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Lawrence G. Biegel  
New York State Department of Environmental Conservation  
21 South Putt Corners Road  
New Paltz NY 12561

Dear Mr. Biegel:

This letter contains my comments on the Red Wing Draft Environmental Impact Statement (DEIS) for the proposed Archer soil mine on Turkey Hill Road in the Town of Milan, Dutchess County, New York. I am submitting these comments at the request of Milan Concerns. My comments focus on the issue of protection of the Blanding's turtle, listed as a Threatened species in New York.

I am the foremost expert on the ecology and conservation of the Blanding's turtle in Dutchess County. I have studied Blanding's turtle in Dutchess since the 1970s, performed Blanding's turtle habitat assessments or Blanding's turtle surveys for a number of proposed development projects (for permit applicants or intervenors), and I supervised a Hudsonia team that worked with Arlington Central School District and the Department of Environmental Conservation to design and monitor a mitigation project and perform long-term research (currently in its 12<sup>th</sup> year) on Blanding's turtle and ecosystem response to creation of wetland and upland habitats for this species (Kiviat 1993, 1997, Kiviat et al. 2001, 2004, Kiviat and Stevens 2001, Hartwig et al. 2006, Hartwig and Kiviat in press). A list of my technical assistance reports on the Blanding's turtle is available on request.

Hudsonia Ltd. does not oppose or support mining projects or other development projects. We provide up-to-date, geographically specific, scientific information based on our research and observations, the literature, and other information, and make recommendations for better planning and management.

Red Wing's consultant, Terrestrial Environmental Specialists (TES), performed a Blanding's turtle habitat assessment for the proposed Archer mine site. This assessment appeared in report form and subsequently was presented in the DEIS. I commented on the TES assessment in a letter to the DEC dated 1 February 2004. The DEC letter dated 28 May 2004 concerning the "Proposed Archer Mine Final Scope" accepted the TES assessment ("Staff of our Division of Wildlife have re-reviewed your consultants'

Blandings Turtle Habitat Assessment and have no reason to alter our original view that we are satisfied that the site is ‘not suitable for Blandings Turtle habitat.’”). The DEC letter did not explain why DEC staff rejected my analysis of the Blanding’s turtle situation.

A live juvenile Blanding’s turtle of carapace length 108 mm was found on County Route 56 (Turkey Hill Road – Spring Lake Road) at the intersection of Hapeman Hill Road just west of Warackamac Lake, by Maria Kelly on 6 May 1989. I measured, photographed, marked, and released that turtle and reported it to the DEC Endangered Species Unit. At the time, there was no public consideration of mining on the Archer site and I had not heard any mention of the currently proposed project. I do not know which wetland(s) the turtle was using, but it was within movement distance of the wetlands south of the Archer site (south of Turkey Hill Road) and of Lake Warackamac, as well as possibly the vernal pools reported on the northeastern portion of the proposed mine site.

The TES assessment dismissed the Blanding’s turtle issue based on the conclusion that there was no Blanding’s turtle habitat on or near the Archer site. For the assessment, TES interpreted aerial photograph(s) as showing forested wetlands south of Turkey Hill Road that were deemed unsuitable for Blanding’s turtle because of the forest cover. In order to explain my assessment of the Blanding’s turtle issue, it is first necessary to outline how Blanding’s turtles use habitats.

In Dutchess County, local groups of Blanding’s turtles use large areas that cover one to several square kilometers (Kiviat 1997). Each such Blanding’s turtle landscape includes one or more “core wetland habitats” in which the turtles typically overwinter, spend much of the early spring, and commonly spend significant amounts of time at other seasons. A core wetland is typically a deep-flooding (30-100 cm water depth at seasonal maximum) wetland with a substantial shrubby (often buttonbush) component in the vegetation, little evident surface water inflow or outflow, a “fringe” of usually mature trees around the margin of the wetland, organic sediments, proximity to gravelly or sandy upland soil, and apparent groundwater discharge at the wetland margins (Kiviat 1993, 1997). Core wetlands may be as small as 20 m in diameter or as large as 7+ hectares, and may have permanent or intermittent standing water. We refer to the typical Dutchess County core wetland as a “kettle shrub pool” (Kiviat and Stevens 2001) because these wetlands often occur in apparent glacial kettleholes on or at the edge of a glacial outwash deposit (most often associated with gravelly loam soil).

