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Memorandum

To: Nicole Emmons, Hart Howerton

From: Chad Seewagen, AKRF; Jim Nash, AKRF

Date: November 8, 2012

Re: EPT Concord Resort – Phase 1 pool-breeding amphibians survey

cc: C. Robbins, N. Bourne

SUMMARY:

As part of AKRF's assessment of potential impacts to natural resources from the EPT Concord Resort project, the DGEIS states that Phase 1 of the proposed project has the potential to adversely, but not significantly, affect pool-breeding amphibians documented within or near the project site through the direct loss of breeding and surrounding upland habitat. To clarify the assessment given in the DGEIS, this memo describes the species and locations of pool-breeding amphibians found within and near the Phase 1 project site during 2012 field surveys. Other pool-breeding amphibians that are considered to have the potential to occur, but were not found, within or near the project site are also discussed. Specific locations of vernal pools that were inventoried during a follow-up site visit on September 21, 2012 are provided.

Based on site investigations conducted in 2012, three (3) small woodland depressions (pools) were found to contain breeding wood frogs (*Rana sylvatica*). One of these pools would be directly disturbed by the proposed project. The other two pools would be indirectly disturbed because 40-50% of their 750 foot "critical terrestrial habitat" buffer would be disturbed. No threatened, endangered, or special concern amphibians were identified within the Phase 1 footprint. Additional woodland depressions were found within or in proximity to the Phase 1 footprint. However, most of these pools were not inundated at time of survey, contained no egg masses or pool amphibians, and are insufficiently sized to ensure that they could sustain inundation to provide viable breeding habitat for pool breeding amphibians. In addition, site investigations to identify amphibian breeding activity and to document pool characteristics indicate that all onsite pools are at best Tier III pools, meaning they contain no Federal/State-listed species, have only one or zero vernal pool indicator species, and/or have more than 50% of their adjacent critical terrestrial habitat already disturbed by the existing golf course.

Photographs and locations of all pools identified in Phase 1 are shown in the attached figures.

POOL LOCATIONS

During the March 30 and May 24, 2012 wildlife surveys in support of the DGEIS and during visits to the site for other purposes, three woodland pools (Pools #1, #5, #6) were noted in proximity to the limit of disturbance (LOD) for Phase 1 of the project. Pool #1 is within a dirt road and was likely created by compaction of the ground by ATV's or other motorized vehicles. The other two pools (Pool #5, #6) appear to be natural and are located immediately east of the stream that is fed by the outflow of the large freshwater pond south of the Phase 1 project site (Wetland #101). The hydrology of these two pools is likely independent of the stream.

To better document the presence and distribution of potential vernal pools within the Phase 1 site (including the route of the proposed entry road), a survey was conducted on September 21, 2012 of all woodland depressions showing evidence of periodic inundation/saturation. Locations of the pools found during previous visits to the site and all additional woodland depressions encountered during the September survey were recorded with a handheld GPS. Some pools contained standing water, whereas others were free of standing water but counted as potentially capable of serving as breeding habitat for pool-breeding amphibians based on the presence of blackened leaves and detrital material, a clear depression in the topography that would be sufficient to collect and retain water, and the presence of soil saturation. The presumption that these depressions retain surface water for a month or more during the spring season is unconfirmed. Those pools which did not exhibit inundation at the time of survey may not provide more than ephemeral ponding (immediately following rain storms), therefore rendering them incapable of sustaining larval amphibians through to metamorphosis.

In total, fourteen (14) woodland depressions showing evidence of periodic inundation/saturation were identified. Figure 1 illustrates the locations of the fourteen (14) pools layered over the current site plan for the Phase 1 development. Photographs of each of the fourteen (14) pools are attached at the end of this report.

Precipitation records for Sullivan County International Airport (KMSV), the closest weather station to the Project Site located roughly 7.5 miles to the West, recorded 2.75 inches of precipitation for the 24 hour period ending Tuesday, September 18, 2012. This is three days prior to the Phase 1 pool survey conducted on September 21, 2012. Average high/low temperatures for this week were in the mid-sixties during the day and mid-forties at night. As shown in the attached photographs, the only pools showing inundation to a depth of an 1" or more on September 21, 2012 were the following: Pool #1 (located in dirt roadway); Pool #5 (forested location); Pool #6 (forested location); and Pool #14 (located in dirt roadway). These three pools were also inundated on previous inspection dates in March/May. The fact that this sizable storm on September 18th did not produce sustained inundation in the majority of topographic depressions identified within the forested portions of Phase 1 and proximal lands strongly suggests most are incapable of serving as viable breeding sites for vernal pool dependent amphibians.

