

**Vermont Agency of Natural Resources
Department of Environmental Conservation
Watershed Management Division**

**Class I Determination Rulemaking Decision
Issued Pursuant to Section 4.3 of the Vermont Wetland Rules**

In the matter of:

Agency of Natural Resources
**For the reclassification of the Dennis Pond/Mud Pond wetland complex from Class II to
Class I wetland**
Route 201, Brunswick

File #:2016-351

The Secretary may, upon a petition or on his or her own motion, determine whether any wetland is a Class I wetland, pursuant to 29 V.S.A. § 410. The Secretary may establish the necessary width of a buffer zone of any Class I wetland as part of any wetland determination pursuant to the Rules. Section 4.2 of the VWR

As required under 29 V.S.A. § 410 and Section 7 VWR, this wetland determination is based on an evaluation of the extent to which the wetland serves the functions and values of Rules, is **exceptional or irreplaceable in its contribution to Vermont's natural heritage** and, therefore, merits the highest level of protection. Public notice of this wetland determination has been given in accordance with Section 8.3 of the VWR.

Summary

1. The State of Vermont's Wetlands Program initiated this determination process in May of 2016. The Wetlands Program, acting under its own motion, has gathered various documentation and data for a Wetland Determination. Because there was no petition submitted by a third party, no petition was placed on notice. A pre-rulemaking meeting was conducted with The Nature Conservancy on July 18, 2016, Vermont Fish and Wildlife, and Vermont Forest Parks and Recreation on July 19, 2016, and contents of this determination and informational materials were sent to all landowners on July 14, 2016.
2. The subject wetland is located on the south side of Dennis Pond Road, and is part of the West Mountain Wildlife Management Area owned primarily by the Vermont Fish and Wildlife Department, with some areas of private ownership. A map showing the approximate location of the proposed Class I wetland is attached. The wetland complex is approximately 370 acres and encompasses two bodies of open water, Dennis Pond and Mud Pond, with associated forested, shrub, emergent, peatland and deep marsh wetland types.

Mud Pond is fed by Notch Pond Brook and Telephone Brook, and feeds into Dennis Pond via Dennis Pond Brook. A map showing the approximate location of the proposed Class I wetland is attached.

3. Shannon Morrison, Julie Foley, Alan Quackenbush and Laura Lapierre of the Vermont Wetlands Program visited the site with Doug Morin, Wildlife Biologist with Vermont Fish and Wildlife Department on August 1, 2013.

The wetland in question is currently identified as a Class II wetland on the Vermont Significant Wetlands Inventory (VSWI) map. The proposal is to reclassify this wetland from Class II to Class I, and to update the VSWI map to define the general location of the Class I wetland.

The proposal is also to alter the buffer zone width from the default 100-foot buffer zone established under Section 4.2 of the VWR to 300 feet. This buffer will provide additional watershed protection to the Dennis Pond Wetland Complex.

4. Dennis and Mud Ponds are relatively small open water areas associated with the 370-acre wetland complex. The upper watershed is associated with Notch Pond Brook which feeds Mud Pond, which flows into Dennis Pond Brook and Dennis Pond in the lower water shed. Wetland soils are primarily characterized as Wonsqueak, Pondicherry and Bucksport mucks. The wetland complex is dominated by softwood swamp community types including, Northern White Cedar Swamps, Black Spruce Swamps and Black Spruce Woodland Bog. Surrounding the two ponds are about 148 acres of open peatlands (135 acres surrounding Dennis Pond and 12 acres surrounding Mud Pond, primarily comprised of over 75 acres of a very high quality Poor Fens, making this the largest wetland community type in the complex. Other open areas around the ponds include Intermediate Tall Sedge Fen, Sedge Meadow, Sweet Gale Shoreline Swamp and Alder Swamp. The ponds themselves are dystrophic with small and large sedge islands concentrated at the inlet and outlet.

The diversity of habitats in this wetland complex results in heavy use by wildlife, and provides habitat to host a myriad of rare, threatened and endangered plants and insects as well as those ranked as special concern. The site is known to support seven rare and five uncommon plant species, one rare waterfowl, two rare tiger beetle species, and three uncommon (S3) odonate species. In addition, it functions as a communal breeding site for amphibians, and has high species diversity and brood production of waterfowl and marsh birds. At the west end of Mud Pond is a documented small great blue heron rookery and osprey nests.

