

Town of Atkinson Prime Wetland Study

For: Town of Atkinson
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EXECUTIVE SUMMARY

In the spring of 2002, recognizing that 1) certain high value wetlands are present in Atkinson, and 2) that they are worthy of extra protection because of their uniqueness, fragility and/or unspoiled character, the Town of Atkinson decided to initiate a process to identify and ultimately designate Atkinson's Prime Wetlands. This process is allowed pursuant to NH RSA 482-A:15, and is codified in Chapter Wt 700 of the NH Wetlands Bureau Code of Administrative Rules.

Natural Resource Consulting Services (NRCS) was selected to work, with oversight from the Atkinson Conservation Commission (ACC), to analyze existing water resource and wetland studies, conduct new field investigations, and prepare maps and other documents required for the prime wetland designation process. Selection of candidates for prime designation began with the identification of all wetlands greater than 2.0 acres in size, and was followed by the establishment of a set of threshold conditions that all candidate wetlands would be required to meet. Evaluation against these thresholds resulted in a set of eight wetlands for further study. Finally, each of the eight candidate wetlands was evaluated using the "Comparative Evaluation of Non-tidal Wetlands in New Hampshire" (1991) "The New Hampshire Method".

This report documents the candidate wetland selection, the so called methodology, investigative and mapping procedures, and field research findings for the eight candidate wetlands. It is worth noting that all of the candidate wetlands are currently impounded by man and/or beavers. Charts, graphs, and orthophoto maps of each prime wetland candidate can be found in the Appendix.

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I. INVENTORY

There are 45 waterbodies and 24 mapped watercourses located within the Town of Atkinson. Waters from these wetlands and streams are located in two watersheds; the Spicket River and the Little River. The Spicket River flows southerly into the Merrimack River at Lawrence, Massachusetts and the Little River flows east, directly into the Atlantic Ocean in Seabrook, NH. All wetlands possess a range of functions and values that are defined in various ways. All wetlands are important, but some show greater importance than others for specific functions based on the qualities they possess. To prioritize or rank these various functions and values, several methodologies have been developed, such as the Federal Highway methodology, a series of biological, geological, and hydrological methods, and several others. For this study, we chose to use the "Comparative Evaluation of Non-tidal Wetlands in New Hampshire" (1991) ("The New Hampshire Method") in evaluating freshwater wetland functions as it is suggested in Chapter Wt 700 of the NH Wetlands Bureau Code of Administrative Rules.

NRCS performed this study in cooperation with the Atkinson Conservation Commission, whose local knowledge and insight were invaluable. The study was separated into three phases, which while distinctive, did require a repetitive approach. These phases included:

1. An initial screening of all wetlands in town in order to develop a list of prime wetland "candidates".
2. A field study phase utilizing the New Hampshire Method to assess comparative functional values of the candidate wetlands.
3. A third phase that involved the gathering of GPS data to establish the Prime wetland boundaries, the analysis of collected field data and functional values of the individual wetlands, and the production of maps and charts.

A. Phase I - Initial Screening

Phase I consisted of reviewing information provided by the Town Atkinson and pertinent GRANIT GIS data layers. These data sets consisted of:

- An Inventory Classification and Evaluation of Atkinson's Wetlands – 1978,
- Water Resource Management and Protection Plan for the Town of Atkinson, NH – 1991,
- An Ecological Inventory of Significant Wetlands In the Lower Merrimack Valley, NH First Year Interim Report, which includes the Spicket River – 1992.
- 1995 wetland functional evaluation materials (performed by ACC volunteers).
- GRANIT data layers of soils mapping units and National Wetland Inventory data
- 1999 "Ice Storm" color infrared aerial photography 38" x 38" enlargements.
- Various maps and reports provided by the Atkinson Conservation Commission.

The 1978 study served as the basis for our wetland information, which was supplemented with the 1995 information where applicable. The 1978 study numbered and ranked all wetlands in the Town, based on a methodology which took into account wetland size, soil and vegetation types, open water areas, and wetland diversity. For the purposes of continuity, this study retains this numbering system for the most part. The 1995 study did not evaluate all 46 wetlands studied in the 1978 study, choosing instead to focus on the top 21 wetlands as ranked by the 1978 study. The 1995 study was also incomplete as there were some data omissions within the evaluated wetlands.

We began with the top 19 of the 21 wetlands ranked in the 1995 report, noting that wetland number one has since been found to be located entirely in Hampstead and wetland number four no longer qualifies as a wetland based on the 1985 soil survey (discussed in the 1991 Report). First, we used the two primary threshold criteria i.e., soil drainage classes and aerial extent, to do a coarse screening of these 19 wetlands. The wetlands were evaluated according to size and soil types: a threshold size level of approximately 10 acres or larger was established, and, by State regulation a prime wetland must consist of at least 50% very poorly drained soils and the remaining area must be poorly drained. Exceptions to the coarse screening can be made for unique, pristine wetlands that exhibit exceptional values.

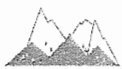
Soil drainage classes are defined by the USDA Natural Resources Conservation Service into several divisions ranging across a spectrum from excessively well drained to very poorly drained. For the interest of this study we are interested in poorly drained and very poorly drained soils. Poorly drained soils are soils which water is removed from the soil so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Very poorly drained soils are those which water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Poorly drained soils in Atkinson include Walpole very fine sandy loam. Very Poorly drained soils in Atkinson include Greenwood & Ossipee soils ponded, Greenwood mucky peat, Chocorua mucky peat, Scarboro muck, and Ossipee mucky peat.

From the soil types and aerial extent screening, thirteen wetlands were determined to be potential prime wetland candidates: 2, 7, 8, 11, 12, 14, 16, 17, 18, 20, 26, 30, and 40. Secondly, these wetlands were further screened for quality and ecological diversity. These criteria reduced the initial list to a total of eight prime candidate wetlands: 7, 12, 18, 20, 26W, 26E, 30, and 40. (This screening separated the very large wetland 26 (Sawmill Swamp) into two wetlands, 26E and 26W due to the physical separation of Maple Avenue).

B. Phase II - Functional Analysis

Once the eight wetlands selected for further study were determined, full functional evaluations based on the New Hampshire Method were completed. The New Hampshire Freshwater Wetland method evaluates 14 functions. These functional evaluations assess the importance of the wetland based on:

1. Ecological Integrity—Wetlands which have a high level of ecological integrity can serve as potential sites for the study of natural ecosystems. It is



necessary to study and understand intact natural systems before we can begin to understand the profound impacts humans have had on the biosphere.

