



March 10, 2014

Timothy J. Myers, Engineer
Gogebic Taconite, LLC
402 Silver Street
Hurley, WI 54534

Subject: Pre-Application Notification Information Pursuant to s. 295.465(2), Wis. Stats.

Dear Mr. Myers:

Gogebic Taconite, LLC, (GTAC) submitted a pre-application notification and pre-application description related to a potential ferrous mining project in Ashland and Iron counties to the Wisconsin Department of Natural Resources on June 17, 2013. A public hearing to solicit public comments was held in Hurley, Wisconsin, on August 15, 2013. Staff from GTAC and the department conducted a series of meetings in December 2013 and January 2014, as required by s. 295.465(1), Stats., to discuss the pre-application notification and the next steps in the ferrous mining permit application process.

Pursuant to s. 295.465(2), Stats., the Department of Natural Resources is required to communicate to a potential ferrous mining permit applicant information related to a potential mining permit application and environmental impact report. Section 295.465(2), Stats., requires the department to notify a potential applicant of the following:

- The approvals, including the filing requirements for the approvals, that may be required for the potential mining project.
- The requirements for submission of an environmental impact report and for submission of any other information required by the department to prepare an environmental impact statement under s. 295.53, Stats.
- The information the department will require to enable the department to process the application for the mining permit in a timely manner.
- Any available information relevant to the potential impacts of the mining project on rare, threatened, or endangered species and historic or cultural resources and any other information relevant to potential impacts that may occur from the project that are required to be considered under s. 1.11, Stats.
- Available information to evaluate the environmental impact of the project and to expedite the preparation of the environmental impact report and the environmental impact statement, including information concerning preliminary environmental reviews, field studies, and investigations; monitoring programs to establish baseline water quality; laboratory studies and investigations; advisory services; and the timing and the processes associated with any necessary consultations with other state or federal agencies and within the department, such as those required for endangered resources and cultural resource consultations and approvals.

The pre-application description provided by GTAC contains a description of the major components of the potential mining project. Given the preliminary nature of the potential project, the description is generally presented on a conceptual level, with minimal detail regarding design, construction and operation of the project. In addition, there are a number of significant project elements that are not discussed, such as the source of water for the project, wastewater discharge location, sources of electricity and natural gas, utility corridors and transportation corridors.

The information concerning necessary approvals and required information specified in this letter is necessarily limited to the conceptual level of detail you have provided in the pre-application description and in the pre-application meetings. We encourage you to continue to work with us and to provide us with more information as the project design evolves, as details of the project are developed, and as analysis of environmental baseline data proceeds. We fully expect that at such time as we receive additional details concerning the potential project, there will be a need for the department to modify or supplement the information requirements specified in this letter.

I. Potentially Required Permits and Approvals

Following is a list of permits and approvals issued by the department that may be required for the potential mining project. Depending on the final design and configuration of the project some of these approvals or permits may not be needed and others that are not listed below may be necessary.

A. Mining

- Mining Permit (s. 295.47, Stats.)
- Mining Plan (s. 295.48, Stats.)
- Reclamation Plan (s. 295.49, Stats.)
- Monitoring Plan (ss. 295.48(3)(hm), 295.64, 295.645 Stats.)
- Mining Waste Site Feasibility Study and Plan of Operation (s. 295.51, Stats.)

B. Air

- Air Pollution Construction Permit and an Air Pollution Control Operation Permit (ss. 285.60, 285.61, 285.62 and subch. VII of ch. 285 Stats.)

C. Water

- Wetland Individual Permit (s. 295.60, Stats.)
- Wetland General Permit (s. 281.36(3g), Stats.)
- Approvals for Navigable Water Activities (s. 295.605, Stats.)
- Water Withdrawal Permit (s. 295.61(2), Stats.)
- Water Use Permit Required in the Great Lakes (s. 281.346(4m), Stats.)
- Registration and Water Use Reporting (s. 281.346(3), Stats.)
- Facility Potable Water Supply System Approval - Non-Transient Non-Community Public Water Supply System (s. 281.41, Stats., and s. NR 811.08, Wis. Adm. Code)
- Mining Waste Site Water Supply Well Setback (s. 295.51(1m)(c), Stats.)
- Monitoring Well Construction Exceptions (s. NR 141.31, Wis. Adm. Code)
- Mining Waste Site Exemptions to ch. NR 140 Groundwater Quality Standards (s. 295.645(8), Stats.)
- Wastewater Discharge Permit (s. 283.31, Stats. and subch. IV of ch. 283 Stats.)
- Storm Water Management Permit (s. 283.33, Stats. and ch. NR 216, Wis. Adm. Code)

Wastewater Treatment Facility Preliminary Engineering Report (s. 281.41, Stats., and ch. NR 108, Wis. Adm. Code)
 Permit to Construct, Operate, and Maintain a Dam (ch. 31, Stats. and chs. NR 116, 333, Wis. Adm. Code)

D. Forestry

County Forest Withdrawal Approval (s. 28.11, Stats.)
 Managed Forest Withdrawal (s. 77.88, Stats.)

