

BAD RIVER BAND OF LAKE SUPERIOR TRIBE OF CHIPPEWA INDIANS

CHIEF BLACKBIRD CENTER

P.O. Box 39 • Odanah, Wisconsin 54861

October 22, 2013

Lawrence J. Lynch, P.G., Hydrogeologist
Water Use Section
Bureau of Drinking Water and Groundwater
Wisconsin Department of Natural Resources

Re: Gogebic Taconite, LLC June 17, 2013 and July 28, 2013 correspondences on Bulk Sampling

Dear Mr. Lynch:

As a sovereign nation with regulatory authority over downstream waters, on-Reservation air quality, and pursuant to treaties we signed with the United States, we submit our comments related to Gogebic Taconite's (henceforth, "GTAC" or "applicant") submission of a proposal to bulk sample in the Bad River Watershed. These comments are based upon the review of materials submitted by the applicant on June 17th and July 28th, as well as your responses to the applicant on July 2nd and August 13th of this year. They detail the information covered during our meeting on October 8th in Odanah and the field review of the project area on October 9th.

These comments principally consider the scope and effect of activities involving blasting at five locations in the headwaters of the Bad River Watershed. Should the applicant submit revised materials that reduce the number of locations and retract or clarify the need for blasting, we anticipate that additional comments would be submitted upon the review of such materials.

Please note that these comments have been submitted on behalf of the Environmental Program of the Bad River Band of Lake Superior Chippewa and do not represent a form of government-to-government consultation. For each item, we will offer background information (or "context") and subsequent comments. Contact information is provided at the conclusion should items exist for which you require further explanation or discussion.

Items Establishing the Reasonable Risk of Contamination

Context (1): The Ironwood formation targeted for bulk sampling is a sedimentary unit containing iron oxide, which is commonly described as being made up of five distinct layers (or members). From top to bottom, those members (and estimated thicknesses) are the: Anvil (16m), Pence (30-37m), Norrie (34-36m), Yale (14-22m), and Plymouth (40-46m). Iron oxides, principally in the form of magnetite, are enriched in two zones of the Ironwood formation. The first enriched zone is in the middle Plymouth and the

other in the Norrie and Pence members (Marsden 1978). These are the members targeted for bulk sampling by the applicant. But, it is important to note that the Ironwood has been subject to folding, faulting, and at least one intrusive event. The effects of tilting and differential weathering mean that formations and members may not be uniformly represented at all locations (Cannon et al. 2008, Bjornerud et al. 2012).

The various members also have different mineralogies, and thus different potentials to release contaminants into the environment. Huber (1959) identifies pyrite of diagenetic origin as a minor mineral in the Ironwood formation. Specifically, a 3-m thick basal layer of the Yale had been identified as containing up to 20% pyrite by rock volume (Huber 1859, Marsden 1978, Schmidt 1980, Cannon et al. 2008, Bjornerud et al. 2012). Schmidt (1980) also reported pyrite as being present in the Anvil member and Bjornerud et al. (2012) identified trace levels of sulfur in the Plymouth and “upper Ironwood.” Trace levels (~0.5-1% by surface area) of pyrite were also observed at proposed bulk sample site 2 in October of this year (Attachment 1). Bulk site 2 is described by the applicant as targeting the Norrie member.

Given the stratigraphic position of the Yale relative to the Ironwood members being targeted for sampling, it seems unlikely that these units could be bulk sampled without affecting the Yale (assuming all units are present at each site). Stratigraphically, the Plymouth (targeted at sites 1 and 3) directly underlies the Yale, and the Norrie (targeted at site 2) directly overlies the Yale (Figure 1). The pyrite observed at site 2 may be a representation of the cross-cutting veinlets described by Huber (1959) or an indication of the proximity of the Yale. It would seem difficult to obtain samples from directly underlying/overlying units without either some ancillary breakage of Yale rock, and/or exposure of the Yale member to air and water. It may be possible that at sites 1 and 3, the overlying Yale is locally not present. However, since the local stratigraphy is not provided by the applicant, it is not possible to ascertain this possibility. At site 2, absence of the Yale is unlikely, as the targeted Norrie directly overlies the Yale. Again, given this direct contact, the relative thinness of these beds, and their angled repose, it is likely that the Yale could be disturbed and/or exposed to air and water while sampling the Norrie.

As the Department is almost certainly aware, pyrite can be an environmental concern if sufficient quantities exist and are oxidized to produce acidic conditions and sulfate. For example, sulfate can alter chemical conditions in wetland systems, thereby impacting native plant regimes (Taiz and Zeiger 2006). Sulfate and acidic conditions can also affect the mercury cycle. Moreover, acidic conditions have the added effect of increasing the rate at which metals are leached into solution.