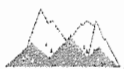
2. Wetland Wildlife Habitat—Assesses the overall suitability of a wetland for that group of wildlife species which are intimately associated with wetlands.
3. Finfish Habitat—The ability of streams and lakes associated with the wetland to function as finfish habitat.
4. Educational Potential—Assesses the educational potential of wetlands in terms of access the widest variety of wetland types.
5. Visual/Aesthetic Quality—Evaluation based on wetland viewpoints from a single location or several locations averaged together.
6. Water-based Recreation—Evaluation of the wetland based on activities such as nature hikes and non-motorized boating.
7. Flood Control Potential—The evaluation derives an index to allow for the comparison of the relative flood control potentials of all the wetlands within the study area.
8. Ground Water Use Potential—Evaluation to compare the wetland's ability to recharge ground water aquifers.
9. Sediment Trapping—Assesses the wetland's ability to remove sediments from runoff waters.
10. Nutrient Attenuation—Evaluates the wetland's ability to reduce the nutrient levels transported in runoff waters.
11. Shoreline Anchoring and Dissipation of Erosive Forces—Wetlands can act as a buffer for wave action between open water and upland. This buffer reduces shoreline erosion.
12. Urban Quality of Life—Attempts to recognize the importance of wetland in an urban environment.
13. Historical Site Potential—Shows known historical significance of the wetland (e.g. mill site)
14. Noteworthiness—Determines if a wetland possesses certain features which gives it a high value regardless of any other attribute.

Chapter Wt700 requires the use of at least 10 wetland values.

The NH Method raw data sheets were provided to the Atkinson Conservation Commission and are on file there.

A three-member team visited each of the eight candidate wetlands. Landowner permission to access parcels in and near the chosen wetlands was sought by the Atkinson Conservation Commission.

Site visits were made to each wetland to collect information on drainage area attributes, such as recent development within the drainage area, type of wetland outlet, overall vegetative cover, type of wetland (bog, marsh, emergent, scrub-shrub, and forested), public access, and educational, historical or recreational value.



The field team then held detailed in-house discussions to average the value responses to the various NH Method questions for each of the 14 functions for all eight wetlands. These evaluations involved office investigations using aerial photographs, topographic maps, available written reports, and other information; as well as field studies and GPS wetland boundary locations.

C. Phase III - Mapping Procedures

All eight of the prime wetland candidates were revisited during this Phase. Each of the eight Prime Wetland candidates were circumnavigated on foot to identify their boundaries; field paths were simultaneously recorded with a Trimble Pathfinder GPS system. During the site visits, the locations of stone walls, wells, dams, and other significant landmarks were captured with the GPS unit for general locating information and future reference. Property corners and Town boundaries were also marked. All of the information gathered was then compiled and used for the creation of the individual wetland maps (Attachment 2). These maps use a digital orthophotograph as a base with the field-collected GPS data and tax assessor's parcel boundary data overlain onto the orthophoto base. For in-house review purposes we also used digital hydric soils and National Wetland Inventory data to analyze probable wetlands. When located in the field, the wetland outlet is shown with a dashed line and the type of retention device (dam, culvert, *etc.*) is indicated.

It is important to note that geometric corrections were made to the tax map data layers to achieve proper orientation of these layers. Data on these maps were developed from various sources with varying degrees of accuracy and precision. For example, the NWI data was originally photo-interpreted from 1:80,000 scale color infrared photography, and the soils data from 1:12,000 CIR photography with the minimum mapping unit being 3 to 8 acres. The tax assessor's maps were developed from a variety of sources with very little horizontal control. When these various data are overlain, discrepancies in their quality become obvious. To improve the appearance of the final maps, the assessor's tax map data were rotated and shifted. While we have aligned the tax maps with the orthophoto and other data shown in the maps to the best of our ability, there will still be some minor misalignment seen between the orthophoto and the tax map lines. The specific wetland maps and accompanying electronic files that have been generated for this study should not be utilized for purposes other than this Prime Wetland Study. The attached maps are not surveys.

II. CANDIDATE PRIME WETLAND DESCRIPTIONS

These field observations were done during one of the worst droughts on record. We visited the wetlands from August through October, 2002.

Wetland 7—Hall Farm Road Pond

Route 111 borders wetland 7 to the north and Hall Farm Road to the south. This 9.4 acre wetland has only few small inflow streams and the outlet culvert is partially blocked. Even with this partial blockage, the culvert inlet is at an elevation sufficient to maintain the health

of this wetland. This culvert was located several feet above the water height during our investigations.

Though just under ten acres, wetland 7 shows very diverse features with open water, emergent, scrub-shrub, and forested areas. During our visits we observed several species of wildlife including black ducks, red-tailed hawk, and many songbirds. A stand of *Decodon verticillatus*, (water-willow) was observed in this wetland. This is the host plant of the Decodon moth, a species listed as N2 (Nationally Imperiled) by The Nature Conservancy's web site (NatureServe).

There is a pull-off from Hall Farm Road that allows an observer to view most of the shallow open water and scrub-shrub areas of this wetland, thus providing excellent access and education/research point. At this observation point there are two fire hydrants where water can be pumped directly from the wetland.

Even with the partially constricted elevated culvert, this wetland appears to be very stable. There was previous beaver activity, as indicated by the beaver houses found in the wetland. The beaver damming activity appears to have been limited to the partial plugging of the culvert with mud and vegetative debris.

Although this wetland falls just below the 10-acre threshold, it possesses several exemplary attributes. These include potential habitat for an endangered species, undisturbed natural communities, and excellent access for general viewing or educational pursuits.

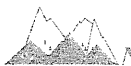
Wetland 12—Hog Hill Brook

Wetland 12 is a 17.5-acre long narrow wetland that is the result of a dammed stream, and is bordered by Island Pond Road and Chandler Drive. At the north end of the wetland the inlet stream enters through a culvert under Island Pond Road from Hodges Mill Pond. The outlet for this wetland is at the south end at an approximately 20 foot long earthen berm. There is beaver activity throughout the middle and southern portions of this wetland where there currently is open water. The north portion of the wetland consists of a narrow stream and scrub shrub/emergent plants. There is no direct access to this wetland for the general public and therefore there is no area for education or research without seeking landowner permission.

There are several stone walls that run into and some that run across this wetland indicating that the berm is of relatively recent construction and that this property was used for animal grazing or crop cultivation in the past.

Wetland 18— Hovey Meadow Wetland

Wetland 18 is an irregular shaped pond and stream bordered by Pope Road to the south and West Side Drive to the West. Wetland 18 is located to the southwest of the Village Subdivision. Wetland 20 drains into it from the northeast. Much of this wetland has emergent vegetation with some scrub shrub and a small amount of forested wetland section.



There is a section of open water south of Wellington Circle. An earthen dam that may have been a farm road crossing in the past dams the water. Water does percolate through this dam and flows southwesterly, eventually exiting through a culvert under West Side Drive. Just east of this culvert the wetland dries up completely during the dry summer months exposing a cobble rock bottom with little to no vegetation. The unvegetated bottom indicates that flows are sustained until late in the season, and the cobble rock indicates that there are relatively high velocities in the stream. Moving easterly the wetland becomes a forested pit and mound wetland with an intermittently distinguishable stream channel. The channel is definite near to the earthen berm. Upslope of the berm the wetland is open water and cattail swamp turning back into a forested wetland/mineral bottom stream at the inlet.

