau of Planning & Community Assistance
Data/Map Creation Originally Started in: January 1990
*Additional Road Class Information based on the 2020 Town of Alton Annual Report
Data Obtained from: NH GRANIT

6) World Imagery Base Map 1-m Resolution(last revised June 2021)
Originated by: Environmental Systems Research Institute (ESRI)
Data/Map Creation Originally Started in: December 2009
Data Obtained from: ESRI

7) Recreational Trails (last revised July 2020)
Originated by: NH Office of Strategic Initiatives and NH Fish and Game Department
Data/Map Creation Originally Started in: January 2008
Data Obtained from: NH GRANIT
*Additional trail data has been added to this layer based on information by Weldon Bosworth of Belknap Range Trails

8) Dam Inventory (last revised December 2019)
Originated by: Jim Weber, New Hampshire Department of Environmental Services, Dam Safety Engineer
Data/Map Creation Originally Started in: January 1920
Data Obtained from: NH GRANIT

9) Wetlands – National Wetland Inventory (last revised May 2021)
Originated by: United States Fish & Wildlife Service
Data/Map Creation Originally Started in: 1977
Data Obtained from: NH GRANIT

10) Wildlife Habitat Land Cover – 2020 Wildlife Action Plan (last revised April 2020)
Originated by: New Hampshire Fish and Game Department, Wildlife Division
Data Obtained from: NH GRANIT

11) Ranked Wildlife Habitat – 2020 Wildlife Action Plan (last revised April 2020)
Originated by: New Hampshire Fish and Game Department, Wildlife Division
Data Obtained from: NH GRANIT

12) NHB Element of Occurrence Hexagon Analysis (last revised February 2022)
Originated by: New Hampshire Natural Heritage Bureau
Data Obtained from: New Hampshire Natural Heritage Bureau

13) Soils – Soil Survey Geographic Database (SSURGO) (last revised July 2020)
Originated by: United States Department of Agriculture, National Resources Conservation Service (NRCS)
Data Obtained from: NH GRANIT

14) LiDAR Derived Percent Slope (last revised January 2020)
Originated by: Earth Systems Research Center, University of New Hampshire
Data Obtained from: NH GRANIT

15) Historic Properties – Enhanced Mapping & Management Information Tool (EMMIT) (last updated September 2021)
Originated by: New Hampshire Division of Historical Resources
Data Obtained from: New Hampshire Division of Historical Resources

16) Cultural Resources (last revised by LRPC in 2006, updated by SRE in 2022)
Originated by: Lakes Region Planning Commission (LRPC)
Data Obtained from: Lakes Region Planning Commission (LRPC)
*This layer was created for a Natural, Cultural, and Historic Site Map of the town of Alton in 2006 by the LRPC. SRE acquired the data from the LRPC and updated it based on correspondence with the Alton Historic Society.

17) Underground Storage Tanks (last revised November 2020)
Originated by: New Hampshire Department of Environmental Services (NHDES)
Data/Map Creation Originally Started in: September 2006
Data Obtained from: NHDES

18) Aboveground Storage Tanks (last revised February 2016)
Originated by: New Hampshire Department of Environmental Services (NHDES)
Data/Map Creation Originally Started in: September 2006
Data Obtained from: NHDES

19) Local Potential Contamination Sources (last revised November 2020)
Originated by: NHDES
*Additional information based on correspondence with the Town of Alton's Conservation Commission
Data/Map Creation Originally Started in: January 1999
Data Obtained from: NHDES

20) Public Water Supplies (last revised April 2016)
Originated by: NHDES & United States Environmental Protection Agency
Data/Map Creation Originally Started in: June 2005
Data Obtained from: NHDES
*Data Sharing Restrictions are present with this data

21) Wellhead Protection Areas (last revised February 2016)
Originated by: NHDES
Data/Map Creation Originally Started in: September 2006
Data Obtained from: NHDES
*Data Sharing Restrictions are present with this data

22) Favorable Gravel Well Analysis (last revised in 2010)
Originated by: NHDES
Data Obtained from: NHDES

23) Stratified Drift Aquifer Boundaries (last revised in 1995)
Originated by: USGS & NHDES
Data Obtained from: NHDES

24) 2019 National Land Cover Data (last revised June 2021)
Originated by: USGS
Data Obtained from: Multi-Resolution Land Characteristics Consortium (MRLC)

25) 1988 Floodplain Data (last revised in 1988)
Originated by: Federal Emergency Management Agency (FEMA)
Data Obtained from: FEMA (digital maps) & Town of Alton (hardcopy maps)
* Floodplain data digitized and approximated based on the digital and hardcopy 1988 FEMA Floodplain maps

26) Unfragmented Open Space (last revised October 2021)
Originated by: Stoney Ridge Environmental (SRE)
*This layer was created based on principals and correspondence from the University of New Hampshire Cooperative Extension. All public roadways that are considered Class I - V were buffered by 500ft. All private roads and roadways Class VI and above were excluded. Any area outside of this 500ft buffer are considered an unfragmented land-open space block.

27) Public Water Access Data (last revised in August 2019)
Originated by: New Hampshire Office of Strategic Initiatives
Data/Map Creation Originally Started in: 1997
Data Obtained from: NH GRANIT
*Additional data added based on information from the Alton Conservation Commission

28) Recreation Point Data (last revised in January 2010)
Originated by: New Hampshire Office of Energy & Planning
Data/Map Creation Originally Started in: December 1997
Data Obtained from: NH GRANIT
* SRE made minor updates to the layer in 2022

29) Recreation Polygon Data (Parks) (last revised in January 2008)
Originated by: New Hampshire Office of Energy & Planning
Data/Map Creation Originally Started in: December 1997
Data Obtained from: NH GRANIT
* SRE updated this layer to show the Town of Alton's Parks & Facilities based on documentation published by the town's Parks & Recreation Department and based on correspondence with the Alton Conservation Commission.

30) Important Viewpoints/Viewsheds Data (last revised in 2008)
Originated by: Lakes Region Planning Commission (LRPC)
Data Obtained from: LRPC
*Additional data added based on information from the Alton Conservation Commission