Once such contaminants are liberated, suspended sediments can facilitate the transport of metals and other contaminants. However, metals and organics can also occur in the dissolved phase, which is less likely to be restricted by physical controls intended to mitigate sediment transport. Salmonids in particular are recognized as being highly

sensitive to certain contaminants (e.g., copper, selenium, acidity). Dissolved copper, for example, on the scale of parts-per-billion has been demonstrated to cause adverse effects in salmonids; including reduced growth, behavioral avoidance, and mortality (Hansen et al. 1999, 2002; Meyer et al. 2007).

To date, the applicant has not provided any information on the local stratigraphy at the sites, beyond the specific member being targeted for sampling. They do not indicate which other Ironwood members are present and provide no information on the mineralogy of the rock present at the proposed bulk sampling sites. No data are presented on the acid-generating potential or neutralizing potential of these rocks. As noted above, previous studies conducted in the area report iron sulfide mineralization (Huber, 1959; Marsden, 1978; Schmidt, 1980; Cannon et al., 2008; Bjornerud et al., 2012), as well as trace contaminants including selenium, arsenic, copper, zinc, and mercury (Bjornerud et al., 2012) in multiple members of the Ironwood, as well as the Tyler formation.

Comment (1.1): The lack of information provided to date results in a significant level of uncertainty and risk with respect to the potential release of contaminants from the rock, and the potential for contamination of the local environment during bulk sampling.

Comment (1.2): In item 5 of your letter on August 13th, the Department rightly acknowledges the potential for sulfide minerals to occur in other units of the Ironwood and we support the need to develop contingency measures should activities encounter evidence of sulfides. However, an obligation remains for the applicant to provide the information identified in Comments 1.3 and 1.4 in order for the Department to make an informed permit determination and specify appropriate conditions to the permit.

Comment (1.3): The Department should require the applicant to submit detailed characterization of the local stratigraphy, as well as the lithology and mineralogy, of the members targeted and adjacent to proposed bulk sampling activities.

Comment (1.4): The Department should require the applicant to provide a characterization of the acid-generating potential and neutralizing potential of the rock (e.g. acid-based accounting); as well as the leachability of constituents known to be present in the Ironwood formation.

Comment (1.5): Absent characterization of the local rock units that are present and likely to be exposed during the proposed operations, it is not possible to conclude that there are no potential risks of adverse environmental effects. Furthermore, given what is known about these rock types based on previous studies conducted on these geologic formations, there is evidence that the proposed bulk sampling of these materials poses a reasonable risk to the environment from the release of contaminants.

Comment (1.6): Erosion and sedimentation controls typical of construction site projects are inadequate for the control of contaminants, such as metals in dissolved phase, which could reasonably be expected to be present on-site and exposed by the proposed activities. The proximity of trout streams and the sensitivity of salmonids and other aquatic life to certain dissolved metals heightens the need for additional effluent characterization and effective pollution controls. Effluent characterization cannot be adequately accomplished without the minimal information identified in comments 1.3 and 1.4.

Context (2): In the responses provided by the applicant on July 28th, they deny the presence of asbestiform minerals in the Gogebic Iron Range near Mellen and state that the geologic conditions do not support the formation of asbestos. In your letter to the applicant on August 13th, the Department seems to disagree with this assertion and acknowledges the presence of asbestiform minerals in the project area. However, based upon the Department's response, it is unclear if you are aware whether such minerals occur in the needle-like, crystalline habit that is typically identified as the greatest health concern.

Based upon observations in the field, we can confirm that grunerite is present in both bedrock and rock samples from the western end of the project area (Attachment 2). At multiple outcrops, grunerite is abundant as burrs of radiating fibers amid coarse-grained quartz. These grunerite-rich layers are interbedded with magnetite-rich layers oriented along strike and typical of the Ironwood Formation. One location, an outcrop nearest bulk sample site 4, also exhibited grunerite as a dense, fibrous mass nested amid magnetite-rich zones similar to those just described.

Also of note, grunerite was not observed at the proposed bulk sample sites in Iron County (i.e. sites 1, 2, and 5). However, upon review of "The Geology of the Gogebic Iron Range of Wisconsin" (1929), H.R. Aldrich describes the repeated occurrence of grunerite and amphibole as "bunches of needles" in the Plymouth member of the Ironwood formation. The author goes on to describe the presence of pyrite in the Yale member and the abundance of needle-like amphibole elsewhere in the iron formation. This information was derived from a detailed, cross-sectional analysis in the vicinity of the proposed mine site (i.e. along the Tyler Forks river).

Comment (2.1): We agree with the Department that asbestiform minerals are present and support the requirement for additional identification and characterization as part of any mine permit application. Furthermore, we can confirm through field observations that grunerite occurs repeatedly in a needle-like habit in at least part of the proposed mine site.

Comment (2.2): Given the abundance of grunerite where it occurs, the applicant should provide sufficient evidence that the proposed bulk sampling operations at sites 3A and 4 will not exceed the permissible exposure limits for airborne asbestos fibers established by the Mine Safety and Health Administration (30 CFR 56, 57, and 71). Similar

evidence of an ability to comply with applicable safety laws should be provided for the analyses intended at the pilot plant.