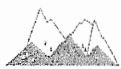
Wetland 20— Stewart Farm Pond

Wetland 20 is a shallow bottom predominantly open water pond with emergent vegetation along the perimeter. There is definite beaver activity with an active beaver dam at the outlet along the southwest side. There is also another impounded area on the southwest side that borders a logging road; the beaver activity could divert water across a low area, creating a second outlet to this wetland – but only during high flow periods. Along an inlet on the northwest corner is a curious stonewall structure that separated two neighboring herds of cows while allowing them to drink from the wetland that sits along a mineral/cobble bottom stream with surrounding forested wetland. The mill is only distinguishable by the rock foundation in the middle of the stream. The northern section of the wetland is vegetated with various reeds and cattails. Discussions with a local fisherman found that there are fish (such as catfish) found in this pond. A barred owl was flushed in the tall white pines located at the northwest sector of the wetland. This stand of mature pine and the adjacent red maple swamp provide ideal habitat for this species. There are some dead trees within the wetland showing that the water elevation wasn't always this high and that the rising water, possibly due to the beavers, may have killed them.

There is a development of homes surrounding this wetland on the westerly side and they are located mostly on high banks and overlook the open water that is more in the center of the wetland. It appears that the mowed lawns of some of these houses extend to the wetland/pond edge, which may conflict with portions of the Shoreline Protection Act.

Wetland 26 West—Sawmill Swamp

Wetland 26 West, Sawmill Swamp is a very large wetland located along the northern border of the Atkinson Town line. The Town of Atkinson owns several parcels that border the westerly side of this wetland. Maple Avenue bisects the East and West portions of Sawmill Swamp with a section of fill and a culvert. Water flows from east Sawmill Swamp, through the culvert, and then north through the wetland across the town border into Hampstead. Other ephemeral (intermittent) streams enter this wetland from the south and west. Wetland 26 West is not entirely located within the Town of Atkinson, 64 acres of the 130 acres are located within the Town with the remaining acres located in Hampstead.



This wetland has great diversity, varying from forested wetland, scrub shrub, emergent, and some shallow open water. The banks are fairly distinct for the most part with only limited areas of less distinct prime wetland jurisdiction near the south west corner where the wetland gradually transitions into a forested wetland. This wetland shows great animal diversity with sign of deer, coyote, beaver, various ducks, great blue heron, and many songbirds. There are several islands in the forested wetland. Upland Islands increase overall habitat diversity. One island is almost entirely located within the Town of Hampstead north of the Atkinson Town Line.

Wetland 26 East—Sawmill Swamp

Wetland 26 East, Sawmill Swamp is also a very large diverse wetland. This wetland flows westerly through a culvert under Maple Avenue into Wetland 26 West. Much of this wetland has shallow marsh emergent and scrub shrub vegetation (standing water) with very little open water (no floating-leaved aquatics). Several ephemeral streams located all along the boundary feed the wetland.

This wetland has great animal habitat. Bear scat was found along the north section of the wetland within a blueberry thicket. There was also sign of coyote, deer, many songbirds, and various ducks. The habitat throughout the wetland is diverse and much of the houses along this wetland are set far enough back to create a substantial buffer for wildlife.

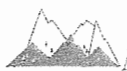
There is some sign of illegal fill (mostly yard debris) found in this wetland along the southeast border at the bottom of a steep hill near Dearborn Ridge Road.

Wetland 30—Wright Farm Pond

Wetland 30, Wright Farm Pond, is located between Sawmill Road, Bittersweet Lane, and Kings Grant Drive. There is no direct public access to this wetland and, therefore, access of research and educational is low. However, this is a very diverse and interesting wetland. The diversity and interspersed habitats range from a large forested wetland to scrub shrub, emergent, open water, as well as a large forested island in the middle of the wetland. This diversity creates great animal habitat. Animal signs seen during several visits include deer, coyote, great blue heron, various ducks, beaver, and numerous songbirds.

The island is actually now a peninsula joined to the mainland with fill for access road to a community water well. The road has three culverts underneath allowing connection for the natural hydrology. The fill does not appear to have affected the wetland hydrology and because of the narrowness of the fill and openness of the road the island could still be considered fairly isolated from the mainland surrounding this wetland. This fill may have adverse impacts to resident wildlife as it provides an access to the island by subsidized predators, i.e., house cats, raccoons and skunks, who are predators for the native species.

There are two stream courses entering the wetland, one from the northeast and one from the east. The northeast stream forms a channel that eventually opens up into the open water of



the wetland. The eastern channel drains into the forested wetland and does not form a significant channel within Wetland 30.

There is an earthen dam at the outlet at the northwest corner that may have been created by beavers but fortified by people. This dam is approximately 20 feet long but very substantial. If this structure was breached or removed, the water in the wetland would drop several feet drying up the forested wetland section to the southeast.

There were several areas where filling of the wetland is occurring. This is mostly behind the residences along Summit Drive. There were several piles of lawn clippings and vegetative debris as well as dump piles within the wetland.

Wetland 40—Bryant Brook

Wetland 40, Bryant Brook runs south along the border of Atkinson and Plaistow. Bryant Brook enters Atkinson from the east, crossing Line Brook Road. The wetland then flows south under East Road, along Bryant Woods Drive, and behind Bayberry Drive heading under a railroad trestle as it exits the Town of Atkinson to the south. This wetland comes from several wetland fingers that finally develop into a brook that is held back by a large beaver dam (approximately 50 feet long) that spills into a cobble bottom stream course running under the railroad trestle. This wetland has several distinct features. In the south near the beaver dam there is a large span of open water with emergent vegetation along the borders.

Moving upstream, the wetland spreads into narrow swales that extend westward across Bryant Woods Drive. The southernmost stream is held back in one section by an earthen dam approximately 1400 feet from where the swale empties into the main section of Bryant Brook. This dam is approximately 100 feet long. This section of the swale continues to Little Rob Road.

The second swale heads more northwest from Bryant Brook and also extends across Bryant Woods Road. Passing through three culverts it becomes an area that has recently been disturbed by at least three months of continuous draining (as reported by a local resident). The area that had been drained also had some filling and much of the vegetation had been completely removed. Shrubs and trees were cut down, leaving sticks, branches, and wood chips. Though drained, the area remained a wetland with the hydrology still evident.

Moving northward, the wetland becomes a forested pit and mound wetland extending out into an overgrown field along East Road. The wetland passes under a bridge under East Road. On the east side of East Road is a dry hydrant. The wetland continues northward along East Road and then behind some residences and across the town line. There was evidence of dumping of yard debris behind the residences along East Road. The predominant fill was lawn clippings, branches, and vegetative debris.

III. WETLAND SURVEY RESULTS

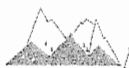
Of the eight wetlands studied, we have determined the weights of the various functions and values listed in the New Hampshire Method of Freshwater Wetlands Analysis which are presented in Table 1. Wetland Value Units (WVU) for the 14 Functional Values of a wetland are not additive. The NH Method does not calculate an overall score for a wetland (Method for the Comparative Evaluation of Nontidal Wetlands in NH, 1991).

The New Hampshire Method is an inventory and planning tool that is intended to be used to compare the relative values of a number of wetlands and not as a site-specific evaluation tool. This method can be used in different ways:

- Wetland Protection
 - Zoning and Subdivision Regulations
 - Comments to the NH Wetlands Bureau
 - Designation of Prime Wetlands
 - Acquisition of Wetlands
 - Comments to the US Army Corps of Engineers
- Prioritizing Wetland Values within a Town
- Wetland Management
- Education.