This area was formerly part of the Vermont Champion lands, and now is operated as a Special Treatment Area to be managed to the highest levels of ecological integrity within the West Mountain Wildlife Management Area. Owners of the Dennis Pond-Mud Pond complex include the State of Vermont, The Nature Conservancy, and private landowners including Weyerhaeuser. Logging roads and pre-existing camps edge closely to Dennis Pond, while the upper watershed around Mud Pond is largely undeveloped.

Findings

As required by 10 V.S.A. § 914 and Section 7 of the VWR, this wetland determination is based on an evaluation of the functions and values of the subject wetland as described in Section 5 of the VWR. Section 5 provides that in evaluating whether a wetland is a Class II or a Class I wetland, the Secretary shall evaluate the functions that the wetland serves both as a discrete wetland and in conjunction with other wetlands by considering detailed functional criteria. Consideration shall be given to the number of and/or extent to which protected functions and values are provided by a wetland or wetland complex.

1. The protected functions of the subject wetland include the following: water storage for flood water and storm runoff as described in Section 5.1 of the VWR; surface and groundwater protection (Section 5.2); fisheries habitat (Section 5.3); wildlife and migratory bird habitat (Section 5.4); exemplary wetland natural community (Section 5.5); rare, threatened and endangered species habitat (Section 5.6); education and research in natural science (Section 5.7); recreational value and economic benefits (Section 5.8); and open space and aesthetics (Section 5.9).

2. The following protected functions are considered exemplary or irreplaceable: wildlife and migratory bird habitat (Section 5.4); exemplary wetland natural community (Section 5.5); and rare, threatened and endangered species habitat (Section 5.6).

3. **Water Storage for Flood Water and Storm Runoff**

Wetlands that provide for the temporary storage of floodwater or stormwater runoff to the extent that they make an important contribution to reducing risks to public safety, reducing damage to public or private property reducing downstream erosion or enhancing the stability of habitat for aquatic life are significant wetlands.

The Dennis Pond Basin, which includes Dennis Pond, Mud Pond and adjacent wetlands provide water storage in flood conditions for several streams including Notch Pond Brook and Dennis Pond Brook. An unconstructed inlet and a constricted outlet, combined with the physical space for the expansion of floodwater contribute to this function. The wetland complex serves as storage for a fairly steep upstream watershed, allowing for flood storage before water reaches the Connecticut River 1.5 mile away. The wetland is significant for the water storage for flood water and storm runoff function.

4. **Surface and Ground Water Protection**

Wetlands that make an important contribution to the protection or enhancement of the quality of surface or of ground water are significant wetlands.

The diverse wetland complex associated with the Dennis Pond Basin provides a depositional environment for the streams entering this system. Natural vegetation and micro-topography intercepts surface flows, and allows water to slow down and drop its sediment load during flood events. The wetland is significant for the surface and ground water function.

5. Fish Habitat

Wetlands that are used for spawning by northern pike or that are important for providing fish habitat are significant wetlands.

Shrub, emergent and forested wetlands lie adjacent to Notch Pond Brook and Dennis Pond Brook and provide shading, shelter and food sources for fish populations in those brooks. Dennis Pond Brook flows into the Connecticut River and provides a rich source of food for that larger fishery. The wetland is significant for the fish habitat function.

6. Wildlife Habitat

Wetlands that support a significant number of breeding waterfowl, including all species of ducks, geese and swans, or broods of waterfowl or that provide important habitat for other wildlife and migratory birds are significant wetlands.

The Dennis and Mud Pond wetland complex provide exceptional wildlife habitat. The 370-acre wetland complex is described by the Vermont Department of Fish and Wildlife as one of the most significant and interesting natural areas in Vermont (Lapin and Engstrom 2002). The diversity of wetland types, the size, the intactness of the wetland complex, and high quality of the surrounding landscape make this area exceptional for wildlife habitat. The Dennis Pond Basin is one area in the larger collection of conserved land managed as the West Mountain Wildlife WMA (8,903-ha), and the Nulhegan Basin Division of the Silvio O. Conte National Fish and Wildlife Refuge (10,522 ha). In the context of this larger significant wildlife habitat, the Dennis Pond Basin is referred to as a diversity hot-spot.

The combination of a variety of wetland types, including a high quality poor fen, dystrophic ponds, aquatic beds, peaty pondshore, softwood swamps, peaty alder swamps, streams, and high quality upland forest surrounding the complex make this ideal habitat for a variety of wetland dependent wildlife, and important habitat for wildlife that depend on these areas seasonally or for part of their lifecycle.

