

Hinesburg Town Forest Wetland Assessment and Trail Crossing Recommendations May 22, 2012

Introduction

Arrowwood was retained by the Hinesburg Town Conservation Commission to map and assess wetlands and along some of the existing bike trails in the Hinesburg Town Forest. Field work occurred on May 3rd, 2012 during which time the following trails were assessed: Maiden, International and Dragon's Tail. Each of these trail was walked and wetlands that crossed the trail or could be seen from the trail were roughly mapped using GPS. Notes were taken on the nature and functionality of these wetlands. In addition, GPS locations and notes were taken in areas that required trail maintenance due to wetland or surface water crossings. All of these mapped features are shown on the attached map.

Wetland Functions and Values

Two wetland natural community types that were documented in the study area: Seeps and Vernal Pools. For a description of these natural communities, refer to Wetland, Woodland, Wildland: A Guide to the Natural Communities of Vermont (Thompson and Sorenson, 2000). In addition to natural community typing, wetlands can also be assessed based on the functions and values that they perform on the landscape. A total of ten different functions and values are recognized in the state:

1. Water Storage for Flood Water and Storm Runoff
2. Surface & Ground Water Protection
3. Fish Habitat
4. Wildlife Habitat
5. Exemplary Wetland Natural Community
6. Rare, Threatened, and Endangered Species Habitat
7. Education and Research in Natural Sciences
8. Recreational Value and Economic Benefits
9. Open Space and Aesthetics
10. Erosion Control through Binding and Stabilizing the Soil

The standard method for ranking a particular wetland for its functions and values is outlined in the Vermont Wetland Evaluation Form (which can be found at:

http://www.vtwaterquality.org/wetlands/docs/wl_evaluationform.pdf). Based on the physical and biological nature of the wetland, it is assigned a "Low", "Moderate" or "High" ranking for each function. The higher the overall ranking of a wetland, the more important or "significant" that wetland is on the landscape.

Seeps

The Seep natural community is fairly common and widespread in the state. It typically occurs in a forested setting at sites of ground water discharge. Wetland vegetation often grows at the site of this discharge and thin organic soils often develop. These areas often form the headwaters of small streams or contribute to the flow of streams. The wet conditions often exclude the growth of trees. Herbaceous species such as slender mannagrass (*Glyceria melicaria*), rough-stemmed sedge (*Carex scabrata*), gynandrous sedge (*Carex gynandra*) and orange jewelweed (*Impatiens capensis*) typically dominate this community. Small seeps can also occur in a more diffuse pattern scattered throughout hardwood forests. In these seepy forest areas, it is often difficult to map-out upland from wetland. These sites are considered a type of Seep wetland but are consequently called Northern Hardwood Seepage Forests to distinguish them from the more open seeps.

The functions and values that seeps perform can range widely depending upon the nature of the particular wetland. Because they can provide clean, cold water to nearby surface waters, some seeps are significant for water quality (Surface and Ground Water Protection) and Fish Habitat. Some Seeps are also important as wildlife habitat. Many are used by Spring and Dusky salamanders. In addition, because of their ground water inputs, the vegetation in seeps often grows early in the spring, providing important feeding habitat for Black Bear and White-tailed Deer. Finally, seeps that grow along the banks of streams can be important for the Erosion Control function.

Vernal Pools

Vernal Pools are also widespread throughout the state, though less common than the Seep natural community. Vernal Pools are hydrological isolated wetlands that retain water in the spring and early summer but typically dry up in the late summer or fall. They contain open water that provides vital habitat to a wide range of invertebrates and amphibians. Unlike other natural communities, vernal pools are defined by the wildlife that use them: Spotted, Jefferson and Blue-spotted salamanders, wood frogs, and fairy shrimp. The salamanders and frogs spend most of their lives in the upland forests but use the vernal pools for breeding during the spring.

The most significant function of vernal pools is related to the wildlife habitat they provide. As mentioned above, these sites are vital for the survival of the amphibians that use them. In addition to the wetland itself, maintaining the surrounding upland habitat is also important for these species.

Results of Assessment

Wetlands

A total of 11 wetlands were mapped and assessed as part of this inventory. The locations of these wetlands are shown on the attached map. A brief description of each wetland, including notes on the functions and values that it performs is provided below.

W1: Seep. This is a nice little stream-side seep. It has organic soils and some surface water input into stream. Sparsely vegetated by sensitive fern and gynandrous sedge. Moderate functionality for water quality and erosion control.

W2: Seep. This Seep is a sloping site which is sparsely vegetated and contains some open water. It is channelized below the trail crossing. Low functionality for water quality.

W3: Northern Hardwood Seepage Forest. A diffuse seep within a Northern Hardwood Forest. Very sparse herbaceous vegetation, may continue down slope. Marginal functionality.