However, there are limitations to its use including:

1. The NH Method is designed for use by town officials and others for educating members of the Conservation Commission, town board, and others about wetland functions; collecting basic information about the wetlands in a particular study area; creating a database containing the relative ranking of the evaluated wetlands for a number of Functional Values, as well as other wetland data; or supporting the planning and decision making process within a town or region.
2. The NH Method is designed for the comparison of Function Values of a number of wetlands. It is not suitable for evaluating a single wetland.
3. The NH Method is not designed for impact analysis. Impact analysis requires the judgement of a wetland professional who would be responsible for selecting a detailed method of evaluation and/or conducting detailed on-site studies of wetland function.
4. The NH Method is not intended to be used as a justification of the destruction of wetlands which rank low in value for a particular Functional Value or a group of Functional Values. It is the consensus among wetland professionals that all wetlands have some value and that all losses of wetlands are to be avoided if possible and mitigated where avoidance is not possible.
5. The NH Method may appear to give too low a rating to some small wetlands unless careful use is made of the Noteworthiness Functional Value. For example, a small



wetland may have only limited function for wildlife habitat but its value for this function might be high because it is the only wetland readily available for bird watching by residents of a nearby retirement home.

6. The NH Method is not designed for use in legal proceedings which require detailed information about individual wetlands.

IV. DISCUSSION

All of the wetlands finalized for the Prime Wetland classification are impounded one way or another. All of the impoundments were found during our field investigations and are noted on the attached maps with the exception of Wetland 26 West, which is significantly outside of the Town of Atkinson borders. The impoundments (man and beaver) create the habitat diversity of the wetland by deepening available water and extending the hydroperiod. The wetland types range from forested pit and mound, to scrub shrub, emergent, and finally to shallow (less than two meters) open water. Without the impoundments, the wetlands would be a great deal smaller. If the dam holding back a given prime wetland candidate is created by beavers, then it may be important to try to maintain a sustainable population of beavers. This does not mean that beavers need to be in permanent residence in these wetlands. The normal beaver flowage cycle begins with the creation of a dam; after a period of time, the beavers exhaust the available food supply, and abandon the site; the dam is breached and the impoundment drains away leaving a mud bottom or emergent vegetation; a series of plant communities follow, beginning with a sedge meadow, followed by a shrub-scrub wetland, and possibly a wooded wetland; after an adequate food supply grows, the beavers may return, beginning the cycle again.

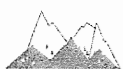
To best provide for the continued or presence of beaver and other wildlife, buffers around wetlands are of paramount importance. The New Hampshire Fish and Game Department is developing guidelines for buffers, and have focused on the most vulnerable to human development, frogs, salamanders, and turtles. Presently, there are greatly varying widths of undeveloped upland surrounding the various wetlands. These buffers therefore vary in viability and functionality.

A. WELLS

Most of the wetlands contained active wells immediately adjacent to the wetlands or dry hydrants with intakes located directly within the wetland. It is important to regulate water withdrawal pumping from these wells to insure they do not significantly reduce the water table thereby reducing the size or the quality of the wetland. Such impacts could adversely impact wildlife habitat as well as the vegetative cover composition. Locations of wells identified through our field investigations are shown on the attached maps.

B. WETLAND FILLING

Whether intentional or unintentional, several of the house lots bordering the above-described wetlands have deposited minor amounts of household and yard debris fill in the wetlands.



Much of this filling can be described as incremental encroachment of wetlands and consists of lawn trash, including grass clippings, leaves, branches, sticks, and rocks. We have found from past observations that such material may have high quantities of nutrients, herbicides, or fecal material from dog droppings. The amount of fill found is minimal, but is incremental. Although it may have been unintentional, filling a wetland without prior State approval is technically illegal. It may be best to notify these individuals that filling a wetland is illegal and all unapproved fill should be removed. NRCS has found that an educational effort by the Conservation Commission of the general principles of the Wetland Protection Act can have positive results without the necessity of having to resort to legal remedies in such matters.

TABLE 1.

Wetland Value Unit

Functional Value	Wetland #7	Wetland #12	Wetland #18	Wetland #20	Wetland #26 W	Wetland #26 E	Wetland #30	Wetland #40
Ecological Integrity	5.8	11.3	6.4	16.3	106.5	46.4	31.3	32.1
Wetland Wildlife Habitat	5.8	13.9	7.5	15.6	104.1	30.7	25.3	44.7
Finfish Habitat Rivers and Streams	0.0	15.5	0.0	0.0	79.9	39.4	15.2	47.3
Ponds and Lakes	1.7	14.6	3.7	14.4	66.6	41.2	13.1	39.1
Educational Potential	6.4	0.2	4.8	13.1	58.1	5.5	23.5	16.2
Visual/Aesthetic Quality	4.4	0.5	2.2	9.9	75.0	3.0	15.0	16.8
Water-based Recreation	3.6	7.7	2.6	12.0	53.0	19.6	8.7	30.5
Flood Control Potential	6.0	17.6	13.0	23.0	121.0	58.0	46.0	50.4
Ground Water Use Potential	7.0	15.5	9.1	20.2	106.5	58.0	40.5	63.0
Sediment Trapping	5.6	17.1	5.7	15.0	62.9	39.4	27.6	39.7
Nutrient Attenuation	6.0	16.7	6.2	16.1	82.3	38.9	30.4	42.2
Shoreline Anchoring	0.5	1.1	0.7	0.6	5.0	1.8	1.1	4.9
Urban Quality of Life Wetland Habitat	5.4	12.7	9.4	17.5	96.8	23.2	29.4	39.1
Educational Opportunity	8.8	0.1	5.2	11.5	70.2	6.5	32.2	20.4
Visual/Aesthetic Quality	8.0	0.8	2.3	14.1	101.6	3.2	15.2	15.0
Water-based Recreation	6.0	15.5	5.3	15.0	93.0	32.0	20.2	45.0
Historical Site Potential	4.2	2.7	0.6	1.4	60.5	0.4	6.4	5.6
Noteworthiness	10.0	0.0	0.0	23.0	121.0	58.0	46.0	0.0