Comment (2.3): Given the complexity of the geology where grunerite has been observed, we are skeptical that the applicant currently has sufficient information to defensibly characterize the distribution and abundance of asbestiform minerals reasonably expected to be liberated during the mining and milling operations proposed in the June 17th pre-application notice.

Context (3): In materials submitted to the Department on July 28th, the applicant states that “site inspections of the area have not identified the presence of springs during the high flow period in May 2013.” Let us first state that surveys for evidence of groundwater during saturated, high flow conditions are less than informative. In addition, while we retain a number of concerns with the applicant’s wetland delineation report, that report did identify a “seep” at wetland 5-1, just east of— and at comparable elevation to— bulk sample site 2. This site was visited and observed to host saturated conditions during the October 9th field review.

Given the surface water hydrology in this area, which largely consists of low-lying wetlands and ponds interconnected by rivers and streams, groundwater is likely very shallow over much of the area. Surface water and groundwater in this system should be considered conceptually as one continuous resource. This high degree of interconnectedness has many implications. Surface contamination has a high risk of reaching groundwater, and contaminants present in groundwater are likely to find short and rapid paths to discharge to surface water.

The applicant also indicates that “if groundwater were encountered during the project excavation, the pit will be graded to allow gravity discharge to the perimeter silt fence.” This is an important point, as any discharging groundwater would likely percolate through the finer materials used as backfill. Finer materials have markedly greater relative surface area than run-of-mine sized material. This means that potential contaminants (e.g. selenium, copper, pyrite) are more likely to react, leach, or otherwise mobilize via the dominant transport media (i.e. groundwater to surface water) along a manmade conveyance.

Comment (3.1): The applicant should conduct a more meaningful and thorough investigation of groundwater on-site using methods appropriate for informing project review; to include: wetland functional review, stormwater management, and the drafting of a site-specific stormwater pollution prevention plan (e.g. Rosenberry and LaBaugh 2008).

Comment (3.2): Groundwater depth and quality should be characterized prior to bulk sampling. Appropriate water quality parameters include pH, dissolved oxygen (DO), dissolved organic carbon (DOC), hardness, metals/metalloids, sulfates, phosphates, and

hydrocarbons. The elevation of the water table should have already been provided in preapplication materials as prescribed under NR 295.46(b)(6).

Items Regarding the Implementation of the Clean Water Act

Context (4): In your letter to the applicant on August 13th, you indicate that based upon the information provided the Department has determined that coverage under a general discharge permit for construction site storm water runoff (General Permit # WI-S067831-4) is appropriate for bulk sampling in the Bad River Watershed. A review of relevant state and federal environmental law, in addition to the existing factual basis, lead us to believe that the proposed project should be reviewed as an industrial activity *and* conditioned via an individual permit.

40 CFR§ 122.26 (b)(14)(iii) defines active and inactive mining operations as industrial activities and identifies the appropriateness of regulation of storm water that has come into contact with, any overburden, raw material, intermediate products, finished products, byproducts or waste products located on the site of such operations. Regarding State law, we note that Table 4 in Subchapter II of NR 216.07 also lists “metal mining” as a category that generates industrial discharges.

As bulk sampling methods employ the same general practices as the mining of ore, there is the reasonable expectation that storm water may be contaminated by contact with the abovementioned sources of industrial pollution. The review and conditioning of bulk sampling permits should receive the same level and type of scrutiny as would the mining of ore.

Appendix D of 40 CFR§ 122 goes on to identify testing requirements for categories of pollutants by industry. Ore mining is expected to test for all categories of pollutant; which includes volatiles, acids, base/neutral, and pesticides. Given the likelihood of other pollutants, it is also appropriate for the applicant to monitor for other toxic pollutants under table III (e.g. arsenic, lead, mercury), conventional and nonconventional pollutants under table IV (e.g. nitrate-nitrite, phosphorus, sulfate), and toxic pollutants and hazardous substances under table V (i.e. asbestos). However, coverage under the general construction stormwater permit does not require the applicant to identify potential pollutants in its discharge.

In addition, the construction site stormwater runoff permit (General Permit # WI-S067831-4) states that activities are not eligible for coverage if the land disturbing activity and associated storm water discharges could 1) affect wetlands, 2) have a reasonable potential to cause or contribute to an excursion above any applicable water quality standard, or 3) affect endangered and threatened resources. Of note, General Permit # WI-S067857-3 contains similar conditions. Moreover, Wisconsin’s general permits were adopted with regard to the State’s regulatory framework for managing water resources. They provide no meaningful mechanism with which to demonstrate the ability

to consider or comply with downstream waters regulated by other authorities (e.g. Bad River Band's Water Quality Standards).

Comment (4.1): Discharges of this nature are not eligible for coverage under a general permit (*see* item 5 regarding wetland identification, item 6 for water quality standard compliance, and item 7 regarding endangered and threatened resources).

