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## Memorandum

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**To:** Nicole Emmons (HH)  
**From:** James Nash (AKRF)  
**Date:** August 22, 2012  
**Re:** Targeted T&E Plant Survey – northern blue monkshood (*Aconitum noveboracense*)

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Summary:

Communication with Federal and State agencies initiated as part of environmental assessment for the Concord Resort Project revealed no known occurrences of federally-listed or state-listed plant species within 0.5 miles of the Project Site<sup>1</sup>. Although not known from the project site or vicinity, one plant species, the federally “threatened” northern blue monkshood (*Aconitum noveboracense*), is listed by the U.S. Fish and Wildlife Service for Sullivan County as a whole. In order to determine if this species occurs on the project site, a site inspection targeting this single species in areas of potential habitat was conducted by AKRF, Inc. on August 17, 2012. No individuals of *A. noveboracense* were identified and areas of potential habitat were determined to be marginal for this species. Therefore, this species was not found and is not expected to occupy the Phase 1 and Phase 1 Infrastructure areas of the Project Site.

Methodology:

Habitat requirements for *A. noveboracense* were reviewed using the USFWS Recovery Plan for this species.<sup>2</sup> The habitat within the entirety of the proposed Phase 1 development area (Casino Resort project component) and proposed Phase 1 Infrastructure development areas (Resort Entry Road and sewage force main) were examined by trained ecologists from AKRF, Inc. during the spring of 2012 as part of the ecological assessment for the project’s environmental assessment (EPT Concord Resort DGEIS accepted as complete 7/24/12). During this reconnaissance field inspection, two areas were determined to constitute potentially appropriate habitat for *A. noveboracense*. These two locations were examined during the species’ flowering period. A visual encounter survey for this single species was conducted at the specific habitat areas identified using a plotless, meandering transect until the sites were thoroughly examined.

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<sup>1</sup> NY Natural Heritage Program Response letter for the Concord Resort. Pietrusiak. 3/3/12.

<sup>2</sup> *Recovery Plan for the Northern Monkshood Aconitum noveboracense*. Robert H. Read and James B. Hale. Wisconsin Department of Natural Resources. Completed for the U.S. Fish and Wildlife Service, September 15, 1983.

### Discussion:

Northern blue monkshood (*Aconitum noveboracense*) is a flowering plant belonging to the buttercup family (Ranunculaceae). It is listed as a “threatened” species<sup>3</sup> by the USFWS. It grows in specific habitats in portions of New York State and in unglaciated areas of Iowa and Wisconsin. Northern blue monkshood is an herbaceous perennial, 1 to 4 feet in height, with blue, hood-shaped flowers. The species typically blooms between June and September. Degradation and loss of habitat are the primary threats to species survival. Fruiting occurs from early August through late September.

This species favors cold microclimates provided by shaded to partially shaded cliffs, algific talus slopes (cold air slopes), or cool, headwater streamside sites. These areas have cool soil conditions, cold air drainage, or cold groundwater flowage. Tolerance to low soil phosphorous and shade may provide monkshood a competitive edge over other species at these sites. New York’s northern monkshood populations are found on shale or conglomerate sandstone of Ordovician age. These bedrock types occur on the Project Site. The common denominator contributing most to habitat preference appears to be the cold soil environment associated with the cliff, talus slope and spring/headwater stream situations. (See Recovery Plan, Read and Hale, 1983).

The Project Site is underlain by shale and sandstone bedrock, but exhibits few areas of bedrock outcropping. During field inspection for development of the Concord Resort DGEIS in the winter/spring of 2012, two areas of potential habitat were identified in proximity to the Phase 1 Resort Entry Road. These areas include a north-south trending ridge of bedrock outcropping approximately 1000 feet in length and 10 to 20 feet in height and a groundwater seep immediately east of Concord Wetland #22 (NYSDEC Wetland MO-57). Figure 1 shows the approximate location of both habitat areas. Photographs of each habitat are also provided. These two areas constitute the only potential habitats for *A. noveboracense* within the Concord Project’s Phase 1 and Phase 1 Infrastructure areas.