AMPHIBIANS DOCUMENTED DURING FIELD SURVEYS

On March 30, 2012, AKRF conducted an extensive cover object search within and around the Phase 1 project site. Over the course of several hours, natural cover objects such as rocks, logs, and bark were turned over and inspected for the presence of salamanders. Woodland pools that were encountered were inspected for the presence of egg masses visually and with a dip net. The search area included the wooded sections of the southern half of the Phase 1 project site as well as the forested area between the eastern side of the freshwater pond and Joyland Road. On May 24, 2012, AKRF conducted an additional cover object search within these same areas and re-inspected the same pools. During the September 21, 2012 pool search and inventory, AKRF visually inspected each pool that contained water for the presence of amphibians (although the survey date was well beyond the period when most species would occur within a vernal pool) and opportunistically searched beneath cover objects. During this effort in September the entirety of the Phase 1 and the Phase 1 Infrastructure areas, including the Resort Entry Road, were thoroughly inspected.

Breeding wood frog (*Rana sylvatica*) and egg masses were observed in Pool #1, Pool #5, and Pool #6 during the March survey, and wood frog tadpoles confirmed in these three pools in May, 2012. Egg masses identified as likely spotted salamander (*Ambystoma maculatum*) were identified in Pool #5 during the May 21, 2012 site inspection. However, no spotted salamander adults or larvae were found on any survey date. No other pool-breeding amphibians were identified in these pools or elsewhere within the Phase 1 project footprint. Representative photos of wood frog and spotted salamander egg masses taken during the March and May 2012 site inspection are attached at the end of this report.

The following lists all amphibians documented within wetland or upland portions of the Phase 1 site during the pool surveys described above and during others visits to the Phase 1 site conducted for other purposes (e.g., wetland delineation, vegetation inventory, etc.):

-Wood frog (egg masses, tadpoles, and adults)
-Spotted salamander (egg masses)
-American toad (adult)
-Bullfrog (adult)
-Green frog (adult)
-Northern dusky salamander (adult)
-Northern two-lined salamander (adult)
-Northern red-back salamander (adult)
-Eastern newt (eft and adult stages)

None of these species is listed as endangered, threatened, or of special concern by the State of New York. The wood frog and spotted salamander are pool-breeding amphibians, whereas the other species will commonly breed in a variety of aquatic and wetland habitats.

ADDITIONAL AMPHIBIANS POTENTIALLY PRESENT

On the basis of the habitat observed within and around the Phase 1 project site, consideration was given in the DGEIS to additional amphibian species that have the potential to occur in the area but were not documented during the field surveys. These include spring peeper, Jefferson salamander (NYS special concern), blue-spotted salamander (NYS special concern), four-toed salamander, and red salamander. Of these, Jefferson and blue-spotted salamanders are the only vernal pool obligate species. The NYS Herp Atlas Project (1990-1999) documented Jefferson's and blue spotted salamanders within the nearby Woodbridge and Ellenville USGS Quadrangles but not on the Monticello Quadrangle within which the Project Site is located. Type and availability of habitat, including such factors as vegetative cover type, elevation, abundance of wetland habitat, etc. can be expected to be roughly similar across these three USGS Quads. Therefore the lack of Herp Atlas records for these two species' within the Monticello Quad cannot be viewed as a determination that they are absent from the project area.[1]

Jefferson and blue-spotted salamanders are fossorial the majority of the year, and are therefore difficult to observe. The March 30, 2012 survey intentionally coincided with the season when these species move to breeding pools from surrounding uplands and are more detectable, but there was no precipitation that evening. As such, there was likely little or no movement of Jefferson or blue-spotted salamanders during the survey. However, during both the March 30 and May 24, 2012 surveys, the vernal pools within and near the Phase 1 site were thoroughly inspected (visually and with a dip net) for the presence of amphibian egg masses and larvae. Only wood frog and likely spotted salamander egg masses were found. Although the eggs of wood frog, spotted salamander, Jefferson salamanders, and blue-spotted