Comment (4.2): We petition the Department to require an application for an individual NPDES permit (NR 216.25) appropriate for the regulation of industrial activity. This is all the more important for projects with the potential to discharge to high-quality waters of an interjurisdictional nature.

Comment (4.3): Well-reasoned estimates of pollutants or parameters identified under Appendix D of 40 CFR§ 122 should be required from the applicant. Monitoring should be required for the abovementioned categories of pollutants, in addition to those parameters identified in 40 CFR§ 122.26(c)(1)(i)(E), to both establish a meaningful record of baseline conditions and identify any impacts to water resources (*see* comment 9.4 for additional considerations related to contamination from blasting).

Context (5): In your letter to the applicant on August 13th, you also indicated that the proposed bulk sampling activity will not require wetland or waterway permits.

On May 30th of this year, we submitted comments on the proposed exploration activity informing the Department that a number of unmapped tributaries to exceptional resource waters exist on-site. Application materials continue to ignore the presence and effect of these unmapped water resources. Several of these water bodies are perennial in nature and all can increase the potential for the transport of contaminants off-site. In fact, we consider it very possible that impacts to high quality waters have already occurred from the irresponsible use of forest roads (i.e. vehicles exceeding the seasonal capacity of the roads), a lack of erosion controls, and inappropriate implementation and maintenance of sedimentation controls (e.g. application of hay bales in areas of channelized flow). To date, the applicant has not demonstrated the capacity to anticipate or mitigate impacts to water resources, either in application materials or on the project site.

Regarding wetland identification, it is our opinion that the delineation provided by the applicant on July 28th, 2013 was informed by inadequate data collection. The complex geography of the area results in "abrupt micro-relief" (Curtis 1959) where small pockets of wetlands are likely to occur within soils mapped as upland. A review of aerial photographs reveals multiple areas with seasonally ponding water, and other possible drainage ways, where wetlands are likely to exist within or adjacent to access roads and bulk sampling sites (Attachment 3). However, a number of these sites appear to have been left out in the materials provided to the Department. In fact, even sites with large, mapped wetlands (e.g. Wisconsin Wetland Inventory mapped wetland south of proposed bulk site 5; figure 2C of Wetlands and Waterways delineation report) lack delineation

data. Likewise, data is absent from the five sump (figure 2B, Wetlands and Waterways) and two culvert locations (figure 2C, Wetlands and Waterways) proposed in the application. Maps of wetlands on and in the vicinity of the staging areas are also lacking. Aerial photography of the proposed bulk site 3A (Figure 2A, Wetlands and Waterways) shows darker soils (indicative of ponded water or saturated soils) both within and immediately adjacent the lowest point on the topographic map. There is no data either within or directly adjacent the bulk sample site to either confirm or rule out wetlands or drainageways in this area which could be directly or indirectly impacted by this proposal.

The bulk sample sites have clearly defined project boundaries. However, the access road project area is vague. There is no data on the proposed road width and footprint of disturbance, nor a reasonable area beyond the road footprint that could be impacted by the project. Typically, in a linear project, a wetland delineation defines the width of the corridor examined for wetlands within and adjacent any disturbance. This procedure is not evident in this report. There are apparent ponded or saturated soils within or adjacent the proposed road and since the road and corridor examined have unspecified width, there is no way we can rule out wetlands or drainageways within the project vicinity based on this report. These areas could be either directly impacted by road fill, or indirectly impacted by road sediments that wash into them, as was observed during exploration activities this spring.

The proposed bulk sampling locations are on high points in the vicinity of multiple wet soils and mapped wetlands. These water resources could be impacted by sediment transported off of cleared, steeply-graded slopes should erosion and sedimentation controls be inappropriately selected, installed, or maintained. The removal of vegetation and standing timber, either by the landowner or the applicant, will only exacerbate the challenge of erosion and sediment control during snowmelt.

Note that the Tribe sought the employ a WDNR Professionally Assured Wetland Delineator to investigate these issues. However, following the communication of that intent, representatives of the applicant threatened criminal prosecution for wetland delineation activities on publically-accessible lands.

To the best of our knowledge, the applicant has also not requested a concurrence with the wetland delineation findings or a jurisdictional determination from the Army Corps of Engineers. These steps are necessary to establish that bulk sampling will not impact wetlands under federal jurisdiction absent a permit. A desk review of the applicant's wetland delineation and comparison with leaf off maps by a WDNR Assured Wetland Delineator revealed that there are likely pockets of wetlands within and adjacent to the project area. Given the likelihood of wetlands within the project area and the absence of a concurrence on the delineated boundaries or a jurisdictional determination, if the applicant proceeds as planned without a permit or jurisdictional determination from the

Army Corps of Engineers, it risks the possibility of enforcement action by citizens or government entities.

Comment (5.1): Based upon the discrepancies identified above, we encourage a more critical review of the materials provided and additional field verification during conditions which facilitate meaningful delineation and review.

Comment (5.2): The Department should require a more comprehensive inventory of surface waters in the vicinity and down gradient of the proposed activities. Knowledge of the location and characteristics of water resources is essential to determining if an activity poses a risk to high quality waters on-site and in the watershed.