V. BIBLIOGRAPHY

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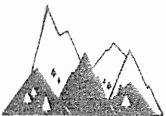
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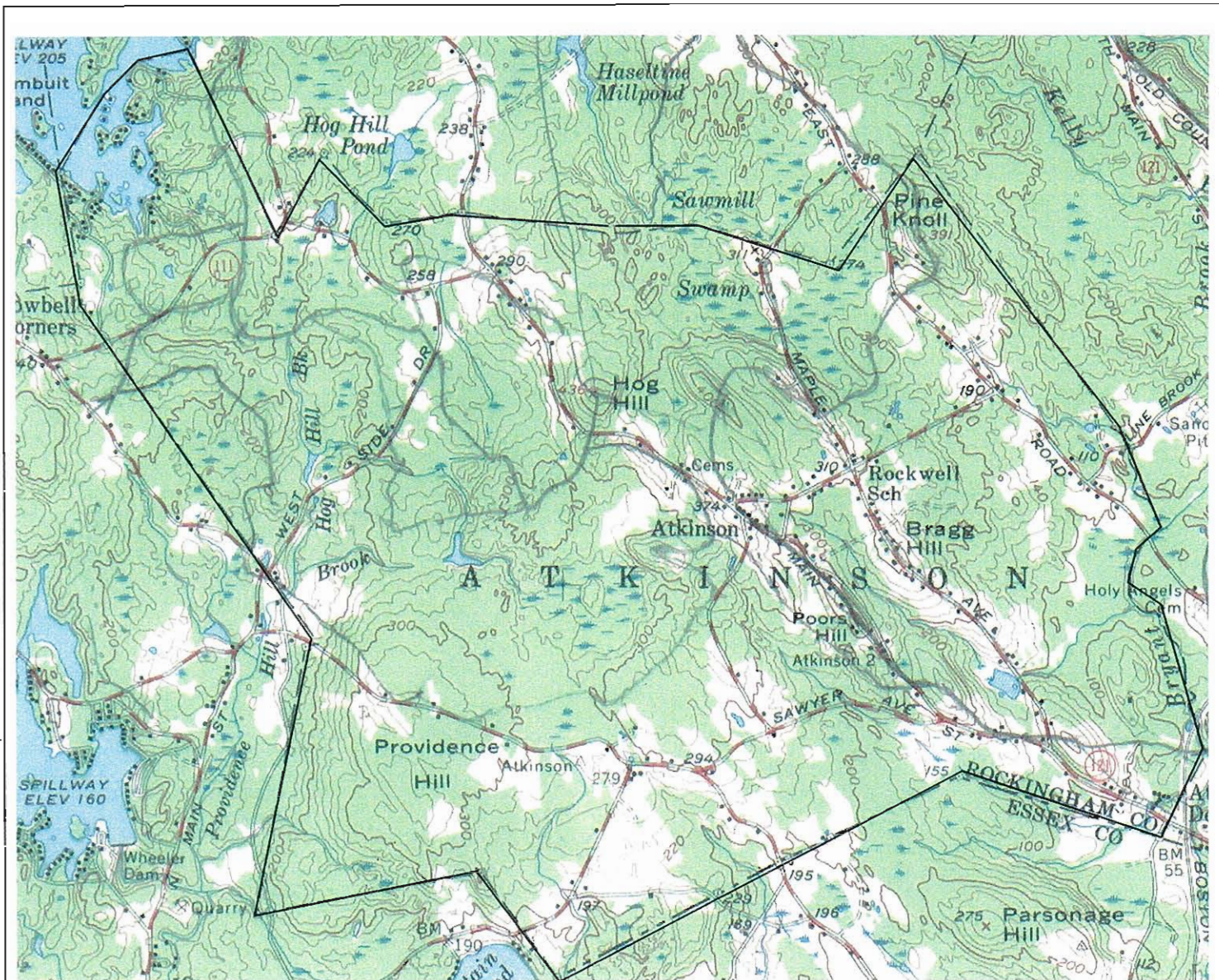
NH RSA 482 A:10 1-15 Available at: <http://www.gencourt.state.nh.us/rsa/html/L/482-A/482-A-10-a.htm> Accessed: December 2002.

Town of Atkinson Prime Wetland Study

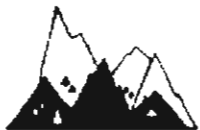
Attachment 1

Locus Map





Study was conducted throughout Atkinson—rough town boundary outlined.



**NATURAL RESOURCE
CONSULTING SERVICES**

167 SOUTH STREET
CONCORD, NH 03301
603-228-4600

67 WEST SHORE ROAD
GRAND ISLE, VT 05458
802-878-4800

Source:

USGS Topographic
Haverhill, NH-Mass.
15 Minute 1956

Project: Town of Atkinson Prime Wetland Study

Project No. 616.01

Date: November 27, 2002

LOCUS PLAN

FIGURE 1

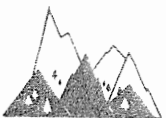


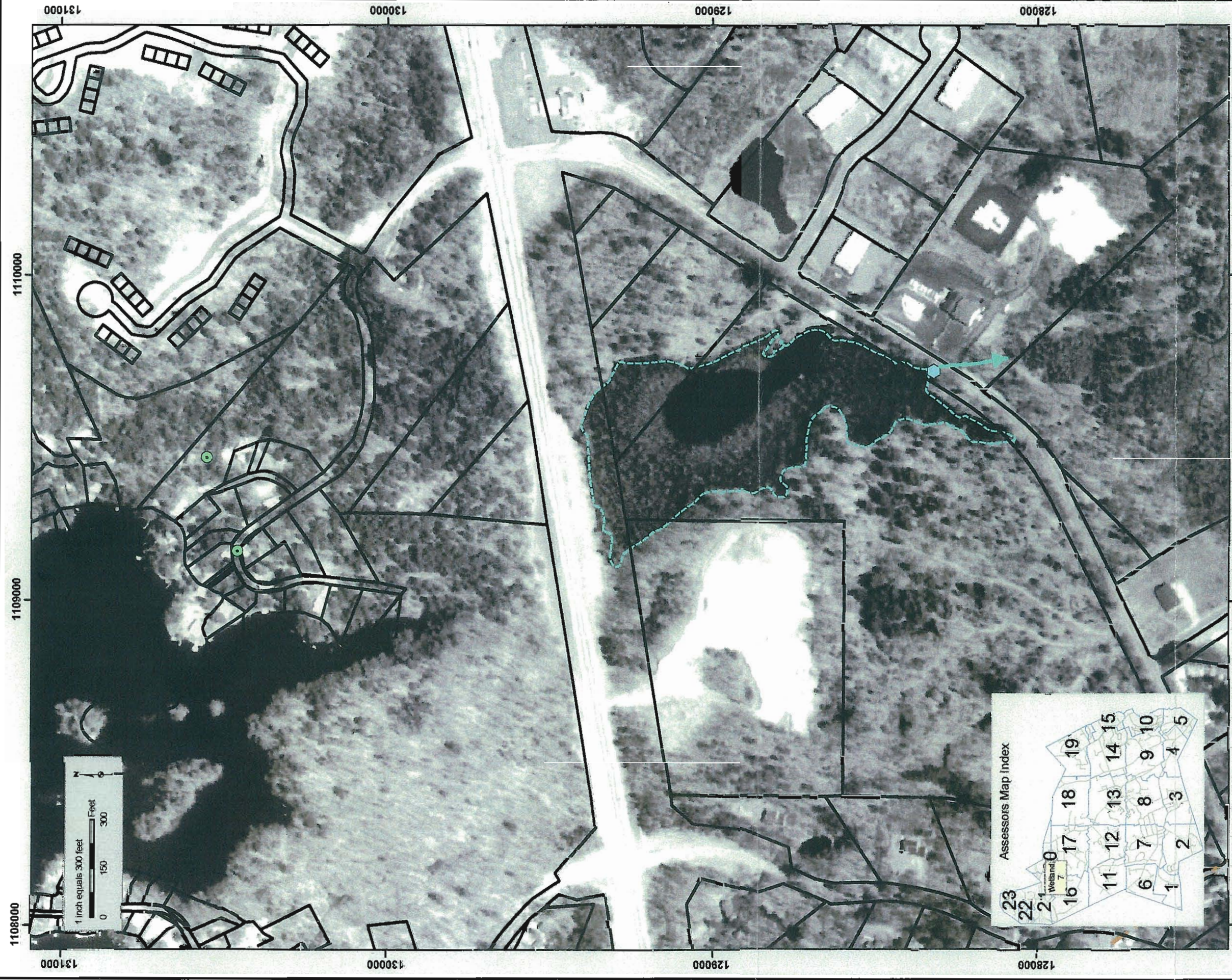
Town of Atkinson Prime Wetland Study

Attachment 2

Candidate Prime Wetland Maps

- 7 Hall Farm Road Pond
- 12 Hog Hill Brook
- 18 Hovey Meadow Wetland
- 20 Stewart Farm Pond
- 26 West Sawmill Swamp
- 26 East Sawmill Swamp
- 30 Wright Farm Pond
- 40 Bryant Brook