E. Endangered Resources

Endangered Resources Incidental Take Permit or Authorization (s. 29.604, Stats., and ch. NR 27, Wis. Adm. Code)

Please refer to the cited statutes and codes for information that is required for permit and approval applications. Information that is required by statute or rule should be provided for a complete permit application. Further description of some of the application requirements is provided in section IV below.

II. Environmental Impact Report

The Environmental Impact Report (EIR) will form the basis on which the department will develop the Environmental Impact Statement for the project as required under s. 295.53, Stats. Under s. 295.53(3), Stats., the EIR must include a description of the proposed mining project, a characterization of the present environmental and socioeconomic conditions in the area around the proposed project and the area which could be affected by the project, a discussion of alternatives to the proposed project including alternatives to major project elements, and a summary of the anticipated environmental and socioeconomic impacts that may occur as a result of the project. The EIR must also include details of any wetlands mitigation program under s. 295.60(8), Stats., any measures for navigable waters under s. 295.605(4), Stats., and any proposed changes to the forest designations specified in s. 295.53(4)(c), Stats.

The department has provided additional information and recommendations in Attachment A regarding the EIR and what information may reasonably be necessary for the department to evaluate the proposed mining project and its environmental effects, as required by s. 295.53, Stats. The department understands that you intend to proceed with data collection through a phased, iterative approach – in other words, the company plans to start with data collection in closest proximity to the proposed mine, complete preliminary data and impact analyses, determine additional data needs and repeat the data collection and analyses until all required information has been collected. This is a valid approach if it includes ongoing consultation and information exchange with the department. However, it can lead to an extended period of data collection in that some needed information may not be identified for collection until quite some time into the process.

In order to assist you as you undertake development of your potential mine project, the department has presented a comprehensive outline and discussion of the elements that might be required to fully assess the project. Many of the data needs identified in this letter are dependent on future definition of the area of potential impacts related to the project. Since the precise area of potential impacts is not predictable at this early stage in your project, you may want to devise your data collection programs to include a larger potential impact area so that you can complete your data collection more expeditiously and so that you do not miss opportunities for data collection early in the project. While the potential impact areas may change as data collection and analyses are conducted, a more comprehensive outline is presented in an effort to minimize delays in the overall process related to identification of future data needs.

The proposed EIR outline that is included as Attachment A sets forth a structure that is consistent with the outline that the department anticipates could be used for an EIS. Following a similar outline for the EIR will facilitate efficient development of the EIS, thereby ensuring compliance with the statutorily mandated review/approval timelines. As with other recommendations in this letter, we look forward to working with you as you develop a more detailed understanding of the project and current environmental conditions in and around the project. Our recommendations regarding the EIR and baseline data needs may change as you provide us with more information about baseline conditions and your project plans.

We intend to continue our efforts to coordinate environmental review of the project with the U.S. Army Corps of Engineers and U.S. Environmental Protection Agency, as required by ss. 295.465(5) and 295.53(4)(e), Stats. In order to satisfy both federal and state environmental review requirements, your EIR should evaluate direct, secondary and cumulative environmental effects (or impacts). The affected environment is defined as the natural or physical environment, including the components, structures, and functioning of ecosystems, and the relationship of people with that environment, including aesthetic, historic, cultural, economic, social, and human health-related components. Secondary effects are reasonably foreseeable indirect effects caused by an action or project later in time or farther removed in distance, including induced changes in the pattern of land use, population density or growth rate and related effects on the human environment. Cumulative effects are compounding effects on the environment resulting from repeated or other proximal actions, activities or projects.

III. Information Required For The Department's Review

The department provides additional information below regarding some of the approvals that may be necessary. This information may be helpful to the department in processing an application for a mining permit and for other approvals in a timely manner and in completing an EIS in a timely manner.

A. Mining

1. Mining Permit Application

The process for filing an application for a mining permit is set forth in ss. 295.47 and 295.57, Stats. A mining permit application and EIR may be submitted no earlier than 1 year after the filing of a preapplication notice. The law contains detailed requirements and required demonstrations for a mining plan (s. 295.48, Stats.), a reclamation plan (s. 295.49, Stats.), and a mining waste site feasibility study and plan of operation (s. 295.51, Stats.).

The law contains deadlines for department consideration of an administratively complete mining permit application. At the time the mining permit application is filed, you may specify a deadline under s. 295.47(1)(am), Stats., for the department to act on a mining permit application that is more than 420 days after the day on which the application is administratively complete.

2. Mining Waste Site Feasibility Study and Plan of Operation

The feasibility study and plan of operation submittal must include a thorough discussion and analyses of all project waste materials and a complete detailed description of the design, construction, operation and closure of waste disposal and storage facilities necessary for the mining project. All information specified in ss. 295.51(2) through (6), Stats., must be submitted as part of the feasibility study and plan of operation for the mining waste facility. In addition, information documenting the location of the facility in the context of the location criteria specified in s. 295.51(1m), Stats., shall also be submitted. The mining waste site report must also include sufficient information to support the required demonstrations delineated in s. 295.51(7), Stats.