Comment (5.3): The scope of the wetland delineation effort should be more clearly illustrated and described. Data should be provided for all sites likely or suspected to host wetlands to ensure that water resources in the project vicinity are adequately considered and to inform wetland and stormwater permit review.

Comment (5.4): Absent the information identified in comments 5.1-5.3, it is unclear how a well-reasoned and defensible decision has or could be made that no wetlands or waterways permits would be required.

Comment (5.5): Baseline assessments of wetland functions should be collected by the Department or provided by the applicant under a well-established protocol for all wetlands on and in the vicinity of the project area (e.g. the Department's Rapid Assessment Methodology for Evaluating Wetland Functional Values). In the absence of such baseline data, it appears unlikely that extant resources may be adequately protected or impacts defensibly identified.

Context (6): Under 40 CFR§ 131.12, states are directed to adopt an antidegradation policy for high quality waters and develop methods for ensuring that existing instream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. The state of Wisconsin undertakes the antidegradation rule in NR 207 of its Administrative Code and authorizes new discharges to Outstanding and Exceptional Resource Waters only if they maintain the existing water quality. NR 207 goes on to state that water quality based effluent limitations shall be set equal to the existing levels of these substances upstream of, or adjacent to, the discharge site. Lacking baseline data for the various potential pollutants which could be discharged, it is unclear how the Department will be capable of establishing appropriate effluent limitations.

Furthermore, EPA's Region V Guidance for Antidegradation Policy Implementation for High Quality Waters raises the need to consider cumulative effects and to apply consistent protections to all unused assimilative capacity. As noted in item 2, impacts to these high quality waters may already have occurred and additional road activity is currently proposed by the applicant (*see* item 6). The potential cumulative effects of

these various activities markedly enhance the risk to high quality waters both on-site and downstream.

Preliminary flow path analyses indicate that contaminants discharging from the five proposed bulk sampling sites have the reasonable potential to reach Devil's Creek (bulk site 4 and possibly 3A), Ballou Creek (bulk site 3A), Javorsky Creek (bulk sites 1 and 2), and the Tyler Forks River (bulk site 5). Devil's Creek, Ballou Creek, and Javorsky Creek are all Exceptional Resources Waters and class I trout streams. The Tyler Forks River is an Outstanding Resource Water and a class II trout stream.

Comment (6.1): We are concerned that permitting an activity of this scale prior to *any* water quality monitoring by the prospective mine permit applicant has the reasonable probability of creating a false baseline in the future for high quality waters protected under the antidegradation rule. We strongly recommend that the Department require monitoring by the applicant for a sufficient amount of time in order to establish a defensible background water quality for the pollutants identified in Appendix D of 40 CFR§ 122.

Comment (6.2): As in comment 4.3, effluent quality estimates should be provided in a quantitative form to facilitate the Department's review. Other relevant information we view as necessary is highlighted in item 1 (geologic contaminant potential) and comments 3.2 (groundwater conditions) and 9.4 (blasting-related contaminants).

Comment (6.3): Absent the action recommended under comment 6.2, it is unclear how the Department will set effluent limitations or determine the assimilative capacity of Exceptional Resource Waters and make a defensible determination of whether or not a significant lowering of water quality will occur.

Summary Comment (CWA 1): It is our opinion that coverage under a general discharge permit for construction site storm water runoff (General Permit # WI-S067831-4) fails in a material respect to comply with regulations promulgated under the Clean Water Act.

Summary Comment (CWA 2): Determinations on permit requirements must be based on accurate and complete information in order for the Department to be capable of articulating a rational connection between the facts found and the conclusions made. It is unclear how the Department has made such determinations absent a range of baseline information and while relevant information is still being requested from the applicant.

Other Items

Context (7): Under Chapter 29.604 of the Wisconsin Administrative Code, the Legislature found that "certain wild animals and wild plants are endangered or threatened and are entitled to preservation and protection as a matter of general state concern." The Legislature also went on to find "that the activities of both individual persons and governmental agencies are tending to destroy the few remaining whole plant-animal communities in this state.

Since these communities represent the only standard against which the effects of change can be measured, their preservation is of highest importance, and the legislature urges all persons and agencies to fully consider all decisions in this light.”

While it is acknowledged that under Wisconsin’s new ferrous mining law, the applicant is permitted to “cut, root up, sever, injure or destroy” a threatened and endangered resource in the process of bulk sampling, NR 295.45(c) requires the applicant to identify how impacts to plant and wildlife habitats will be avoided or minimized to the extent practicable. Absent any data of their occurrence and distribution on site, the Department cannot determine if such impacts will be avoided or minimized.