Town of
Atkinson, NH

**Candidate
Prime Wetland Map**

for
7 Hall Farm Road Pond

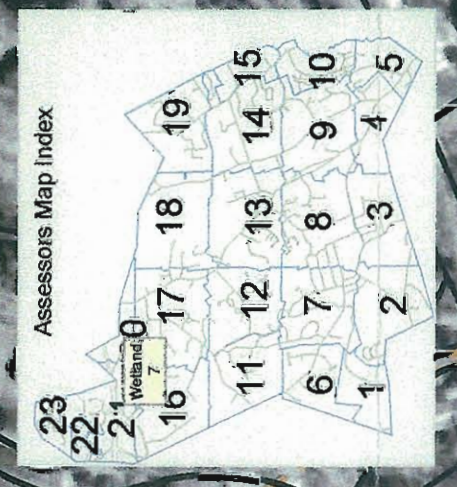
Notes:
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MAP LEGEND

Assessor's Parcel Lines	Well Locations
Field-checked Candidate Prime Wetland	State Mapped GPS collected
Wetland outflow direction	Other Points (GPS)
Town Boundary	Culverts
Bike Path	Edge of Dams or Impounding Structures



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www.nrcs-nh.com

1111000

1112000

1113000

130000

130000

129000

129000

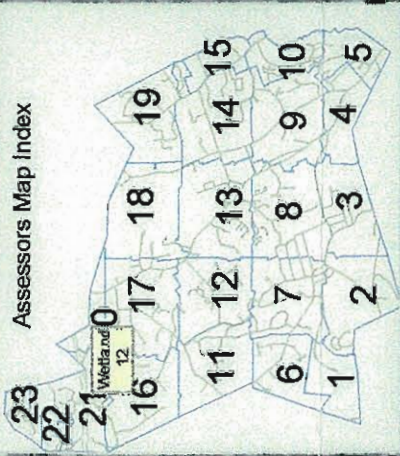
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1112000

1113000



MAP LEGEND

Assessor's Parcel Lines	Well Locations: State Mapped
Field-checked Candidate	GPS collected
Prime Wetland	Other Points (GPS)
Wetland outflow direction	Culverts
Town Boundary	Edge of Dams or Impounding Structures
Bike Path	

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Notes:
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Town of Atkinson, NH
Candidate Prime Wetland Map
 for
 12 Hog Hill Brook

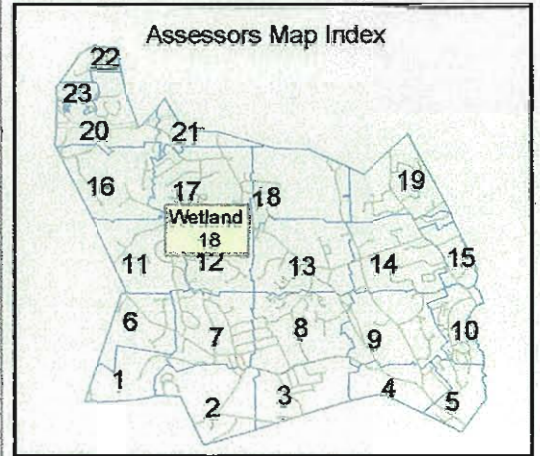


Town of
Atkinson, NH
**Candidate
Prime Wetland Map**
for
18 Hovey Meadow Wetland

Notes:
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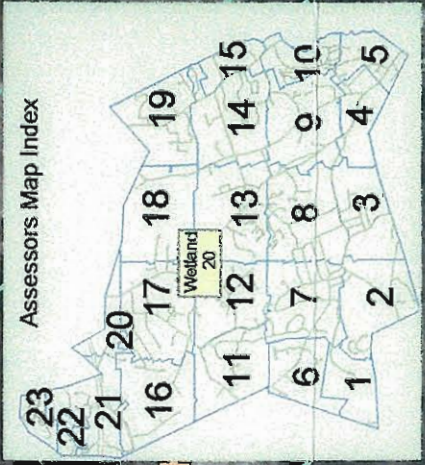
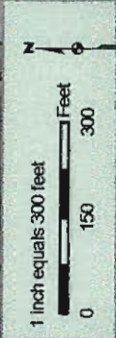
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MAP LEGEND

- | | |
|---|---|
| — Assessor's Parcel Lines | ● State Mapped |
| --- Field-checked Candidate Prime Wetland | ● GPS collected |
| → Wetland outflow direction | ● Other Points (GPS) |
| --- Town Boundary | ● Culverts |
| --- Bike Path | ⊕ Edge of Dams or Impounding Structures |

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pwnrncs@attbi.com



- MAP LEGEND**
- Assessor's Parcel Lines
 - Field-checked Candidate Prime Wetland
 - Wetland outflow direction
 - Town Boundary
 - Bike Path
 - Well Locations
 - State Mapped
 - GPS collected
 - Other Points (GPS)
 - Culverts
 - Edge of Dams or Impounding Structures

Notes:
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Town of
 Atkinson, NH

**Candidate
 Prime Wetland Map**

for
 20 Stewart Farm Pond

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 Concord, NH 03301
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 dwnrscs@nrcs.com