All mining wastes that are anticipated to be disposed of at the mining waste facility must be thoroughly characterized in accordance with the provisions of s. 295.51(3), Stats. Information must be submitted to demonstrate that any material used in the waste characterization studies is representative of the materials that may be generated and disposed of during the mining operation. This will necessitate establishment and submittal of sufficient geologic information and interpretation to document the geology of the ore body and other geologic materials in the area. Future consultation with the department will be necessary as the waste characterization study design is being developed to ensure the waste samples are representative. The geologic information will be an important part of the mining waste facility feasibility report submitted under s. 295.51, Stats. Mineralogical evaluation of the waste materials as required under s. 295.51(3)(b), Stats., should specifically address whether asbestiform minerals are present and, if so, the distribution in the waste materials in addition to the overall mineralogical characterization of the materials.

In addition to the explicit requirements of s. 295.51, Stats., it is also likely that a comprehensive evaluation and analysis of the mining waste facility will require geochemical modeling of the wastes and contaminant transport modeling of leachate or seepage from the waste facility and the pits. Such modeling is necessary to develop projections of the long-term characteristics of the waste material, to assess possible surface water and groundwater quality impacts and ultimately to demonstrate compliance with the applicable surface water and groundwater standards as required under s. 295.51, Stats.

3. Reclamation Plan

The reclamation plan submitted as part of the Mining Permit Application must include all of the information specified in s. 295.49(1), Stats., sufficient information to demonstrate compliance with all provisions specified in s. 295.49(2), Stats., and documentation to meet the requirement under s. 295.49(3), Stats. The reclamation plan must clearly depict the final land use(s) for the mining site and must describe in detail the materials, methods and processes that will be employed to reach those designated land uses, in conformance with s. 295.49, Stats. In addition, as required under s. 295.49(1)(g), an estimate of projected costs of reclamation must be provided. This estimate must be of sufficient detail to determine the appropriate amount of the reclamation bond required under s. 295.59(1)(c), Stats.

The following information is recommended as part of the reclamation plan or environmental impact report, as appropriate, for purposes of reclamation planning and implementation:

- a) A description of the current land uses at the proposed mining site as well as in contiguous areas.
- b) Available information on the area's biological resources to address the relationship of existing vegetation, current plant communities, and wildlife utilization and a similar analyses as related to expected post-mining conditions.
- c) Plant species inventory including information on plant species present, plant diversity, density, and distribution, their relative abundance, presence and distribution in various contiguous plant communities. Provide a pre-mining analysis on the overall productivity of vegetative cover for the community/communities to post-mining vegetation and wildlife habitat for portions of or areas near-by or adjacent to the mining site.
- d) Details of the general revegetation plan including site operation, proposed seed mixes, seeding rates, soil amendments and mulch type and rate or application as well as any other revegetation measures that may be needed. Also, as appropriate, a proposal for specific variations to the general revegetation plan due to different post-mining land use(s) on the mining site.
- e) Quantitative success criteria evaluation of revegetation at the mining site with specific standards applicable to each unique habitat type created during final reclamation.
- f) Detailed discussion concerning topsoil and other soil material present on the site. In addition to a detailed inventory of the specific materials (including estimates of volumes of different soil materials), information concerning salvage, storage and use of all salvaged material should be included.

Additional recommendations for the EIR relating to the mining plan, reclamation plan, and mining waste site feasibility study and plan of operation are included in Attachment A.

B. Air Quality

The following information will be required as part of the permit application for the air pollution construction permit and an air pollution control operation permit required under subch. VII, ch. 285, Stats., and ch. NR 405, Wis. Adm. Code.

1. Identification of all potential emissions unit to include:
 - Description of emissions unit
 - Expected emissions from emissions unit
 - Calculations for all expected emissions
 - Identification of applicable regulations for each emissions unit
 - Proposed date of construction
 - Proposed emissions controls
 - Proposed compliance demonstration for all applicable requirements
 - Information submitted on department approved forms as required under s. NR 406.03(1m), Wis. Adm. Code
2. All analyses required under ch. NR 405, Wis. Adm. Code, and all necessary information as required under s. NR 405.12(1), Wis. Adm. Code, to include, but not limited to:
 - s. NR 405.08, Wis. Adm. Code, Control technology review
 - s. NR 405.09, Wis. Adm. Code, Source impact analysis, including impact of emissions in comparison to the one-hour sulfur dioxide and the one-hour nitrogen dioxide National Ambient Air Quality Standards as well as the impact of secondarily formed ozone and fine particulate matter
 - s. NR 405.11, Wis. Adm. Code, Air quality analysis, including an assessment of the pre-construction air quality around the proposed facility and possible preconstruction onsite monitoring
 - s. NR 405.12, Wis. Adm. Code, Source information
 - s. NR 405.13, Wis. Adm. Code, Additional impact analysis
 - s. NR 405.14, Wis. Adm. Code, Class I area impact analysis, including all Federal Class I areas within 300 km of the proposed facility
 - s. NR 405.19, Wis. Adm. Code, Forest County Potawatomi Class I analysis.
3. Any determination required under s. NR 424.03, Wis. Adm. Code.
4. Any ambient air quality or emission control determination required under ch. NR 445, Wis. Adm. Code.
5. Any emission control determination required under s. NR 446.03(2)(a), Wis. Adm. Code.
6. A dispersion modeling protocol submitted prior to the application for department review and agreement.
7. Contact with all Class I area federal and tribal land managers for each Class I area located within 300 km of the proposed mine as identified on this map:
<http://dmr.wi.gov/topic/AirPermits/documents/300kmClassIAreas.pdf>.

