

**Elemental Wetland & Ecological Consulting, LLC**  
**152 Moulton Rd, Waitsfield, VT 05673**  
**Cell Phone: (802) 279-2125**  
**[Elemental@gmavt.net](mailto:Elemental@gmavt.net)**

**Kayle Hope & Susan Bourque, East Hill Road, Plainfield, VT Wetland Report**

To: Kayle Hope & Susan Bourque  
From: Patricia Greene-Swift  
Date: November 14, 2023  
Re: Northern White Cedar Seepage Forest Wetland



**Introduction**

On September 21, 2023, I met with Kayle and Susan Bourque at their parcel, located at 3809 East Hill Road, in Plainfield, Vermont, to examine and discuss an unmapped wetland on their property.

We walked the wetland and upland on the property, and discussed the difference between wetland and upland characteristics, and changes that they had noted prior to and after the heavy rain events that occurred in July of this year (2023). Also discussed were what is and is

not allowed within a Class II wetland or its adjacent 50-foot wetland buffer located on their property. Wetland delineating was initiated on September 21, and on September 27, 2023, the wetland delineation on the subject parcel was completed. However, the entire boundary of the wetland could not be delineated since Wetland A, a large wetland complex, continued off the subject property. I observed while delineating Wetland A that it continued onto the adjoining parcel immediately to the south, and later noted this was true west of the parcel where it is bisected by East Hill Road, where streamflow connects wetland on both sides via culvert.

The examination and delineation of the wetland was suggested by Shannon Morrison of the Vermont Wetlands Program, after a visit to the parcel initiated by the landowners, so they could better understand what was allowable under the wetland rules for future planning.

### **Wetland Complex A:**

Wetland A on the subject parcel is a matrix of Northern White Cedar Seepage Forest Wetland, emergent wetland, and shrub swamp, which combine to form a large wetland complex that has the potential to connect to a larger mapped wetland southwest of the subject parcel on East Hill Road. The estimated size of the wetland complex is 11+ acres. However, due to its continuation off the subject parcel south and westward, even while using the ANR Natural Wetland Inventory map, and the ANR Natural Resources Atlas, it was not possible to get a completely reliable estimate of the entire boundary of the wetland as landowner permission had not been obtained to the south and west where questions remain. Due to this situation, flags were placed where the boundary was perceived to be located along the property line, and these wetland flags were marked in the notes as PL flags with wetland id numbers.

Wetland A is a unique wetland, a northern white cedar seepage forest wetland that has a forest canopy dominated by older northern white cedar (*Thuja occidentalis*), with little to no shrub or herbaceous growth beneath due to limited natural light filtering through the 90 – 100 percent closed canopy. Groundwater seepage was evident in patchy locations of the wetland where water was seen moving below the substrate, sometimes emerging from the ground, and many drainage patterns were evident throughout the wetland on its slopes.

The wetland drainage from the northern white cedar seepage wetland supports the hydrology of the shrub swamp, and the formation of the three small stream channels, which come together and then flow under East Hill Road via culvert. These three streams eventually converge flow west of the road, and contribute to flows of the Great Brook, along Brook Road in Plainfield.

Wetland A had ponded water in September in a pooled area near East Hill Road, and the landowners noted that it is usually ponded in the early spring and summer and spring peepers are heard calling. Therefore, Wetland A does have vernal pool functions.

### **Ecological Functions of the Northern White Cedar Seepage Forest - Wetland Complex**

Wildlife functions – present for amphibian breeding, songbirds, and forest mammals (white-tailed deer evident) raccoon tracks.

Water quality – present due to natural underground springs welling up from the ground that augment three streams that flow westward off the parcel.

Fish function – present due to trees forming a canopy over the wetland that cool water surface and subsurface flows through the wetland, and into the stream that flows via culvert under East Hill Road.

Rare, threatened, endangered species function - green bog orchid (*Plantanthera aquilonis*) was noted in the wetland; it is a VT uncommon S3 species. Due to the wetland being examined in late summer, it is unknown if other orchid species, or other rare, threatened, or endangered plants or animals are present in the wetland complex.

#### **Army corps information:**

**Plants:** 65% or greater FACW, 20% or greater, 10% or greater FAC, and 5% or greater OBL

**Soil layer:** 7.5YR 2.5/1, 0 – 6” and in patchy locations up to 10”, with a reduced matrix beginning at 6” – 8” inches of 2.5Y 4/4 with redox having a depleted matrix below of 7/5YR 4/4 6 to 12 +/- inches, and redox of 7.5YR 4/4 with rock below.

**Hydrology:** drainage patterns, saturated to surface, hummock hollow terrain, ponded water, groundwater seepage, adventitious roots, stilted trees, leaning trees, iron in soil,

#### **Conclusion**

Wetland A is a large stream associated wetland complex that is in good condition despite historic impacts to the hydrology, alterations to the natural community, ongoing alterations to the hydrology, and current management regimes for road stabilization. It is Northern White Cedar Seepage Forest, with inclusions of emergent wetland, ponded wetland, shrub swamp, wet field/agricultural wetland, and disturbed areas of wetland that have been ditched, ponded, and maintained alongside East Hill Road. The wetland also supports a total of three streams that (with combined flow from smaller streams and seeps) flow to the eastern edge of East Hill Road, which then flow via culvert underneath the road, and continue flowing east to west onto other properties west of East Hill Road. Water quality function is high, both above and below the surface in this wetland due to surface and subsurface flows in the northern white cedar seepage forest, and in areas of the wetland where water collects and becomes channelized into small streams. The fish habitat function is moderate to high due to cold stream waters flowing through the heavily shaded wetland, and the natural cold-water emerging from the ground creating rills and seeps that form small channels which contribute to small stream formations.



Protection of this wetland, Wetland A, will continue to support wildlife, clean water, stream system health for fish, and potential rare, threatened, or endangered species.



Groundwater saturated soil showing where a small stream channel formed.