The wetland complex has been cited as having a high species diversity and brood production of waterfowl and march birds relative to the rest of the Nulhegan Basin and West Mountain Wildlife Management Area, and perhaps the biophysical region (Lambert 2000). The pond has small and large sedge islands, concentrated at the inlet and outlet which are likely to be integral to the high quality waterfowl habitat. The wetland complex provides habitat for pied-billed grebe, American bittern, rusty blackbird, nesting sites for osprey, and a small heron rookery on Mud Pond.

The wetland complex supports wetland dependent mammals such as otter, and also provides important winter habitat for deer, and seasonal use by moose and bear. The open water habitats support amphibian breeding including pickerel frogs, spring peepers and bullfrogs. Painted and snapping turtles make homes in both ponds. The wetland is significant and exemplary for the wildlife habitat function.

7. Exemplary Wetland Natural Community

Wetlands that make an important contribution to Vermont's natural heritage are significant wetlands. These include wetlands that are identified as high quality examples of one of Vermont's recognized natural community types.

The over 75 acre Poor Fen associated with the wetland complex, and the Dennis Pond peaty sand shoreline are irreplaceable to Vermont's natural heritage. The size and quality of the poor fen, combined with the irreplaceable nature of these types of peatland merit Class I designation. The peaty sand pondshore natural community is a rare type of wetland, and Dennis Pond provides an excellent example. Other exemplary wetland natural communities at Dennis and Mud Ponds include Black Spruce Swamp, Northern White Cedar Swamp, Black Spruce Woodland Bog, and Intermediate Tall Sedge Fen.

From the Vermont Fish and Wildlife Natural Heritage Inventory Element Occurrence Report: Poor Fen, Dennis Pond, Mud Pond, Brunswick, 2007 (with removal of one threatened grass species name):

"Dennis and Mud Ponds are the relatively small open water areas that are the namesakes of this exceptional 360 acre wetland complex. The wetlands are associated with Notch Pond Brook (upper watershed) and Dennis Pond Brook (lower watershed). Softwood swamps are the dominant wetland types, including Northern White Cedar Swamp, Black Spruce Swamp, and Spruce-Fir-Tamarack Swamp. Surrounding the two ponds are open peatlands, with Poor Fen being the centerpiece natural community for which this site is highly recognized. Other open and shrub wetlands include Intermediate Tall Sedge Fen, Sedge Meadow, Sweet Gale Shoreline Swamp, and Alder Swamp. Several 20-30 foot high eskers extend for up to 700 feet into the western side of the Dennis Pond Poor Fen and make an exceptional look-out from which to view the open wetland complex...

Although considered one occurrence of Poor Fen because they are part of the same large wetland complex, the distinct character of the Mud Pond and Dennis Pond fens deserve separate descriptions. Mud Pond and the surrounding Poor Fen and Spruce-Fir-Tamarack Swamp are remote and in excellent condition. The view west across the pond and fen to Notch Pond Mountain is beautiful. There is distinct zonation from the water's edge to the upland spruce-fir forests. At the pond margin is a narrow band of wet Poor Fen made up of Sweetgale (*Myrica gale*), Leatherleaf (*Chamaedaphne calyculata*), Bog Sedge (*Carex exilis*), White Beaksedge (*Rhynchospora alba*), Swollen-Beaked Sedge (*Carex utriculata*), Pitcherplant (*Sarracenia purpurea*), Large Cranberry (*Vaccinium macrocarpon*), *Sphagnum rubellum*, and *Sphagnum angustifolium*. The widest zone is the relatively level Poor Fen dominated by leatherleaf, with Bog-Rosemary (*Andromeda polifolia*), sweetgale, white beaksedge, Tawny Cottonsedge (*Eriophorum virginicum*), pitcherplant, and a carpet of *Sphagnum rubellum* with Small Cranberry (*Vaccinium oxycoccos*). Additional Poor Fen species include Spatulate-Leaved Sundew (*Drosera intermedia*), Horned Bladderwort (*Utricularia cornuta*), Bog Aster

(*Oclemena nemoralis*), Woolly-Fruited Sedge (*Carex lasiocarpa*), Three-Leaved False Solomon's-Seal (*Maianthemum trifolium*), and at the eastern end of the pond Grading into the Poor Fen is a high quality Black Spruce Woodland Bog. Peat depth in the Mud Pond Poor Fen is 13 feet and the peatland surface water has a pH of 3.79 and conductivity of 70 μ S. The Dennis Pond Poor Fen is expansive and beautiful in a much grander way. The Poor Fen includes a lot of community variation, with open water drainage tracks, ericaceous shrub-dominated fens like at Mud Pond, and Sphagnum lawns.”