Although Blanding’s turtle activities center around the core wetlands, the turtles also use a variety of other wetlands that contain 20+ cm deep water at some time during the turtle activity season. Those “associated wetland habitats” can be herbaceous marshes, wooded swamps, or intermittent woodland pools (“vernal pools”). The turtles also use drought refuges, which are natural or excavated, groundwater-fed, ponds or pools, during hot dry periods. Adult Blanding’s turtles remain quiescent in such drought refuge pools or sometimes remain quiescent in upland shrub thickets or the forest floor during hot dry periods (turtles sometimes rest next to a downlog or stone wall). During droughts, we

have also found adults quiescent in or on the moist sediments of drawn-down wetlands or in a small remnant stream pool.

Adult females, during their late May to early July nesting migration, use a variety of natural or artificial ponds or pools for rehydration, and some of those pools are quite small (e.g., 10 m in diameter). Females nest in a variety of upland soils that are typically coarse-textured (gravelly or sandy), well drained, and sparsely vegetated, with a good sun exposure, but nest site soils are sometimes fine-textured. Dutchess Blanding's turtles have been recorded nesting in disturbed soils at gravel pits, landfill cover, ornamental borders next to houses, construction sites, cut-and-fill in a subdivision, and soil stockpiles, among other habitats. Hatchling and small juvenile Blanding's turtles appear to spend most of their time in wetlands that are densely vegetated and shallower than typical adult habitats. Lastly, adult and juvenile turtles use the spaces intervening between the types of habitats mentioned above, to move from one wetland to another, or from a wetland to the nesting area. Inter-wetland movements or nesting migrations can span straight-line distances of 1000 meters or more. We consider a 1000 m wide belt around the outside of a proposed development site as a "Blanding's turtle-shed" from which turtles may move onto the site (Kiviat 1997).

What potential habitat exists on or within 1000 m of the Archer site? The site and its vicinity contain potential core wetland habitat, associated wetlands, juvenile habitats, nesting areas, and drought refuges – everything Blanding's turtles need. The wetland ca. 200 m south of Turkey Hill Road, apparently the north end of state-regulated wetland CM-16, is a classic kettle shrub pool, and has all the indicator features of high quality core wetland habitat: large stands of buttonbush, deep long-lasting flooding, trees at the margin, organic sediment, and the nearby presence of gravelly loam upland soils. This is presumably the wetland TES dismissed as too heavily forested for Blanding's turtle habitat; in fact, it is shrub-dominated nearly throughout, not forested. Other wetlands south of the kettle shrub pool (apparently also part of CM-16) are potential associated wetland habitats and have some potential as core habitat. Portions of these wetlands, and the small grassy marsh close to Turkey Hill Road, are potential habitat for small juvenile Blanding's turtles. Lake Warackamac, on the Archer site just north of Turkey Hill Road, is a potential drought refuge pond for adult Blanding's turtles and rehydration pond for nesting females. The possible artificial (mining) origin of Warackamac Lake does not preclude its use for drought refuge or rehydration, as I have observed in excavated lakes and ponds in the towns of Clinton, Stanford, and La Grange. There is undoubtedly potential nesting habitat on the Archer site in actively or recently farmed areas, along internal roads, at old soil mine pits, in soil pockets associated with rock outcrops, and in other areas of sparsely vegetated sunny soils. The proposed mining activities are likely to create additional nesting habitats. Hoosic gravelly loam is the soil most commonly associated with Blanding's turtle landscapes in Dutchess County, and is good nesting habitat. Hoosic gravelly loam, and similar gravelly glacial outwash soils, occur on and near the Archer site. Given the occurrence of gravelly glacial outwash, the potential habitat complex described above, and the observation of a Blanding's turtle, we have to presume the presence of a local group of turtles using habitats on and off the Archer site.