Recommendations for evaluating air quality impacts in the EIR are provided in section 2.1.1 of Attachment A.

C. Water

Wetlands

1. The wetland boundary of all wetlands within the mine site and potentially affected wetlands in the mine vicinity should be delineated consistent with the U.S. Army Corps of Engineers 1987 Wetlands Delineation Manual and any final regional supplement to the manual. The department recommends the use of assured wetland delineators if practicable. Consultation with the Corps of Engineers and the department should occur on the delineation and mapping procedures before beginning field work.
2. A practicable alternatives analysis must be completed for all impacts to wetlands in the mine site and potentially affected wetlands in the mine vicinity. This must include measures to avoid and minimize impacts to wetlands following the standards in s. 295.60(5).
3. A functional assessment of all wetlands within the mine site and potentially affected wetlands in the mine vicinity must be completed. The Wisconsin Rapid Assessment methodology (WRAM), NWI+ Web Mapper (mapping), and a Floristic Quality Assessment (FQA) are recommended methodologies. These methods are further described in Attachment C. Requirements for wetland functional assessments are set forth in s. 295.60(4)(c), Stats. The wetland water quality standards and functional values that must be addressed are set forth in s. 295.60(5)(a), Stats.
4. A wetland individual permit will be required, which calls for a mitigation plan as outlined in s. 295.60(8) and a schedule for implementing the project. Wetland compensatory mitigation information can be located on our website at: <http://dnr.wi.gov/topic/Wetlands/Mitigation/>. The mitigation plan must be developed using a watershed approach, considering the loss of wetland function resulting from the project. A demonstration of the watershed approach has been conducted by The Nature Conservancy in the Duck-Pensaukee Basin, an 8-digit Watershed Management Unit in northeastern Wisconsin (Miller, et al 2011), which can serve as a useful reference for developing the mitigation plan.

Navigable Waters

1. Waterway mapping should be conducted of all navigable streams and navigable waters (as defined in s. 30.10, Stats.) that are located on the mine site and mine vicinity. Consultation should occur with the department before beginning field work.
2. The environmental impact report and/or navigable water approval application must address any impacts to navigable water activity and meet all the requirements in s. 295.605(4), Stats., including a plan containing proposed measures to meet the requirements of s. 295.605(4)(a), Stats., along with a proposed schedule for implementing the measures.
3. As provided by s. 295.605(1m), Stats., ch. 30, Stats., permits will be required if an application for a navigable water activity is filed after the department issues a mining permit. The department's web site contains application materials for ch. 30 permits at: <http://dnr.wi.gov/Permmits/Water/>.

Wastewater and Stormwater

1. All wastewater sources must be identified, and all permitted wastewater sources must be characterized with information on the quality and quantity. The following list identifies potential wastewater sources that could require a WPDES wastewater permit in order to discharge to waters of the state:

- Pump testing groundwater.
- Pit dewatering.
- Process wastewater from taconite mill - dewatering of tailings.
- Noncontact cooling water.
- Contact cooling water.
- Boiler blowdown.
- Cooling tower blowdown.
- Potable and boiler make-up water treatment.
- Wet scrubbers used for air emission controls.
- Sanitary wastewater.
- Water transfers of surface water or groundwater from one water body to another.

2. A permit may not be needed if the wastewater is entirely reused or recycled. In the case of the pump testing water, a permit may be unnecessary if the groundwater does not contain any pollutants of concern and the water is discharged back to the groundwater by soil absorption.

3. Discharges of storm water from both land disturbing construction activities and industrial activities will be regulated together under an individual permit. The department may choose to regulate disparate activities like rail/utility corridors/offsite mitigation/etc. separately in the individual permit or under a construction site storm water general permit.

4. Because any discharge from the mine project would be considered a new discharge, the effluent quality is unknown. Information on the characteristics of the potential wastewater discharges, both the quality and quantity, is necessary to enable the department to determine the appropriate effluent monitoring parameters and limitations. Data from a similar mining facility with equivalent ore properties, similar wastewater and stormwater discharges and treatment systems may be useful in the department's evaluation to establish water quality based effluent limits. In addition, because of the potential for unique ore characteristics in the Penokee deposit that could result in site specific wastewater and stormwater characteristics, a study must be conducted to characterize the anticipated wastewater, stormwater, and treatment system effluent quality.

5. The department's web site provides information on WPDES wastewater permits with instructions for completing the eApplication. For a new facility, the first step is to complete the pre-application form to enable, set up and customize the eApplication form. The effluent monitoring tables that are part of the pre-application may include the pilot treatability results because no actual effluent data is available for a new discharger.