The wetland is significant and irreplaceable for the exemplary wetland natural community as confirmed through a site visit by Agency staff, and by reports generated for and by the Department of Fish and Wildlife.

8. Rare, Threatened, and Endangered Species Habitat

Wetlands that contain rare, threatened, or endangered species of plants or animals are significant wetlands.

The wetland is significant for the rare, threatened and endangered species habitat function as demonstrated in Section 20 of the petition and as confirmed through a site visit by Agency staff.

Described as diversity hot-spot, the wetland complex is known to support seven rare and five uncommon plant species, one rare waterfowl species (pied-billed grebe (*Podilymbus podiceps*) (G5/S2B), two rare tiger beetle species, (*Cicindela longilabris* (G5/S2), *C. purpurea* (G5/SU)), and three uncommon (S3) odonate species (*Gomphus adelphus*, *Ophiogomphus cf. mainensis*, *Somatochlora cf. elongata*).

Rare plants within the wetland complex include: bog sedge (*Carex exilis*) (G5/S2), bog aster (*Aster nemoralis*) (G5/S2), northeastern sedge (*Carex cryptolepis*) (G5/S2), bog rush (*Cladium mariscoides*) (G5/S2), Michaux Sedge (*Carex michauxiana*) (G5/S2S3), shining rose (*Rosa nitida*) and one-flowered muhlenbergia (*Muhlenbergia uniflora*) (G5/S2S3). Two threatened plant species are also known to occur in the peatland of the wetland complex.

The wetland is significant and irreplaceable for the Rare, Threatened and Endangered Species Habitat Value.

9. Education and Research in Natural Sciences

Wetlands that provide, or are likely to provide valuable resources for education or scientific research are significant wetlands.

The Dennis Pond Basin wetlands are owned in part by Vermont Fish and Wildlife, an entity dedicated to public education and outreach regarding wildlife and natural areas in Vermont. The deep peatlands associated with the site, in addition to the diversity of habitats and

wetlands types provide characteristics that make this wetland complex valuable for education and research. The wetland is significant for the education and research in natural sciences function based on the above evaluation and as confirmed through a site visit by Agency staff.

10. Recreational Value and Economic Benefits

Wetlands that provide substantial recreational values or economic benefits are significant wetlands.

As part of the West Mountain Wildlife Management Area, recreational activities such as hunting, fishing, and wildlife watching are encouraged. The wetland complex offers a mecca for such activities, as it is important habitat for wildlife, and offers a wide variety of habitat types. Dennis Pond is easily accessible for these types of pursuits. The wetland is significant for the recreational value and economic benefits function.

11. Open Space and Aesthetics

Wetlands that contribute substantially to the open-space and aesthetic character of the landscape are significant wetlands.

Although the wetland complex is not readily seen from a major thoroughfare, it has been identified as a place to visit for the aesthetic qualities of the site in regional and state plans. The wetland is significant for the open space and aesthetics as demonstrated in state plans and confirmed through a site visit by Agency staff.

12. Erosion Control through Binding and Stabilizing Soil

Wetlands that are important for erosion control are significant wetlands. Such wetlands are typically located along stream, river, pond or lake shorelines, where erosive forces are present.

The wetland complex intercepts a number of brooks, and is adjacent to these flowing bodies of water. Woody and emergent vegetation helps slow down floodwaters and prevent erosion. The wetland is significant for the erosion control through binding and stabilizing soil function as confirmed through a site visit by Agency staff.

13. The Secretary shall also determine whether the wetland is exceptional or irreplaceable based on an evaluation of the extent to which the wetland contributes to Vermont's natural heritage. In determining whether a wetland is exceptional and/or irreplaceable in its contribution to Vermont's natural heritage the Secretary shall, at a minimum, consider whether the wetland is categorized as one or more of the following: Representative Example of Wetland Type; Rare Community Type; Community Assemblage/Wetland Complex; and Landscape Association.

- 14.** The exceptional or irreplaceable characteristics of the wetland include the following: Representative Example of Wetland Type; Rare Community Type; Community Assemblage/Wetland Complex.

15. Representative Example of Wetland Type

Wetlands that are considered exceptional for this criteria exhibit a reference condition for the wetland type(s) with minimal evidence of human disturbance. Based on size, condition, quality and function, these wetlands represent a reference condition for wetland type, and are therefore exceptional.