### Findings:

Site inspection finds that both areas contain marginal habitat for *A. noveboracense*:

- The bedrock ridge lacks the algific (cold air) talus microclimate and contains no headwater springs. A closed canopy of eastern hemlock (*Tsuga canadensis*) dominates the overstory of the bedrock ridge, leaving the understory in full shade resulting in a depauperate herbaceous stratum. Sapling American beech (*Fagus grandifolia*), intermediate wood fern (*Dryopteris intermedia*), and clubmosses (*Lycopodium obscurum/Lycopodium lucidulum*) predominate in the understory.
- The hillside seep is a perennial groundwater outflow consisting of a former farm/homestead stone-lined well. Its topographic position is in close proximity to a larger red maple wetland complex. It is not a high elevation, headwater spring but instead occurs in a bottomland habitat. This suggests that the seep lacks the cool, headwater microclimate favored by *A. noveboracense*. Predominant wetland species in this seep and at the margins of the adjacent red maple swamp include sensitive fern (*Onoclea sensibilis*), sphagnum moss (*Sphagnum sp.*), arrow leaved tearthumb (*Polygonum sagittatum*), Virginia bugleweed (*Lycopus virginicus*), lurid sedge (*Carex lurida*), red maple (*Acer rubrum*), cinnamon fern (*Osmunda cinnamomea*), and red spruce (*Picea rubens*).

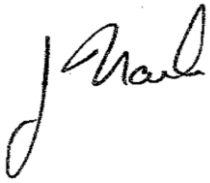
These two areas of potential habitat were examined on August 17th, 2012 during the flowering period of *A. noveboracense*. This species was not found anywhere in the inspection areas. Due to lack of ideal habitat onsite and the failure to find the targeted species in its flowering season onsite, this species is not expected to occupy the Phase 1 and Phase 1 Infrastructure areas of the Project Site.

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<sup>3</sup> 16 U.S.C. 1531-1544.

Although *A. noveboracense* was not found, other members of the Ranunculaceae Family (Buttercup/Crowfoot Family) were identified in the hillside seep. Although not in flower, these species, bristly buttercup (*Ranunculus hispidus*) and creeping buttercup (*Ranunculus repens*), were identified by their beaked achenes. In contrast to these other species, *A. noveboracense* contains irregular flowers in a terminal raceme and has follicular fruiting bodies. Thus the two genera are not easily confused if in flower/fruit.