6. For the WPDES application, the ore mining industrial category specifies the following parameters under the primary industrial process wastewater classifications: (a) common pollutants, (b) metals, cyanide, hardness, and phenols, (c) acid extractable priority pollutants, and (d) any other pollutant that may potentially be present such as asbestos, sulfate, and sulfide. The comprehensive list of parameters for which data is required in the permit application can be found on the department's eApplication web site <http://dnr.wi.gov/topic/wastewater/Permits.html>. The list of substances to be evaluated for baseline conditions and establishing effluent limitations may change as the results of the geologic characterization of the ore body and characterization of waste materials from the mining project are completed.

7. The web-based eApplication will need to be supplemented with several supporting documents that must be submitted before the application is determined to be complete. The following information must be included:

- Water balance diagrams showing water inputs, uses, recycling, wastewater sampling points, outfalls and estimated flows for each element in the water balance.
- Description of proposed wastewater treatment systems with a process flow diagram. Indicate whether the discharge is to a surface or groundwater outfall, or if the effluent is recycled and reused.
- Water treatment additive information. Provide item (a) for process wastewater and treatment system chemicals. Provide items (a) through (e) for wastewater that discharges directly without treatment (example, noncontact cooling water).
 - (a) Commercial name of the additive, function, and the Material Safety Data Sheet (MSDS) that provides a description of the product and the active ingredients.
 - (b) Additive dosage concentration and how it will be applied.
 - (c) Estimated additive discharge concentration that takes into account dilution. It must be assumed the additive is conservative and none of the product is consumed or lost.
 - (d) Proposed usage frequency (continuous or slug dose).
 - (e) Aquatic toxicity information (for surface water discharges), consisting of at least one 48-hour LC₅₀ or EC₅₀ value for daphnia magna or Ceriodaphnia dubia, and at least one 96-hour LC₅₀ or EC₅₀ value for either fathead minnow, rainbow trout, or bluegill. The department will only consider toxicity information on the whole product, not just the active ingredient or component of a product.
- Site map showing the location of all surface water and groundwater outfalls, wastewater treatment systems, and any other features relevant to wastewater and stormwater discharges.
- Disposal options for solids and sludges from wastewater treatments system.
- Source of water supply for the processes that use water and estimated volumes.
- Water intake design if surface water is used as a water source. Water intakes may be subject to the EPA 316 (b) water intake regulations that require controls to minimize impingement and entrainment of fish and shell fish.
- Surface water background water quality data to define the current baseline conditions of surface waters that may receive a wastewater and stormwater discharge. The antidegradation requirements in ch. NR 207, Wis. Adm. Code, impose effluent limitations set to background concentration of outstanding and exceptional resource waters and specify the information needed in the application for determining significant lowering of water quality.
- Groundwater background water quality data to define the current baseline conditions of groundwater in the vicinity where a discharge of wastewater to groundwater may occur.
- A site specific erosion control plan that details the best management practices that will be implemented to keep pollutants from being discharged into waters of the state as a result of land disturbing construction activities. This submittal should include all the required elements of s. NR 216.46, Wis. Adm. Code.
- Description of proposed stormwater treatment systems.
- A site specific stormwater management plan that contains all the required elements of ss. NR 216.47 and NR 151.121, Wis. Adm. Code.
- A stormwater pollution prevention plan that contains all the required elements of s. NR 216.27, Wis. Adm. Code.
- Water treatment additive information including application rates that conform to calculated use restrictions (only if introduced into stormwater and discharged).

5. Under s. 283.31(3), (4), Stats., the department must prescribe conditions for WPDES permits to assure compliance with applicable water quality standards. In addition to the state water quality standards, the Bad River Band of the Lake Superior Chippewa have their own water quality standards that were approved by EPA October 5, 2011. The web link below provides access to the Bad River Band's water quality standards: http://www.badriver-nsn.gov/images/stories/docs/bad%20river%20wqs_final_7-

6-11a.pdf. In determining permit limitations, the department must take into account whether a discharge has a reasonable potential to cause or contribute to a water quality standard exceedance as the receiving water enters the boundary of the Bad River Band reservation. There are some water quality standards the state either lacks or that are less stringent than the Bad River Band's water quality standards. Areas of discrepancy between Wisconsin and the Bad River Band include the following: thermal discharges, antidegradation, flow quantity, pH, dissolved oxygen, sulfate, mercury, designated uses, turbidity, and E. coli.

6. The plans and specifications for wastewater treatment systems, which may be necessary for some of the wastewater sources identified, must be submitted to the department for approval in accordance with ch. NR 108, Wis. Adm. Code. Plan submittals must include drawings and an engineering report that contains a description of the treatment system with details on the treatment process necessary to comply with the permit effluent limitations. Reviewable projects also include plans for compliance determining devices such as flow meters, effluent sampling equipment, and groundwater monitoring wells installed around a groundwater outfall for a soil absorption or land treatment system regulated under ch. NR 214, Wis. Adm. Code. The web link below provides further information:
<http://dmr.wi.gov/topic/wastewater/SewerageSystems.html>.