[1] The DGEIS incorrectly stated that these species were listed by the Herp Atlas project for the Monticello Quad. Upon closer inspection of the Atlas maps, it is clear Jefferson and blue-spotted salamanders were not identified within the Monticello Quad over the 10-year span of the NYSDEC Herp Atlas project. Ecological consultants for the Project Sponsor are not aware of any records of occurrence of these salamanders on the project site or vicinity.

salamanders look similar (a black circle encased in a clear or cloudy gelatinous matrix), the configuration of the egg masses differs among species. Wood frog and spotted salamander egg masses are spherical, whereas Jefferson and blue-spotted salamander egg masses are more linear, often attached lengthwise to a submerged branch. There was no evidence of Jefferson or blue-spotted salamander egg masses in the pools. Additionally, no Jefferson or blue-spotted salamanders were found beneath cover objects around the margins of the pools—places where adults of these species often occur prior to and after mating and egg laying.

The assumption in the DGEIS that Jefferson and blue-spotted salamanders have the potential to occur within or in close proximity to the Phase 1 project site is conservative and strictly based upon descriptions of their habitat requirements (which appear to be met by the vernal pools and surrounding upland forest present). Detection probability of adult fossorial salamanders, such as Jefferson and blue-spotted salamanders, with visual encounter and cover object surveys is notoriously low, but if vernal pools within and near the Phase 1 project site were being used as breeding habitat for these species, their egg masses would have likely been observed during the March 30, 2012 survey and larval stage individuals in the May 24, 2012 survey. They were not found and it is presumed that these species do not occur within or in proximity to the Phase 1 site.