W4: Northern Hardwood Seepage Forest. Diffuse seepage areas scattered throughout this Northern Hardwood Forest. The diffuse nature of this wetland makes the boundaries difficult to map. Marginal wetland functionality.

W5: Seep. This is the largest seep in study area. It is a sloping ground water seepage wetland dominated by sensitive fern (*Onoclea sensibilis*), rough-stemmed sedge (*Carex scabrata*), meadow-sweet (*Spiraea alba*), red raspberry (*Rubus idaeus*), and two-leaved toothwort (*Cardamine diphylla*). Channelized at northern end. Moderate functionality for wildlife and water quality.

W6: Seep. This sparsely vegetated seep is a wide channel with vegetation along its banks. It becomes more channelized at north end. Low functionality for wildlife and water quality.

W7: Seep. This seep is more densely vegetated than others in the study area. It is dominated by sensitive fern (*Onoclea sensibilis*), red raspberry (*Rubus idaeus*), gynandrous sedge (*Carex gynandra*), and cinnamon fern (*Osmunda cinnamomea*). Historical ditching has occurred in this wetland. It is channelized below. Some open water occurs in the trail where it crosses the wetland. Low functionality for water quality and wildlife.

W8: Seep. Wide channel with wetland vegetation on banks. Dominated by sensitive fern and gynandrous sedge. Channelized on north end. Low functionality for erosion control and water quality.

W9: Northern Hardwood Seepage Forest. Dominated by upland tree species with pockets of organic soils and wetland vegetation such as sensitive fern and cinnamon fern. Only marginally wet. Marginal wetland functionality.

W10: Potential Vernal Pool. This wetland is provisionally termed a "potential" vernal pool because no evidence of amphibian use was documented during this inventory. This is a relatively small vernal pool which sits on top of the ridge near the Dragon's Tail Trail. There is no inlet or outlet and the water level at the time of the inventory was around 6" deep. No vegetation was growing in the pool. The unusual spring weather this year resulted in many otherwise productive vernal pools lacking evidence of breeding amphibians. The lack of egg masses at this site, therefore, is inconclusive. The size and depth of this wetland, however, suggest that the site may have a long enough hydro-period to support successful reproduction of amphibians only in years with above average snow or rainfall. In order to determine the significance of this pool as wildlife habitat, this site should be visited next spring.

The Dragon's Tail Trail comes within 50 feet of the edge of this vernal pool. Even if this site is used by breeding amphibians, it does not appear the trail would have a negative effect on the vernal pool or its wildlife.

W11: Vernal Pool. This Vernal Pool is an isolated depression which sits at the base of the town road. It consists of two separate pools, the northern one being the larger pool. There is no inlet or outlet. Shrubs and herbaceous vegetation colonize the northern end of this pool. There is evidence that spotted salamanders use this pool for breeding; three eggs masses were documented here. Though no evidence of wood frog breeding was found, it is likely that they also use this wetland for breeding. Green frogs

and fingernail clams were also documented at this site. It is likely that the hydro-period (length that the pool holds water) of this pool is sufficiently long during typical years to support successful reproduction of the spotted salamanders and wood frogs. This wetland should therefore be considered significant for wildlife habitat.

Trail Crossing Recommendations

During the wetland inventory along the biking trails, numerous wetland or stream crossings were encountered that warranted attention. The location of these trail crossings are shown on the attached map. Recommended actions are listed for each crossing in the table below.