Drinking Water & Groundwater

1. In conjunction with the mining waste site Feasibility Study and Plan of Operation, the mining permit applicant must conduct a baseline groundwater quality monitoring program in the area of potential impact of the proposed mine and the mining waste site to establish the characteristics of the concentrations of substances in water before mining begins at the mining site [s. 295.51(4)(h), Stats.]. For geologic characterization at a mining waste site a sufficient number of boreholes is required to represent geologic conditions at the site, at a minimum at least 1 borehole per 80 acres (8 per square mile), is required [s. 295.51(4)(b), Stats.]. We understand that GTAC's consultant proposes to initially install approximately 20 monitoring well nests in the glacial drift/unconsolidated aquifer (approximately 60 individual wells) and 8 multilevel monitoring wells (with 8 -10 monitoring points per well) in the bedrock aquifer. Additional sampling may be required based on the results of this work. Sampling of private water supply wells will also be required as described below. Issues may include whether the monitoring is sufficient to cover the extent of potential effects of mine construction and operation. Modeling will be used to make this determination; sufficient groundwater baseline monitoring must be conducted to fully meet the data needs of the models.

2. A thorough assessment of the characteristics of the local groundwater flow system in glacial drift/unconsolidated aquifer must be conducted. This assessment should include aquifer geology, groundwater depth, horizontal groundwater flow direction(s), presence/location of groundwater divides, vertical component of groundwater flow (directions, gradients, etc.), aquifer characteristics (porosity, hydraulic conductivities, gradients), groundwater velocities, locations of areas of groundwater recharge/discharge, etc.), including sufficient hydrogeologic information to complete engineering and hydrologic modeling required by s. 295.51, Stats. Organized narrative summaries with citations to supporting data provided in appendices will enable timely review.

3. A thorough assessment of the characteristics of the local groundwater flow system in the bedrock aquifer should be conducted. This assessment should include aquifer geology, groundwater depth, horizontal groundwater flow direction(s), presence/location of groundwater divides, vertical component to groundwater flow (directions, gradients, etc.), aquifer characteristics (fracture spacing/density, fracture orientation and aperture, rock porosity, hydraulic conductivities, groundwater gradients, etc.), groundwater velocities, groundwater recharge/discharge locations, etc. Assessment of groundwater flow within the Precambrian bedrock aquifer at the site may require use of advanced geophysical techniques –

proposed techniques may be specified based on results of initial monitoring. Organized narrative summaries with citations to supporting data provided in appendices will enable timely review.

4. A thorough assessment of how the local groundwater flow system functions within the regional glacial drift aquifer and regional Precambrian bedrock aquifer system must be conducted. This assessment should include flow directions, recharge and discharge areas and groundwater divides.
5. A thorough assessment of baseline groundwater quality must be conducted. This assessment should include major anions and cations, total and dissolved metals, appropriate inorganics (silica, sulfur, nitrogen, phosphorous, fluoride, arsenic, asbestos, etc.), radionuclides (uranium, radium, etc.), field parameters (pH, temp., conductivity, dissolved oxygen, etc.), and indicator/welfare related parameters (total dissolved solids, chloride, hardness, alkalinity, total organic carbon, etc.). Sampling parameters, analytical testing and reporting should be done in accordance with specific statutory requirements. Use of consistent reporting units must be specified.
6. A thorough assessment of baseline groundwater quantity must be conducted. This assessment should include aquifer characteristics for each aquifer such as yield, storage coefficient, transmissivity, drawdown, etc.
7. A thorough assessment of existing water supply wells (public and private in the area) must be conducted. This assessment should include locations, construction, well yields, baseline water quality, etc. Based on initial monitoring well results the geographic area needed to assess potential impacts on public and private water supply wells may be specifically delineated.
8. A thorough assessment of groundwater base flow contribution to nearby named and unnamed surface waters and wetlands must be conducted. Impact assessment should project impacts to all surface water bodies impacted due to groundwater drawdown and changes in groundwater flow patterns as a result of mining activities.
9. A thorough assessment of bedrock geology must be conducted to identify the presence and characterization of fracture systems present within the bedrock rock matrix and to provide information sufficient to evaluate the potential of the fracture systems to transmit groundwater. This information will be needed for development of an adequate mine site conceptual groundwater flow model. It is our understanding that the conceptual groundwater flow model will be used to design a MODFLOW numerical groundwater flow model of the mining area. The mining area MODFLOW groundwater model should be used to generate, at a minimum, groundwater flow background/baseline conditions prior to mine operation, and groundwater flow conditions during mine site dewatering, during active mining operation, during mine pit filling and recovery and after completion of mine closure and reclamation until groundwater levels stabilize.

Surface Water Monitoring

1. A thorough assessment of the connectivity of surface, ground water and wetlands throughout the project area and the linkage between the physical, chemical, and biological components of these resources should be conducted. This connectivity should be fully described in the EIR and be addressed in a monitoring strategy to fully assess any environmental impacts.
2. A thorough assessment of all potentially affected waters of the state must be conducted. (See s. 283.10(20), Stats., for a definition of "waters of the state".) Baseline information should be collected during the appropriate season using accepted methods and should be collected in such a way that the information is useful in preparing a long term monitoring strategy.