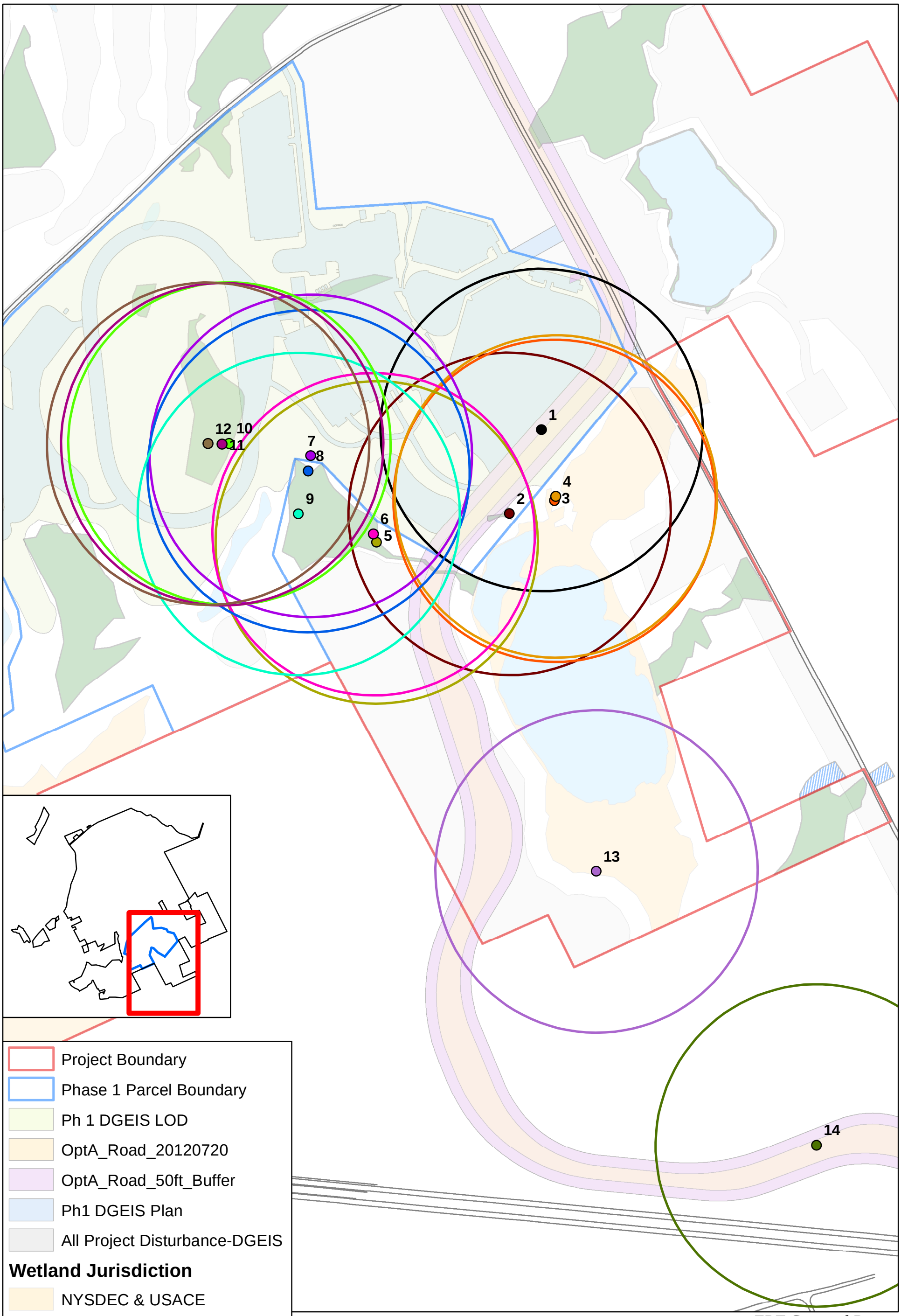
PROJECT IMPACTS

Fourteen small woodland depressions (pools) were encountered and mapped during the September 21, 2012 survey. Of these, 3 occur within the proposed Phase 1 LOD (including the route of the proposed entry road) – Pools #1, #7, and #14. The pools occurring within the LOD of the Phase 1 site will be lost during project development under the current site plan. Because wood frogs and most other vernal pool-breeding amphibian species migrate several hundred feet into surrounding upland forest after breeding, loss of the upland forest within the Phase 1 site LOD may affect amphibians that breed in the vernal pools outside of the LOD. Upon construction of Phase 1, the other woodland depressions identified in proximity to Phase 1 would be indirectly affected by having a portion of their surrounding upland forest cleared and developed. Therefore, the development of Phase 1 has the potential to reduce on-site breeding habitat for pool breeding amphibians, principally the wood frog.

As stated in the DGEIS, the direct loss or indirect disturbance to associated upland habitat in proximity to these woodland depressions by development of the Phase 1 site is not expected to constitute significant adverse impact to local populations of the wood frog or any other pool breeding species conservatively considered to have the potential to occur at the site. Following the valuation scheme of Calhoun and Klemens (2002), the four (4) clearly inundated pools found and inspected during the March 30 and May 24, 2012 surveys within and adjacent to the Phase 1 site are Tier III pools. They lack the quantity of egg masses, number of breeding species, and presence of state-listed species needed for a higher tier ranking. Best development practices for vernal pools treat Tier III pools as of the lowest conservation priority. The ten (10) additional woodland depressions documented during the September 21, 2012 survey are unlikely to provide viable breeding habitat for pool breeding amphibians. In their current condition, nearly all of the pools are bordered by some form of development and inhospitable land cover (e.g., golf course, Joyland Road, residential properties) in at least one direction such that the integrity and intactness of their "envelope" and/or "critical terrestrial habitat" have already been partly compromised (Calhoun and Klemens 2002). The loss or reduced viability of the pools within and near the Phase 1 site, respectively, not expected to have significant adverse impacts to local populations of the wood frog or other amphibians potentially present.

Calhoun A.J.K. and Klemens M.W. 2002. Best development practices: conserving pool-breeding

amphibians in residential and commercial developments in the northeastern United States. Metropolitan Conservation Alliance Technical Paper No. 5, Wildlife Conservation Society, Bronx, New York, USA.



EPT Concord Resort

FIGURE 1
Pool Locations and
750 Foot Buffer

November 8, 2012

Pool #1 (photo 1)

Pool #2 (photo 6)

Pool #3 (photo 9)

Pool #4 (photo 15)

Pool #5 (photo 17)

Pool #6 (photo 19)

Pool #7 (photo 22)

Pool #8 (photo 13)

Pool #9 (photo 25)

Pool #10 (photo 27)

Pool #11 (photo 29)

Pool #12 (photo 30)

Pool #13 (photo 32)

Pool #14 (photo 35)

Wood frog egg mass, Pool #1 (3.30.12)

Spotted salamander egg mass, Pool #5 (5.21.12)