Town of Atkinson, NH

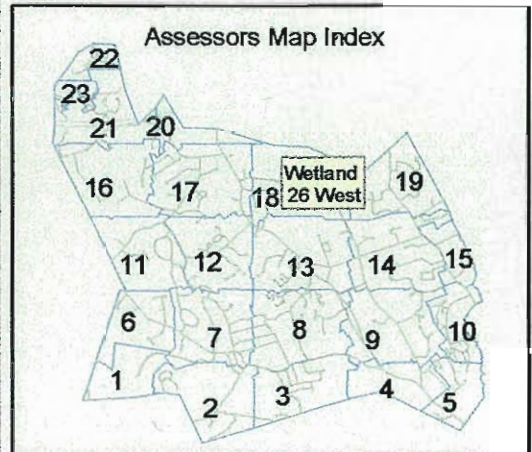
Candidate Prime Wetland Map

for
26 West Sawmill Swamp

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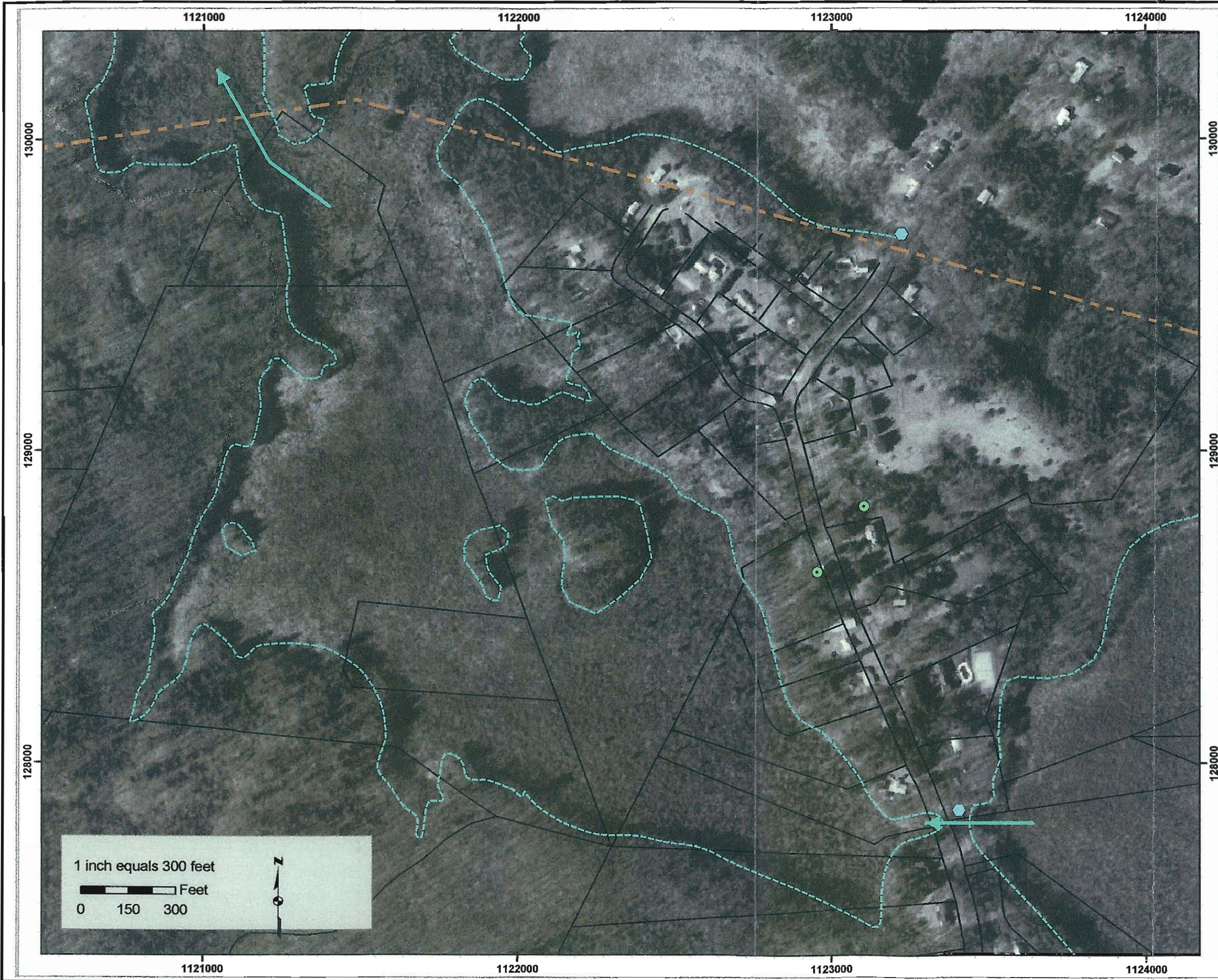
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MAP LEGEND	
Assessor's Parcel Lines	Well Locations
Field-checked Candidate Prime Wetland	GPS collected
Wetland outflow direction	Other Points (GPS)
Town Boundary	Culverts
Bike Path	Edge of Dams or Impounding Structures

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pwsnracs@attbi.com

Maps produced: 1/03/03



1 inch equals 300 feet

0 150 300 Feet

Town of Atkinson, NH

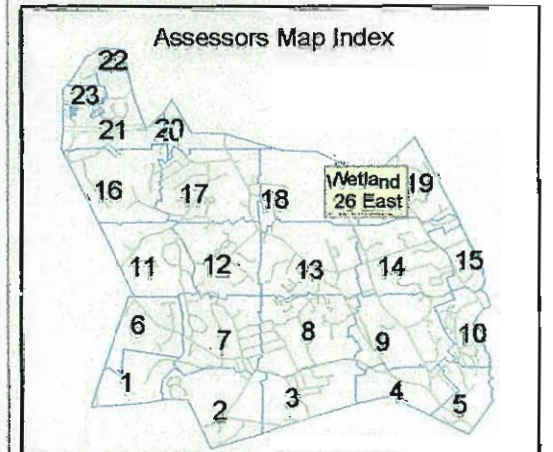
Candidate Prime Wetland Map

for
26 East Sawmill Swamp

Notes:
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MAP LEGEND	
Assessor's Parcel Lines	Well Locations
Field-checked Candidate Prime Wetland	State Mapped
Wetland outflow direction	GPS collected
Town Boundary	Other Points (GPS)
Bike Path	Culverts
	Edge of Dams or Impounding Structures

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Maps produced: 1/03/03



Town of Atkinson, NH

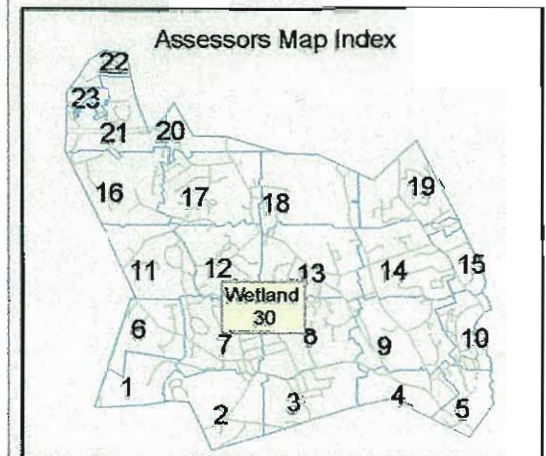
Candidate Prime Wetland Map

for
30 Wright Farm Pond

Notes:
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MAP LEGEND	
	Assessor's Parcel Lines
	Field-checked Candidate Prime Wetland
	Wetland outflow direction
	Town Boundary
	Bike Path/Trail
	Well Locations State Mapped
	GPS collected
	Other Points (GPS) Culverts
	Edge of Dams or Impounding Structures

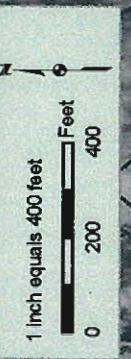
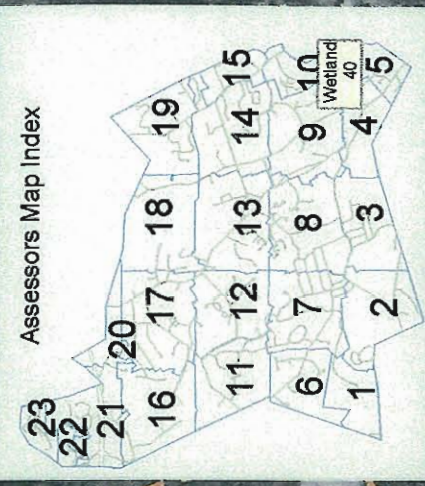
Natural Resource Consulting Services
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(603) 228-4600
pwnrcs@attbi.com