3. GTAC has proposed a baseline monitoring program that uses a tiered structure to represent different levels of frequency and parameter combinations. Tier 1 has the most frequent and inclusive list of parameters, whereas Tier 3 had the least sampling frequency and the smallest list of parameters. The department recommends the following concerning water monitoring:

- The purpose and design rationale for any proposed monitoring plan should be defined, including objectives, design, quality assurance data management, data analysis/assessment, reporting, programmatic evaluation, resources.
- The criteria for site selection, monitoring, parameters, and sample frequency should be defined.
- Lake stations for water quality sampling should be established at the deepest point of the lake, not the outlet of the lake.
- Lakes within the immediate vicinity of the mine that are vulnerable to groundwater drawdown impacts and surface runoff should be monitored. Lakes vulnerable to aerial deposition and metals deposition should be considered and could also serve as references for lakes closer to the mine.
- A parameter list for surface water monitoring should be submitted for each site, or group of sites. The department may also propose additional biological and sediment sampling.
- Weather stations should be established at the mining site to monitor rain fall, wind direction and speed, temperature, atmospheric pressure, and other meteorological data. These weather stations should also monitor atmospheric deposition of mercury, sulfate, particulate matter (PM10), and other contaminants and should conform to the US National Atmospheric Deposition Program (NADP).
- Chemical and flow data should be analyzed during the monitoring phase and if results are highly variable more frequent sampling should be conducted.
- A baseline and long term wetland assessment strategy will be necessary to properly evaluate the project.
- Baseline trend data over multiple years and seasons will be necessary to define data variability.
- Submission of work plans to the department for review would be necessary to ensure the data that is collected will meet the department's needs for preparation of the EIS and for permit development.

Additional recommendations for the EIR relating to wetlands, surface water, and drinking and groundwater impacts are included in Attachment A. Examples of existing department database information on wetlands, surface water and groundwater resources are included in Attachment B. Additional recommendations related to protocols and monitoring are included in Attachments C and D.

D. Forestry

1. County Forest Land Withdrawal Application

The preapplication notice indicates that the project may use approximately 3,300 acres of land that is currently owned by Iron County and enrolled as county forest, under s. 28.11, Stats. The department understands that GTAC has secured an option to lease these lands from Iron County. Prior to executing such a lease or starting to mine or conduct any other activities that are inconsistent with the county forest law on lands currently enrolled as county forest, any lands to be impacted will need to be withdrawn from the county forest pursuant to s. 28.11(11), Stats., and ch. NR 48, Wis. Adm. Code.

Under s. 295.41(3)(a)(1), Stats., the department's decision on an application to withdraw county forest land entered under s.28.11, Stats.,¹ must be incorporated into the department's decision on all other authorizations issued by the department on a mining permit, if a withdrawal application is submitted as part of a mining permit application.

Pursuant to s. NR 48.03, Wis. Adm. Code, an application for withdrawal of lands enrolled as county forest under s.28.11, Stats., must be on department forms (see Form 2453-3) and shall include, unless waived by the department in writing, the following information in connection with the land subject to the application:

- (a) The legal description of the land, the acreage proposed to be withdrawn and the acreage remaining following withdrawal in the affected quarter-quarter section, government lot or fractional lot.
- (b) The proposed use of the land.
- (c) A map showing the location of the land.
- (d) The names and addresses of persons who have requested the county to withdraw the land and the names and addresses of prospective purchasers of the land if the withdrawal is approved.
- (e) Any reservations on the transfer of title, such as a reversionary clause, or other mechanisms to assure compliance with restrictions or conditions of withdrawal.
- (f) A copy of the county resolution authorizing the filing of the application.
- (g) The attributes of the county forest site that relate to the requested use and a comparison of the site and its attributes with other economically and environmentally feasible sites or areas if other sites or areas were considered.
- (h) A description of the potential environmental and forest related benefits and impacts affecting the land.
- (i) The historical and archeological background of the land based upon county records and a site examination by county personnel.
- (j) Knowledge of the presence of endangered or threatened species of plants or wild animals on the land or in the waters on the land.
- (k) The consideration to be received for the land. If land or money or both is to be received in exchange for the land, the county shall describe proposed use and disposition including a description and map of any proposed trade lands to be exchanged with the county.
- (l) The present and future benefits of the proposed withdrawal action as identified by the county at the time of the application and the decision making process used to identify those benefits.
- (m) Other information deemed necessary by the department.

2. Managed Forest Land Withdrawal Application

The preapplication notice preliminarily included roughly 3,500 acres of lands enrolled in the Managed Forest Law (MFL), under subch. VI, ch. 77, Stats. Lands that are not used to encourage the management of private forest lands for the production of future forest crops for commercial use through sound forestry practices are not eligible for continued enrollment in the MFL program (s. 77.80, Stats.).

¹ Section 28.11(11)(a)(1), Stats. states that, "The county board may by resolution adopted by not less than two-thirds of its membership make application to the department to withdraw lands entered under this section. The county board shall first refer the resolution to the county forestry committee, which shall consult with an authorized representative of the department in formulating its withdrawal proposal. The county board shall not take final action on the application until 90 days after referral of the application to the forestry committee or until the report of the forestry committee regarding the application has been filed with the board."