The Poor Fen wetland natural community type within the wetland complex is over 75 acres and is cited by the Department of Fish and Wildlife's Natural Heritage Inventory as a large, high quality representation of this type of wetland. The following wetland natural communities are also considered representative examples by the Department of Fish and Wildlife's Natural Heritage Inventory: Intermediate Tall Sedge Fen, Black Spruce Woodland Bog, Black Spruce Swamp. Although not an official community type, the peaty sand pondshore is of high quality and condition.

16. Rare Community Type

Wetlands that are considered irreplaceable for this criteria contain unique or rare wetland community type(s) which may be slow-forming or near the extent of its natural range.

The wetland complex contains Poor Fen which is a slow forming community type with an S2 (rare) ranking, and peaty sand pondshore community, not an officially recognized natural community type but one for which there are only a few examples in Vermont. The poor fen is over 75 acres in size and has an A ranking in the NNHP reports, meaning it is intact, in a high quality context with little human disturbance. The peaty sand pondshore is associated with Dennis Pond, which is 33 acres in size. The community itself is small but very rare, with a mix of peatland, sandy shore, and sandy peat. Only a couple of other examples of this community type are found in Vermont, and all within the Nulhegan Basin.

17. Community Assemblage/Wetland Complex

Wetlands that are considered exceptional for this criteria are larger wetland complexes usually associated with, multiple wetland community types and bodies of water, which have high species diversity and function. These provide exceptional function and value.

The wetland is a 360+ acre complex comprised of dystrophic ponds, Poor Fen, Dwarf Shrub Bog, Black Spruce Swamp, Northern White Cedar Swamp, deep peat Alder Swamp, peaty sand pondshore, Lowland Spruce-fir Forest, Sedge Meadow, and Sweetgale Shoreline Swamp.

18. In addition to the above criteria, when determining whether a wetland is exceptional and/or irreplaceable in its contribution to Vermont's natural heritage the Secretary may also consider the following qualities, functions and values that would contribute to a wetland being exceptional and irreplaceable: undisturbed condition, intact landscape and connectivity.
19. The exceptional or irreplaceable characteristics of the wetland include the following:

Intact Landscape: Those wetlands that are part of an intact and unfragmented landscape. The Dennis Pond Basin is one area in the larger collection of conserved land managed as the West Mountain Wildlife WMA (8,903-ha), and the Nullhegan Basin Division of the Silvio O. Conte National Fish and Wildlife Refuge (10,522 ha).

Determination of Wetland Classification

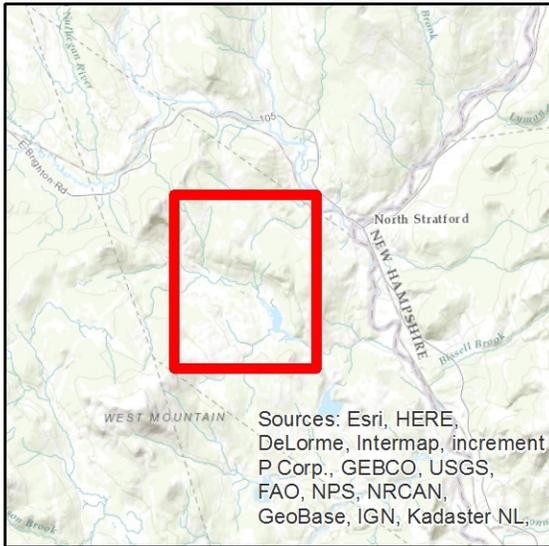
Based on information gathered by the Wetlands Program, input from The Nature Conservancy, and information from the Nongame Natural Heritage Program of the Vermont Department of Fish and Wildlife, the Secretary has determined that the wetland under consideration is a Class I wetland.

Required Buffer Zone

In order to protect the functions that make the wetland exceptional or irreplaceable, the Secretary has determined that a 300 buffer zone is required for the wetland. The reference condition of the wetland complex is due largely to the relatively undisturbed condition of the surrounding watershed. "As with other wetland communities that are fed by groundwater, Poor Fens are threatened by land use changes that occur within both their immediate watersheds and within their groundwater recharge zones. Protecting the quality and quantity of groundwater that discharges into a fen is critical to maintain the hydrology and the vegetation structure and composition of the community," (Thompson and Sorenson, 2005). In addition to the rare natural community types the wildlife function is enhanced the greater the undisturbed buffer zone. Much of the area is already in conservation, and the enhanced buffer zone further supplements protection around this sensitive wetland complex.