Hudsonia has found Blanding's turtles at most of the apparently suitable habitat complexes we have investigated in Dutchess.

In addition to misinterpreting the aerial photograph(s) of the potential core habitat south of Turkey Hill Road, TES apparently ignored a key requirement of any professional and thorough habitat assessment: consulting the local literature and knowledge concerning the study species. The Blanding's turtle habitat assessment performed by TES is a travesty, and the DEC, in accepting the assessment as written, was in dereliction of its responsibility to protect a Threatened species and fully consider it in a SEQRA review. The DEC has been inconsistent in the protection of Blanding's turtle at Dutchess development sites. For example, at the "Avalon Hills" residential subdivision site in the Town of Pleasant Valley (where Hudsonia provided technical assistance to the developer), the DEC required mapping and enhancement of potential Blanding's turtle nesting habitats and installation of a barrier to discourage Blanding's turtles from crossing an internal subdivision road. If we are to protect this highly mobile species in the suburbanizing lands of Dutchess, we will all have to think beyond single property ownerships when we perform SEQRA analyses and land use planning. There is ample precedent for offsite impact assessment under SEQRA (i.e., within the Blanding's turtle-shed), and this is precisely what is needed for the Blanding's turtle at the Archer site.

The proposed Archer mine has several potential negative impacts on the Blanding's turtle. Albeit hazardous, Blanding's turtles have no hesitation to try to cross roads, and turtles that may be using the wetlands south of Turkey Hill Road as core habitat are likely to cross Turkey Hill Road to get to nesting sites, a drought refuge, or associated wetland habitats. The increased heavy truck traffic due to the mine will increase the hazard to turtles. Nesting habitat that may be created by mining activities may prove a fatal attraction to Blanding's turtles which will be at risk of mortality from trucks and earthmoving equipment at the mine. Airborne dust from the mine and silty runoff may pollute wetland and pond habitats. Mining permit applications typically say that drainage will be internal in a soil mine but this is not always the case as I once observed, for example, at the Amenia Sand and Gravel mine. Mining at Archer would very likely be followed by residential development on the site, which would pose additional hazards to turtles. The only definitive way to plan around Blanding's turtles would be to conduct standardized live-trapping surveys for several weeks each spring (May and early June) for multiple years in the wetlands and ponds on and within 1000 m of the Archer site, and to radio-track females and males to determine how they use the landscape for nesting, drought refuge, and other activities (Hartwig et al. 2007). We have learned in the long-term Blanding's turtle study at Arlington High School that habitat use varies greatly from year to year depending on weather and other factors, and that short-term observations on a group of turtles does not answer the most important questions about habitat use and other behavior essential for conservation.

In conclusion, there is a potential habitat complex of good quality for Blanding's turtle at the Archer mine site, a Blanding's turtle has been found very close to the site, and the proposed mine would likely have significant negative impacts on Blanding's turtles. It is the responsibility of the DEC and the applicant to explore this issue fully and accurately.

The TES Blanding's turtle habitat assessment is inaccurate and should be disregarded. The glaring errors in this assessment call into question the other work TES did at the Archer site. It is my opinion that in this particular matter of the proposed Archer Mine, the applicant, their consultants, and the DEC are abrogating their regulatory and ethical responsibility to analyze and assess the Blanding's turtle issue in a fashion that is scientific, documented, repeatable, transparent, accurate, knowledgeable, professional, and impartial.

To facilitate such an analysis and assessment, I offer to meet with the appropriate representatives of the DEC, Red Wing, TES, Griggs-Lang Consulting Geologists, the Town of Milan, and Milan Concerns to view and discuss the potential Blanding's turtle habitats of the site and its vicinity. In addition I would be happy to answer any questions the DEC or others may have concerning my assessment.

Sincerely,

Erik Kiviat, PhD  
Executive Director

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