

# Town of Sandown Wetland Evaluation Report

Prepared for:

Town of Sandown, NH  
Conservation Commission



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with assistance from



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## I. INTRODUCTION

West Environmental, Inc. (WEI) has prepared this report to document the evaluation of 36 wetlands within the Town of Sandown, New Hampshire. These wetlands were identified on the Sandown Preliminary Inventory Map (October 11, 2007), also prepared by WEI and Neatline Associates. The field work for this evaluation was conducted from February to July 2008 and included the verification of aerial photo interpreted wetland boundaries and functional assessments.

The purpose of this wetland evaluation was to gain a better understanding of the wetland resources within the Town of Sandown and to identify wetlands that qualify for Prime Wetland Designation. Each wetland was analyzed to determine its relative importance within the town and the region. The information in this report may also be used as a planning tool by town officials to identify and protect natural resources within the community. The wetland boundaries identified on the aerial photo overlays are for planning and Prime Wetland Designation purposes and are not to be construed as site specific wetland delineations per State of New Hampshire regulations.

The Town of Sandown can utilize this report as the basis for selecting Prime Wetland candidates for designation in accordance with the requirements of RSA 482-A:15 and Chapter Wt 700 of the New Hampshire Department of Environmental Services (NHDES) administrative rules. These regulations allow for designation of “wetlands of significant value...because of their uniqueness, fragility and unspoiled character.”

The following sections of this report document the functions and values of 36 wetlands and include the supporting information used to make these determinations.

## II. METHODOLOGY

West Environmental, Inc. identified 36 wetlands for the inventory on the Sandown Preliminary Wetland Inventory Map (October 11, 2007). These wetlands all met the following criteria:

- State of New Hampshire jurisdictional wetlands with the presence of hydric soils, hydrophytic vegetation and wetland hydrology

### **Wetland Mapping**

Thirty-six wetland systems were mapped onto stereo black & white photographs with a flight date of March 28, 2006. Individual wetland components were classified using the US Fish and Wildlife-Cowardin classification system. WEI staff then field inspected accessible wetlands during the 2008 field season. The wetland boundaries were verified to assess general accuracy and hydrologic connections. Wetland boundary revisions were drawn directly onto the aerial photo overlays. These color aerial photo overlays are included in the report and the boundary for each wetland is shown in dark blue. The wetland boundaries were not flagged “on the ground” in the field and do not constitute a wetland delineation according to the 1987 Corps of Engineers Wetland Delineation Manual, Technical report Y-87-1. These wetland boundaries are not appropriate for project permitting by local, State or Federal Agencies.

### **Wetland Evaluation**

The Wetland Inventory Data Form includes wetland plant community descriptions, verifications of NRCS poorly and very poorly drained soil mapping, and information on field observations of wetland hydrology. This form also includes wildlife habitat observations. A photolog of the various wetland components is included to illustrate the physical features of each wetland. The wetland systems were evaluated utilizing a wetland assessment methodology developed by WEI based in part on the US Army Corps of Engineers New England Divisions Highway Methodology Workbook Supplement. This evaluation is based on collection of data on the physical characteristics of the wetland through field inspections, research of existing information and best professional judgment. This methodology provides a better understanding of the physical characteristics of each wetland for both its functions and values.

The physical features were evaluated to determine if a function is present. The wetland is then evaluated to determine if the function present is a principal function of that wetland based on comparison to other wetlands in the region and using professional judgment.

Wetland Inventory Functional Value Assessment Data Forms were completed for each wetland (See Appendix A). This assessment evaluates the following wetland functions:

- ***Groundwater Recharge/Discharge*** – This function includes the ability of a wetland to provide recharge of surface water into the ground and/or discharge groundwater into surface waters.
- ***Flood-flow Alteration*** – This function considers the effectiveness of the wetland in reducing flood damage by attenuation of floodwaters for prolonged periods following precipitation events.
- ***Sediment/Toxicant/Pathogen Retention*** – The presence of this function reduces or prevents degradation of water quality because the wetland acts as a trap for sediments, toxicants or pathogens.
- ***Nutrient Removal/Retention Transformation*** – This function relates to the effectiveness of the wetland to prevent adverse effects of excess nutrients entering surface waters or aquifers.
- ***Product Export*** – This function relates to the effectiveness of the wetland to produce food or usable products for human or other living organisms.
- ***Sediment/Shoreline Stabilization*** – This function relates to the effectiveness of a wetland to stabilize stream banks and shorelines against erosion.
- ***Wildlife Habitat*** – This function considers the effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with the wetland and the wetland edge (includes resident and migratory species).

The assessment also evaluates the following values associated with wetlands:

- ***Recreational Value*** – This value considers the effectiveness of the wetland and associated watercourses to provide recreation opportunities such as canoeing, fishing, hunting, hiking and other passive recreational activities. This does not include any activities that involve wheeled or tracked vehicles.
- ***Educational/Scientific Value*** – This value considers the effectiveness of the wetland as a site for an “outdoor classroom” or as a location for scientific study or research.
- ***Uniqueness/Heritage*** – This value includes such things as archeological sites, unusual aesthetic quality, historical features, or unique plants, animal or unusual geologic features.