Maps produced: 1/03/03



1 inch equals 300 feet

0 150 300 Feet



Town of
Atkinson, NH

**Candidate
Prime Wetland Map**

for
40 Bryant Brook Wetland

Notes:
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MAP LEGEND

Assessor's Parcel Lines	Well Locations
Field-checked Candidate Prime Wetland	State Mapped
Wetland outflow direction	GPS collected
Town Boundary	Other Points (GPS)
Bike Path	Culverts
	Edge of Dams or Impounding Structures

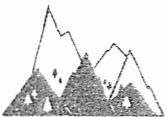
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67 West Shores Road
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187 South Street
Concord, NH 03301
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ew@nrscs.com

Town of Atkinson Prime Wetland Study

Attachment 3

Candidate Prime Wetland Map Overview



Town of Atkinson, NH
Candidate Prime Wetland Map
Overview

Legend

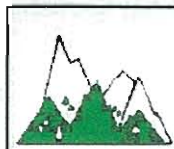
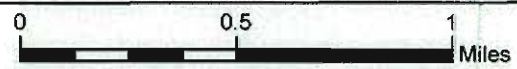
— Candidate Wetlands

Hydric Soils

Very Poorly Drained Soils

Poorly Drained Soils

(Town tax map boundaries shown as background)



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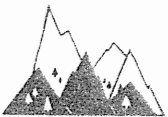
Maps produced: 1/03/03



Town of Atkinson Prime Wetland Study

Attachment 4

Atkinson Prime Wetland Candidate Photographs



**Atkinson Prime Wetland Candidate
Photographs**



Wetland 7



Wetland 12





Wetland 12, upstream of earthen dam



Wetland 12 dam





Wetland 18



Wetland 20, beaver house





Wetland 20



Wetland 26 West





Wetland 26 East



Wetland 30



Open water area of Wetland 40



Dam at the end of Wetland 40





Active draining of Wetland 40



View of Wetland 40 upstream of draining



Town of Atkinson Prime Wetland Study

Attachment 5

**Analysis of Wetlands Considered for "Prime Wetland Status"
Table 2.**

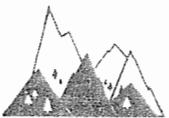


Table 2

**Analysis of Wetlands Considered for "Prime Wetland Status" in the
Town of Atkinson**

(Shaded Wetlands selected as "Prime Wetland Candidates")

1995 Rank ²	1978 Value ¹	ID #	Wetland Name	Acres w/in Town	Acres outside Town	Total Acres	≥50% Very Poorly Drained Soils ³	≥10 Acres Within Town of Atkinson	Dominant wetland Classes ⁴	Has diversity: OW/SS... ⁵	NH Method Score	2002 Candidate Prime Wetland	Selection Criteria Comments
1	44	12	Hog Hill Brook	36	113	149	Y	Y	OW, SS1, EM1	Y	163.46	Y	Adequate soils and acreage within the Town, has a variety of wetland classes
2	41	40	Bryant Brook	40	29	69	Y	Y	OW, SS1, EM1, FO1	Y	552.03	Y	Adequate soils and acreage within the Town, has a variety of wetland classes
3	35	2	Island Pond-Middle	11	0	11	Y	Y	EM1	N		N	Insufficient diversity of wetland classes
4	34	4	Island Pond-South	3	0	3	N	Y	EM1	N		N	Inadequate size; Low diversity
5	34	26	Sawmill Swamp	135	65	200	Y	Y	OW, SS1, EM1, FO1	Y	505.12	Y	Has vast acreage within the Town, almost completely VPD soils, and diverse wetland classes.
6	34	1	Island Pond-North	9	7	16	Y	N	SS1, EM1	N		N	Does not have at least 10 acres within the Town.
7	32	37	Line Brook	6	0	6	N	Y	FO6	N		N	Does not have at least 10 acres within the Town.
8	34	43	Sawyer Land	10	0	10	N	Y	FO6, SS1	N		N	Insufficient VPD soils within the 10 acres.
9	32	42	Blunt's Pond	10	0	10	N	Y	FO1, EM1, SS1	Y		N	Insufficient VPD soils within the 10 acres.
10	30	14	Industrial Way	19	59	78	Y	Y	SS1, EM1	N		N	Low diversity of wetland classes
11	30	30	Wright Farm Pond	75	0	75	Y	Y	OW, SS1, EM1, FO1	Y	534.97	Y	Adequate soils, is completely within the Town, and has a variety of wetland classes
12	26	17	Woods Farm	11	10	21	N	Y	FO1, SS1, EM1	Y		N	Insufficient soils within the 10 acres.
13	29	20	Stewart Farm Pond	21	0	21	Y	Y	OW, SS1, EM1, FO1	Y	238.73	Y	Adequate soils, is completely within the town, and has a variety of wetland classes
14	29	11	Hall Farm/Industrial Way	12	0	12	Y	Y	EM1, SS1	N		N	Low diversity of wetland classes
15	26	16	Shannon Road	1	0	1	Y	Y	FO6	N		N	Low diversity of wetland classes, inadequate acreage.

Table 2 Analysis of Wetlands Considered for "Prime Wetland Status" in the Town of Atkinson

16	26	7	Hall Farm Road Wetland	10	0	10	Y	Y	OW, SS1, EM1	Y	95.25	Y	Adequate soils, is completely within the Town, and has a variety of wetland classes. Does not have as wide a diversity of wetland classes, enough % of VPD soil, nor enough acreage.
17	30	44	Roble Lane	3	0	3	N	Y	FO6	N		N	Does not have as wide a diversity of wetland classes, enough % of VPD soil, nor enough acreage.
18	23	18	Hovey Meadow Wetland	13	0	13	Y	Y	OW, SS1, EM1, FO1	Y	84.72	Y	Adequate soils, is completely within the Town, and has a variety of wetland classes. Does not have sufficient diversity of wetland classes, enough % of VPD soil, nor enough acreage.
19	25	36	Stage Road	2	0	2	N	Y	SS1	N		N	Does not have as wide a diversity of wetland classes, enough % of VPD soil, nor enough acreage.
20	25	15	Providence Hill Brook	7	0	7	N	Y	FO6	N		N	Does not have as wide a diversity of wetland classes, enough % of VPD soil, nor enough acreage.
21	25	8	111 Btwn Hall Farm & Kiplart	10	0	10	Y	Y	FO6	N		N	Does not have as wide a diversity of wetland classes.

1 1978 "An Inventory Classification and Evaluation of Atkinson's Wetland"

2 Atkinson Conservation Commission 1995 wetland investigations

3 Prime Wetland Criteria: the area must have at least 50% Very Poorly Drained (VPD) soils while the remainder is Poorly Drained (PD). Our subjective size threshold for being Prime status was that the wetland be over 10 acres.

4 Wetland Classification

SS1 Scrub Shrub broad-leaved deciduous
 SS4 Scrub Shrub Needle-leaved evergreen
 SS6 Scrub Shrub deciduous

EM1 Emergent Persistent
 EM2 Emergent Nonpersistent

FO1 Forested Broad-leaved deciduous
 FO4 Forested needle-leaved deciduous
 FO6 Forested deciduous

OW Open Water

5 In the NH Method, 3 or more wetland classes present is considered high quality.