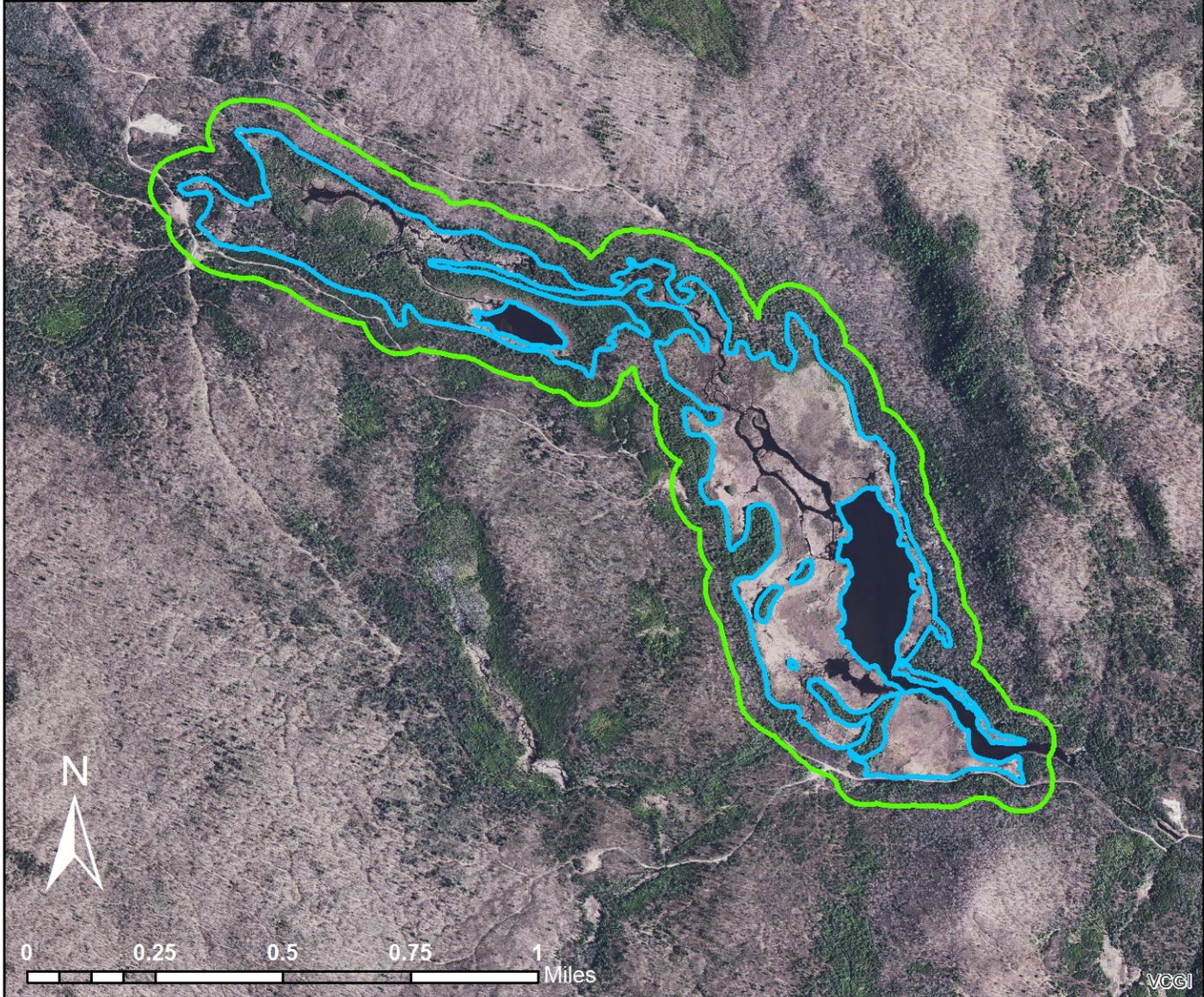
Effect of Class I Wetland Determination

Activity in a Class I wetland or its associated buffer zone is prohibited unless it is an allowed use under the VWR, or unless it is authorized by a permit, conditional use determination or order issued by the Secretary. The Secretary may impose any permit conditions as necessary to achieve the purposes of the VWR. Section 9.1 of the VWR. This Determination does not relieve the petitioner or any other person of the responsibility to comply with all other applicable federal, state or local laws.



Legend

-  Proposed Mapping of Buffer Boundary
-  Proposed Mapping of Wetland Boundary



Proposed Mapping of Class I Wetland
and 300-foot Buffer
Dennis Pond, Brunswick



VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION
WETLANDS PROGRAM