An assessment of Restoration Potential was also performed for each wetland

**Restoration Stabilization Potential** – This assessment includes evaluating the restoration potential of wetlands that have ecological deterioration due to human activity. This includes water quality impacts, invasive species, ditching and fill from erosion or human disturbance.

A comparison of the functions and values used in this study with the Method for Comparative Evaluation of Non-tidal Wetlands in New Hampshire (1991) (NH Method) is shown below.

	<u>Wetland Functions/Values</u>	<u>NH Method</u>
1	Groundwater Recharge/Discharge	Groundwater Use Potential
2	Floodflow Alteration	Flood Control Potential
3	Sediment/Toxicant/Pathogen Retention	Sediment Trapping
4	Nutrient Removal/Retention Transformation	Nutrient Attenuation
5	Production Export	(No equivalent)
6	Sediment/Shoreline Stabilization	Shoreline Anchoring & Dissipation of Erosive Forces
7	Wildlife Habitat	Wildlife Habitat
8	Recreational Value	Water-based Recreation
9	Educational/Scientific Value	Educational Potential
10	Uniqueness/Heritage	Noteworthiness
11	Restoration Potential	(No equivalent)

### III. FINDINGS

The 36 wetland systems identified for the inventory include wetlands ranging in size from 2.5 to 120 acres. The mapped area of the 36 wetlands totals approximately 793 acres. Forested and scrub-shrub wetlands were the dominant wetland type. Beaver activity was present in a significant percentage of the wetlands creating open water, deep marsh, and shallow marsh habitat. The wetlands within Sandown are associated with two main watersheds: the Exeter River and the Powwow River. By far the majority of wetlands drain into the Exeter River which enters the west portion of town from Chester and exits into the northeast portion of Sandown in Danville, near the Fremont town line. Wetlands associated with Punch Pond and Cub Pond in the southeast portion of town are drained by Colby Brook. Wetlands associated with Angle Pond drain into Bartlett Brook. Both of these brooks are tributaries to the Powwow River. The freshwater wetland systems identified in the inventory include forested and scrub-shrub swamps, wet meadows, marshes, and beaver ponds. Most of the freshwater wetlands are associated with intermittent streams and many of them are interconnected and drain into the Exeter River.

Based on field assessments of the above-mentioned wetland values and functions a ranking system was developed to assess the comparative function and value of each wetland (see Table 1 Freshwater Wetlands). The ranking system in this report is based on three components of each wetland: **size** (larger wetlands generally provide greater potential to perform wetland function); **number of principal functions** (diverse wetlands with numerous functions are more important than wetlands with limited functions); and **wetland values** (wetlands that provide human-based values provide greater benefit to the community). These elements were combined to provide a total score for each wetland.

The calculation for ranking the freshwater wetlands is as follows:

*Wetland size (acres) x Number of principal functions + Wetland Value score = Total Score*  
*For the Wetland Value score there are 3 values and each value gets a score of 1, 2 or 3 for low, medium and high.*

Based on the ranking system, four distinct tiers of wetlands emerged. Tier 1 includes 9 of the largest, most diverse freshwater wetlands in Sandown. These wetlands represent 490

acres. These wetlands range in size from 29 to 120 and all of them score over 200 in their evaluations.

Tier 2 includes 9 wetlands that score over 100 and under 200 except for two wetlands that are unique plant and animal habitats. These wetlands, although smaller than the Tier 1 wetlands, are diverse and high functioning. They range from an 11 acre great blue heron rookery to a 26 acre scrub-shrub swamp in the northwest portion of Sandown. The total acreage of this tier is 176.

Tier 3 includes the next 5 wetlands ranging from scores of 80 to 100. These wetlands range in size from 11 to 16 acres and provide significant wetland function and value. The total acreage of this tier is 65.

Tier 4 includes the remaining 13 wetlands that scored below 80. All of these wetlands still qualify as prime but they do not have the high function and value that the top 23 wetlands have.



Table 1

**Sandown Prime Wetland Candidate Ranking**

<u>Wetland ID</u>	<u>Size (acres)</u>	<u>#PF</u>	<u>WVs</u>	<u>Total Score</u>	<u>Rank</u>
1	56 x	7	+ 7	= 399	3
2	8	7	5	61	26
3	38	6	5	233	7
4	12	7	5	89	19
5	16	5	4	84	20
6	14	7	6	104	16
7	41	7	5	292	5
8	20	6	6	126	14
9a	43	7	7	308	4
9b	7	6	7	49	30
9c *	11	5	8	63	24
10a	19	6	5	119	15
10b	2	4	3	11	36
11 **	17	5	5	90	18
12	6	3	6	23	35
13	29	7	6	209	9
14	23	7	8	169	10
15	9	6	5	59	27
16	23	7	6	167	12
17	11	7	5	82	22
18	40	7	6	288	6
19	91	7	9	646	2
20	32	7	9	233	8
21	9	7	8	71	23
22	7	6	8	50	29
23	8	7	6	62	25
24	120	7	8	848	1
25	7	6	5	47	31
26	23	7	7	168	11
27	4	6	5	29	34
28	26	6	6	162	13
29	9	5	6	51	28
30	13	6	5	83	21
31	13	7	8	99	17
32	6	6	6	42	32
33	7.5	4	7	37	33