Comment (7.1): Braun’s hollyfern (*Polystichum braunii*; state threatened) has been verified by a trained botanist in at least 9 locations. In addition, 3 sites with Canada Yew (*Taxus Canadensis*, state special concern), one site with New England sedge (*Carex novae-angliae*, state special concern) and one site with of claspleaf twistedstalk (*Streptopus amplexifolius*, state special concern) have been verified. Note that these species may be impacted by direct (e.g. bulk sampling) and indirect (e.g. timber clearing, storm water discharges) disturbances.

Comment (7.2): Surveys conducted in the vicinity of the proposed activity (i.e. along Lake Road and Caroline Lake Road) confirm the presence of the Big Brown Bat (*Eptesicus fuscus*; state threatened), Silver Haired Bat (*Lasionycteris noctivagans*; state special concern), Eastern Red Bat (*Lasiurus borealis*; state special concern), and the Hoary Bat (*Lasiurus cinereus*; state special concern). Big Brown Bats and their habitat warrant particular attention and protection given the recent impacts of white-nose syndrome on the species.

Comment (7.3): Wood turtles (*Glyptemys insculpta*; state threatened) are known to nest in the vicinity of the proposed activities. Highway truck traffic and staging area activities may pose a significant mortality risk to nesting adults and young in this area if permitted during the spring or fall.

Comment (7.4): The American Marten (Waabizheshi; *Martes americana*; state endangered) is represented in both Ojibwe oral traditions and the clan system. This mammal is dependent upon a mosaic of mature deciduous and coniferous forests, with mature hemlock, birch, and maple playing a key role. The clearing of timber, removal of vegetation, and extraction of rock may all disrupt habitat important to this species. More specifically, such activities should not be permitted in suitable habitat between March-June in order to avoid the potential take of dependent kits unable to disperse from the area.

Comment (7.5): As discussed during our meeting on October 8th, the Bad River Natural Resources Department will gladly share (in a confidential manner) all data which may lead to the protection of threatened, endangered, or special concern species and their

habitats. We look forward to discussing the issue further with the Department's Endangered Resources staff.

Comment (7.6): However, please understand that this is in no way a comprehensive inventory of species or their occurrences in habitats which may be directly or indirectly impacted by activities proposed by the applicant. The applicant should provide inventory data from a credible source which describes the occurrence of any listed species in the vicinity of the proposed activities.

Context (8): Records indicated that the Tyler's Fork mine (at Bulk Site 5) was opened between 1850 and 1860, with limited operations until taken over by a Mr. Smith of Milwaukee (c.a. 1890). At that time, the railroad spur was installed and approximately 60,000 tons of ore were mined until the site was shut down, the spur track removed, and the project abandoned in 1907 (Cox 2005). Observations of conditions along the abandoned railroad spur (i.e. access road 3) on July 7th, 2013 indicate elevated levels of iron in stormwater discharging off that site (Attachment 4). As this was not observed elsewhere on the Ironwood formation, the most reasonable explanation for this condition is the influence of residual pollutants from past industrial activity.

This railroad spur is currently proposed for re-grading and "limited" use for bulk sampling activities. However, there are no activities identified outside the auspices of bulk sampling which would be of such scale or frequency as to justify upgrading access road 3. Rather, the proposed road work and the bulk sampling of sites 1, 2, and 5 appear to be connected elements integral to a larger plan of development (i.e. bulk sampling).

Comment (8.1): Given the historic connection and possible residual contamination linking bulk site 5 and the railroad spur proposed for re-grading, plus the relationship of activities proposed at bulk sites 1, 2, and 5 with access off that road, we request the Department to review both applications as a single project.

Context (9): In the response on July 28th, the applicant provides an estimate of pollutants potentially released into the atmosphere (i.e. emissions) under the blasting scenario using the AP-42 Compilation of Air Pollutant Emission Factors of western surface coal mining (AP-42§11.9, Western Surface Coal Mining, Oct 1998). The lack of site-specific information (i.e. per bulk sample site) makes it challenging to conduct an adequate review of the findings. However, we do wish to highlight a few elements to inform Departmental review.

First, the AP-42 emission factors used in backfill emissions calculations are rated D, *below average*. Likewise, the AP-42 emission factors used in blasting emission calculations are rated D, *below average*, and E, *poor*. AP-42 Ratings of below average or poor are generally unacceptable, except to provide an order of magnitude in estimations.

Second, meteorological conditions (e.g. inversions, wind direction etc.) have the potential to intensify dust, fume and overpressure impacts from blasting on nearby residents. If blasting is permitted, it should be conditioned such that the risk to residents is mitigated. Namely, blasting should be postponed during adverse weather (e.g. elevated wind speeds or dry conditions) and a process should be developed to identify periods when blasting is inappropriate. The determination of blasting exclusions should, at a minimum, be based on considerations of wind direction, wind speed, depth of the blast below natural ground surface, size of the blast, blast loading and design, and rock strength and competency (e.g. Peabody Energy 2011).

Comment (9.1): We recommend the AP-42 estimates be treated with caution and note that it is possible for the proposed activities to create particulate matter emissions above these calculations. This should also be considered in light of item 2 (the occurrence of asbestiform minerals).