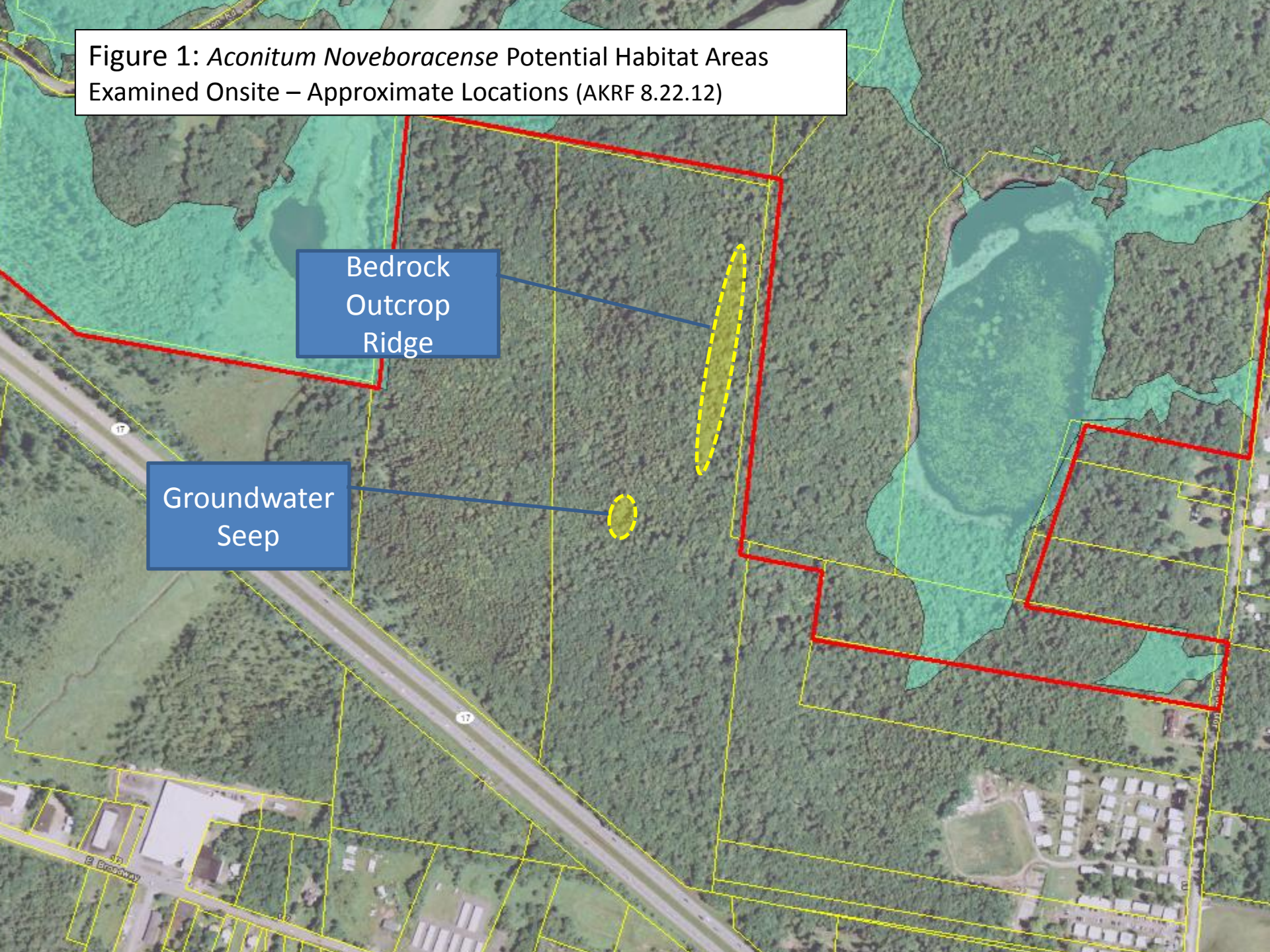
This concludes the targeted plant survey for this species in the Phase 1 and Phase 1 Infrastructure areas. If you have any questions, please don't hesitate to call.

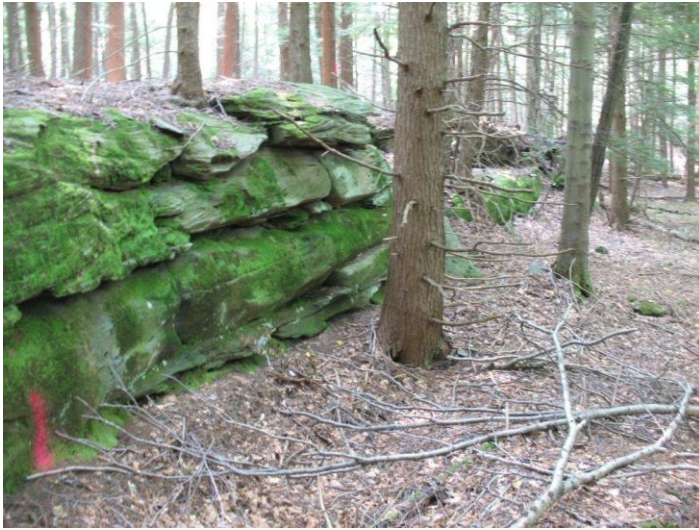
A handwritten signature in black ink, appearing to read "J Nash". The signature is written in a cursive, flowing style.

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James Nash

Figure 1: *Aconitum Novaboracense* Potential Habitat Areas Examined Onsite – Approximate Locations (AKRF 8.22.12)





Photograph 1: Bedrock Ridge Outcrop – Potential Habitat Area



Photograph 2: Bedrock Outcrop – Potential Habitat Area



Photograph 3: Groundwater seep – Potential Habitat Area.



Photograph 4: Groundwater Seep – former well



Blue Monkshood (*A. noveboracense*)

Stock Images: Jeff Nekola @ USDA-NRCS PLANTS Database



Illustration: *A. noveboracense*.

USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. An illustrated flora of the northern United States, Canada and the British Possessions. 3 vols. Charles Scribner's Sons, New York. Vol. 2: 96.