#PF = Number of Principal Functions    WVs = Wetland Value score

\* Great blue heron rookery

\*\* Exemplary plant community

Table 2

Tier One All wetlands with a score over 200

<u>Wetland ID</u>	<u>Size (acres)</u>	<u>Total Score</u>	<u>Rank</u>
24	120	848	1
19	91	646	2
1	56	399	3
9a	43	308	4
7	41	292	5
18	40	288	6
3	38	233	7
20	32	233	8
13	29	209	9
Total acres	490		

Table 3

Tier Two

All wetlands with a score over 100 and under 200

<b>Wetland ID</b>	<b>Size</b>	<b>Score</b>	<b>Rank</b>
14	23	169	10
26	23	168	11
16	23	167	12
28	26	162	13
8	20	126	14
10a	19	119	15
6	14	104	16
11 *	17	90	18
9c **	11	63	24
Total acres	176		

\* Great blue heron rookery

\*\* Exemplary plant community

Table 4

Tier Three  
All wetlands with a score over 80 and under 100

<u>Wetland ID</u>	<u>Size</u>	<u>Score</u>	<u>Rank</u>
31	13	99	17
4	12	89	19
5	16	84	20
30	13	83	21
17	11	82	22
Total acres	65		

Table 5

Tier Four All wetlands with a score under 80

<u>Wetland ID</u>	<u>Size (acres)</u>	<u>Total Score</u>	<u>Rank</u>
21	9	71	23
23	8	62	25
2	8	61	26
15	9	59	27
29	9	51	28
22	7	50	29
9b	7	49	30
25	7	47	31
32	6	42	32
33 *	7.5	37	33
27	4	29	34
12	6	23	35
10b	2	11	36
Total acres	89.5		

\* does not qualify

## **IV. RECOMMENDATIONS**

### **Prime Wetland Recommendations**

West Environmental, Inc. (WEI) recommends all of the wetlands in Tiers 1, 2 & 3 be nominated as prime wetland candidates for designation by Sandown to the NHDES Wetlands Bureau. These 23 wetlands represent the highest functioning wetlands that provide critical habitat, crucial wetlands function and recreational and educational opportunities to the residents of Sandown. All of these wetlands qualify for Prime Wetland status and many of them are identified as highest value wildlife habitat of state importance in the NH Fish & Game's Wildlife Action Plan (2006).

It is recommended that the boundaries of these wetlands be finalized and digitized for placement on the Sandown Tax Maps as part of the local Prime Wetland Designation. The Sandown Conservation Commission should engage the Sandown Planning Board and Selectmen in this process and a warrant article should be crafted per RSA 482-A:15 for local Prime Wetland Designation. A public hearing should be held presenting the information regarding these wetlands and the public should have the opportunity to review the wetland maps and reports and ask questions. When and if the public approves these wetlands for Prime Designation, a final report with the Prime Wetland tax map overlays should be submitted to the NHDES Wetlands Bureau for their acceptance.

### **Vernal Pool Survey**

A significant number of the Tier 3 wetlands provide critical vernal pool habitat that may be utilized by spotted or Blanding's turtles. Numerous smaller vernal pools were also identified during field inspections. A Vernal Pool Survey conducted during amphibian and turtle breeding season would help determine whether these wetlands in fact provide rare species habitat. This information could then be utilized in determining how these wetlands should be protected in the future.

### **Wetland Restoration Projects**

Several of the wetlands identified in this study have the potential for some degree or form of restoration. Alterations to wetland hydrology, inadequate culvert sizing, and disturbance/encroachment were observed in some of the wetlands. Several of these wetlands have invasive species which could be controlled through management and better storm water protection in the wetlands watershed. These areas should be further evaluated and landowners could be contacted in a cooperative effort to restore wetland function lost to impacts and degradation. Grants could potentially be obtained to fund these restoration projects.

### **Wetland Ordinance Revisions**

Another option for Sandown would be to amend Article VII Wetland Ordinance of the Sandown Zoning Ordinances to reference the information contained in this study and to increase protection of prime wetland candidates with greater setbacks and more restrictive buffer zones. This effort would be supported by the data collected in the wetland evaluation and would provide a higher level of protection to these critical resource areas.

**V. AERIAL PHOTO WETLAND MAPS**  
**WETLAND INVENTORY DATA FORMS**  
**PHOTO DOCUMENTATION**