Comment (9.2): We recommend that the Department require the preblasting survey identified under 295.48(L) in order to determine how, where, and when blasting is to be conducted, if at all.

Comment (9.3): If blasting is to be permitted, a blast management plan should be provided by the applicant which clearly identifies a process by which mandatory blasting exclusion periods are determined. The process for making that determination should include the factors identified above which may exacerbate the impact on surrounding residents.

Comment (9.4): The detonation of ammonium nitrate/fuel oil (ANFO) is often incomplete in a wet environment and can result in contamination of soils and groundwater with by-products of unreacted ANFO such as nitrate, nitrite, and ammonia (Brochu 2010). This should be considered in addition to the items discussed under the reasonable risk of contamination (items 1-3) and the implementation of the Clean Water Act (items 4-6) above.

Context (10): The applicant has proposed activities (e.g. east staging area) on lands owned by the LaPointe Iron Company and utilizing public roads.

Comment (10.1): The applicant should submit a letter similar to that provided by RGGSLand and Minerals, Ltd., stating that the proposed use of the property meets the requirement of all land owners whose property may be utilized during bulk sampling and all related activities.

Comment (10.2): Before authorizing coverage under the storm water runoff permit, DNR must determine, via a review of the company's Options to Lease, whether the company in fact holds an interest in the property that allows it to undertake land disturbing construction activity on the property.

We thank you for your time and consideration. My contact information is provided below should any item(s) exist for which you require further explanation or discussion.

Respectfully,

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 William Sande, USACE

Citations:

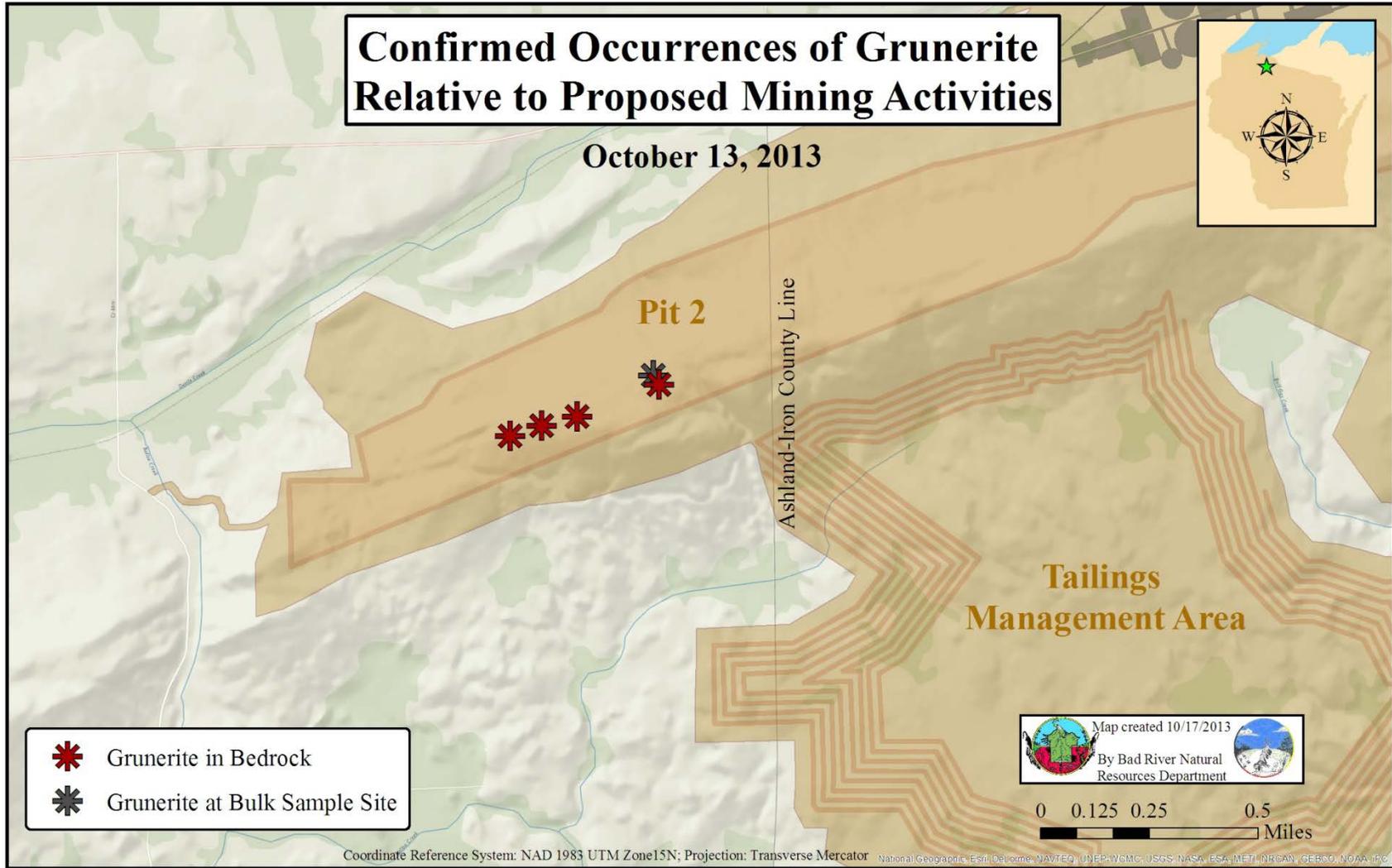
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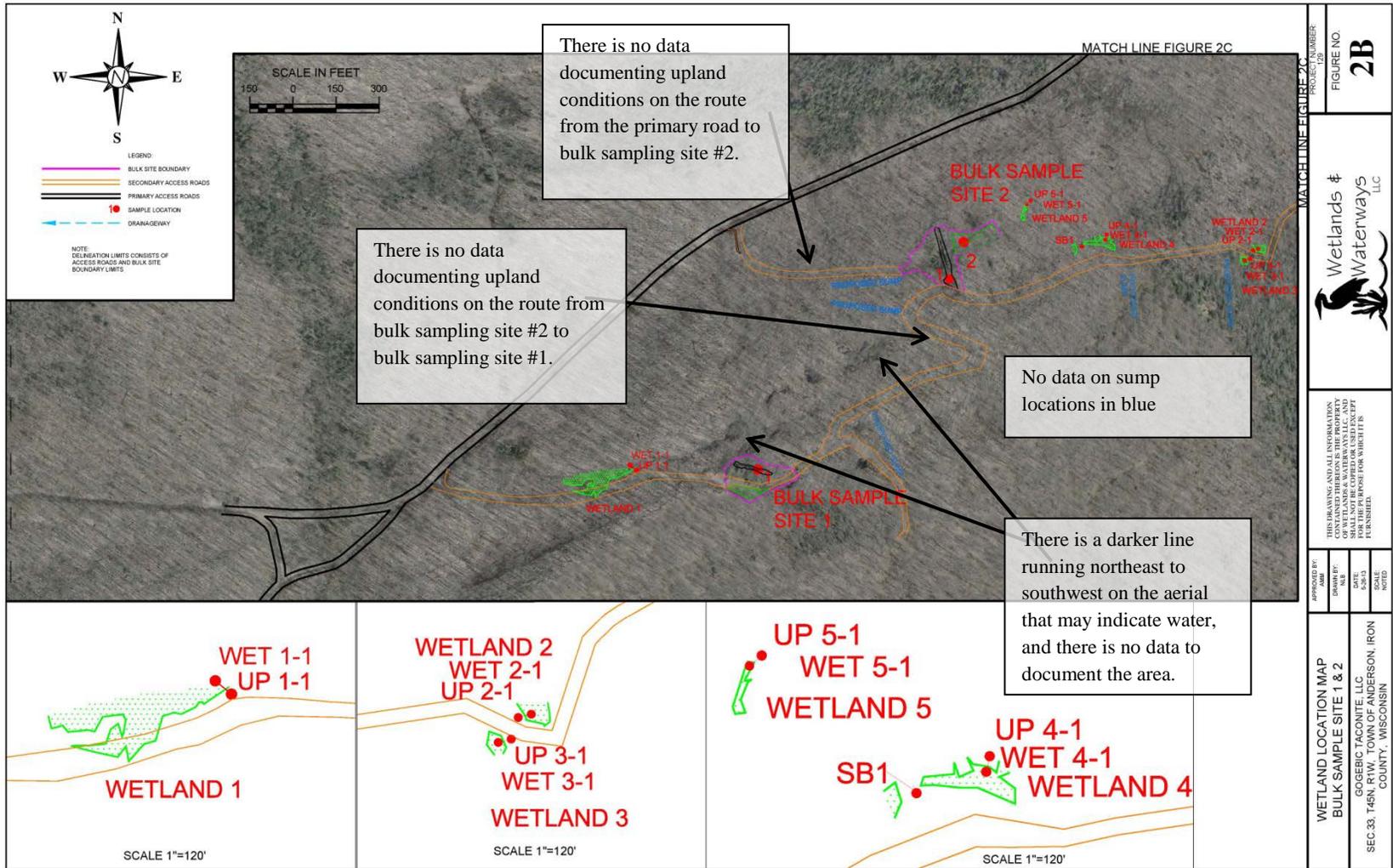
Attachment 1. A large granule of pyrite (circled in red) in rock to be sampled at the proposed bulk sample site 2 in the Norrie Member of the Ironwood Iron Formation (13Oct2013).



Attachment 2. Distribution of confirmed occurrence of asbestiform minerals in the area proposed for mining by Gogebic Taconite, LLC (October 13th, 2013).



Attachment 3. Example data inadequacies and possible wetland delineation discrepancies in the materials submitted by the applicant on July 28th, 2013.



Attachment 4. Storm water influenced by the oxidation of iron along the railroad grade leading to the historic Tyler's Fork mine (July 7th, 2013).