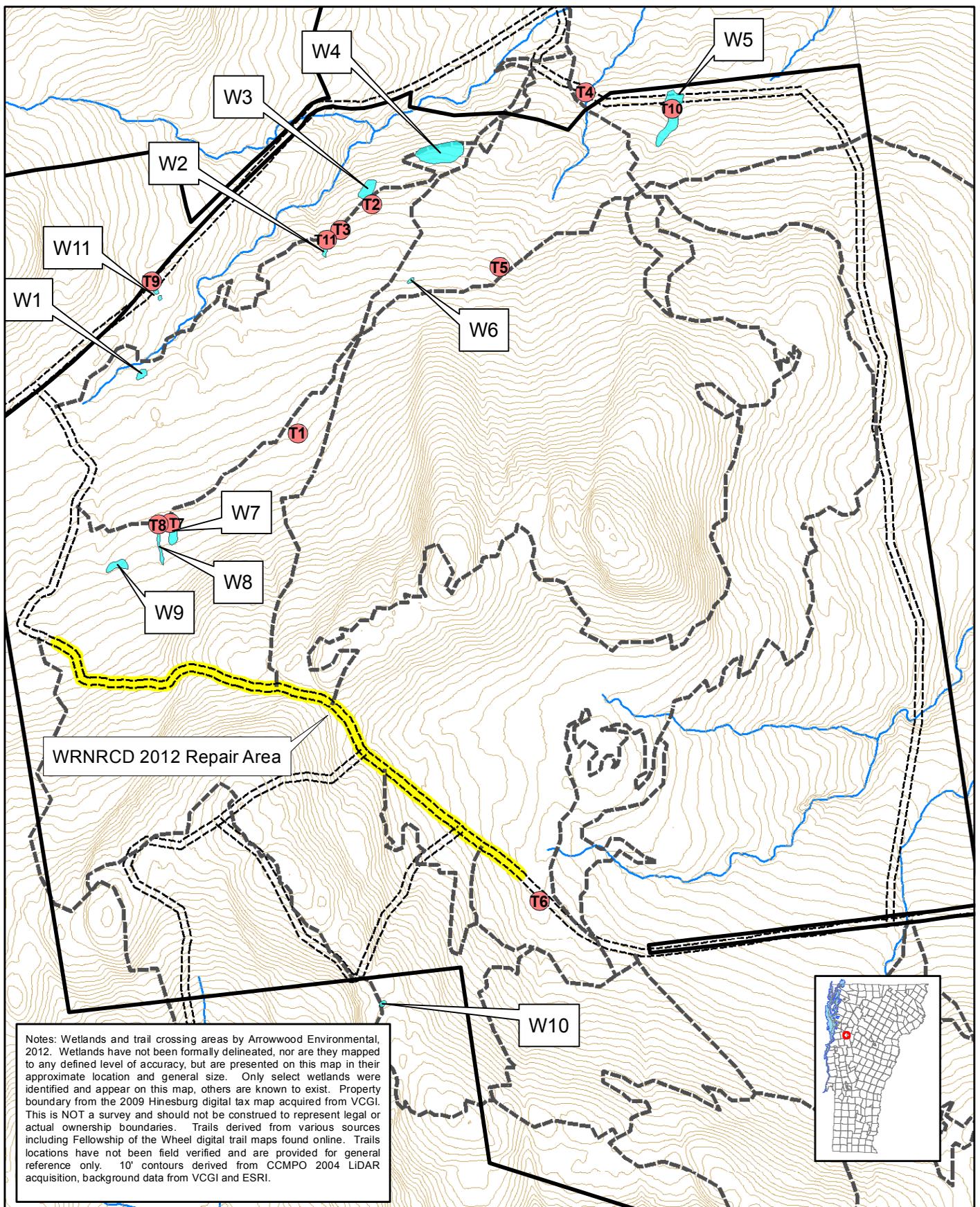
Label	Type	Recommended Action
T1	Stream Crossing	Bridging or other mitigation measures
T2	Stream Crossing	Armor with rock
T3	Stream Crossing	Armor with rock
T4	Woods Road- Stream Crossing	Culvert, following ANR guidelines
T5	Stream Crossing	Install water bars
T6	Class 4 Road Through Wetland	Re-route or mitigate
T7	Wetland Crossing	Mitigate impacts, avoid ruts etc.
T8	Wetland Crossing	Mitigate impacts
T9	Wetland Crossing	Close or Re-Route Woods Road
T10	Wetland Crossing	Close trail
T11	Wetland Crossing	Bridge or boardwalk to avoid impacts

Most of these recommendations are self-explanatory, only three warrant brief discussion.

T4: This is the site where multiple stream channels cross the trail. The existing proposal to culvert these streams should be undertaken. Care should be taken to design and install culverts that meet the recommendations put forth by Vermont ANR in the document: [Guidelines for the Design of Stream/Road Crossings for Passage of Aquatic Organisms in Vermont](#). More information can be found at http://www.vtfishandwildlife.com/fisheries_AOP.cfm

T6: At this location, a Class 4 town road impacts a wetland. Surface flow is channelized down the road and ponding occurs in the road in multiple places. There is a stream flowing through the wetland which crosses the road. All of these issues need to be addressed either by moving the road out of the wetland or by upgrading, ditching and culverting the road in the current location.

T9: On the north side of the vernal pool at this location is an old woods road. This road has created ruts which hold water during the spring. This road should be closed or re-routed away from the vernal pool. Ruts from vehicular traffic can create “false” pools where amphibians often lay eggs. Because these open water areas are small, they rarely hold water long enough for successful reproduction.



Hinesburg Town Forest

Wetland Assessment and Trail Crossing Recommendations

Tuesday, May 22, 2012
 File: TrailWetland1
 Prepared By: Aaron Worthley, Arrowwood Environmental
 Coordinate System: NAD 83, Vt State Plane

0 125 250 500 750 1,000 Feet

1 inch = 800 feet



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