Landowners may voluntarily submit a request for withdraw lands from enrollment in MFL under s. 77.88(3), Stats. The Declaration of Withdrawal Managed Forest Law (Form 2450-140) can be found on the internet at <http://dnr.wi.gov/topic/ForestLandowners/documents/2450140.pdf>. DNR is required to issue the order for withdrawal within 30 days, however the withdrawal order will not become effective until the following January 1. To begin practices that are incompatible with the practice of forestry prior to January 1, landowners must fulfill all financial obligations with the MFL program by paying the withdrawal tax and fee.

Landowners may request that the Department of Revenue (DOR) develop a withdrawal tax estimate and submit this estimate with the Declaration of Withdrawal Managed Forest Law (Form 2450-140). The Request for Estimate of Withdrawal Tax for Managed Forest Land (MFL) can be found at <http://www.revenue.wi.gov/forms/govtvc/pr-296f.pdf>. The cost of obtaining a withdrawal tax estimate from DOR is \$5.00 per acre or partial acres or \$100, whichever is greater.

Recommendations for the EIR relating to forestry impacts are included in section 2.2.4.6. of Attachment A.

E. Endangered Resources

1. Endangered Resources (ER) Review

An Endangered Resources (ER) Review is a screening of the proposed project area for potential impacts to endangered resources. The EIR Outline in Attachment A includes an ER Review in section 2.1.7.3. This review includes information on rare plants and animals, including state and federally listed species, high quality natural communities and other endangered resources that may be impacted by the proposed project. If there is a question regarding the presence/absence of a particular species, applicants have the choice of conducting surveys for the species or proceeding directly to an Incidental Take Permit/Authorization. The ER Review will also include recommendations to help projects comply with Wisconsin's Endangered Species Law, the Federal Endangered Species Act and other laws and regulations protecting endangered resources.

Additional information on ER Reviews including the request form and filing requirements can be found here: <http://dnr.wi.gov/topic/ERReview/Review.html>. Information required to process an ER Review includes a request form, map delineating the project boundary, site photos, relevant reports/assessments and an application fee. Please note that if more than 1 year has passed since an Endangered Resources Review was conducted, the list of species present in the project area will need to be re-checked prior to initiation of the project.

2. Incidental Take Permit/Authorization (ITP/A)

If impacts to any non-exempted E/T species are anticipated, an Incidental Take Permit/Authorization (ITP/A) will be required. An ITP/A allows for the taking of an endangered or threatened species if that taking is minimized and mitigated.

Additional information on the ITP/A including the application and filing requirements can be found here: <http://dnr.wi.gov/topic/ERReview/Take.html>. Information required to process an ITP/A includes an application, a Conservation Plan, and an Implementing Agreement (for Incidental Take Permits only).

3. Endangered/Threatened (E/T) Permit

An Endangered/Threatened (E/T) Permit will be required if any state E/T species will be transported, possessed, etc. An E/T Permit covers an individual person rather than a project or an organization so multiple E/T Permits may be necessary.

Additional information on the E/T permit including the application and filing requirements can be found here: <http://dnr.wi.gov/topic/EndangeredResources/permits.html>.

4. Federal Regulatory Requirements

Federal regulations may include, but are not limited to, the Federal Endangered Species Act, Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act. For more information regarding federal endangered resources regulations please contact the USFWS Wisconsin Field Office Supervisor, Pete Fasbender (920-866-1725, Peter_Fasbender@fws.gov).

Sections 2.1.7 and 2.1.8 of the EIR outline in Attachment A provide additional information regarding the ER review.

F. Wildlife

In order to characterize the existing conditions of wildlife near the potential mining site, the department recommends the surveys listed below be conducted as part of the environmental baseline data collection process. These surveys should focus on the proposed area of disturbance but should also include evaluation of lands within one mile of the anticipated area of disturbance.

Small Game Species

Ten Week Brood Survey

Big Game

Summer Deer Observations

Carnivore Track Survey

Non-Game

Frog and Toad Survey

Rare Animal Observations

Point Count Surveys

Small Mammal Survey

Furbearers

Winter Track Counts

The department has developed data sheets and survey forms for most of the surveys specified above. Such forms will be provided upon request. Protocols for conducting certain wildlife surveys are specified in Attachment C. In addition to these surveys, a study should be conducted to assess the presence or absence of American Marten at the proposed mining site. If you are interested in more detailed information (data, location, etc.) on the endangered resources in your area, we would recommend that you apply for a One-Time Data Request: <http://dnr.wi.gov/topic/ERRReview/DataAccess.html>.

IV. Available Information

The department maintains a wide variety of information in its databases that could be relevant to the potential impacts of the mining project, including information that could assist in the evaluation of the environmental impact of the project and to expedite the preparation of the EIR. Available information

includes data on wetlands, surface water, fisheries, groundwater, drinking water, forestry, and wildlife. Examples of the types of information in the department's databases are provided in Attachment B. Data from the department's databases can be provided electronically upon request.

In conclusion, the information enumerated in this letter is intended to comply with the department's obligations under s. 295.465(2), Stats. It represents the department's best projection of the informational needs related to various permit applications and the environmental impact report for the proposed mining project at this time. As more project-related information becomes available, it may be necessary for the department to modify or adjust the informational needs, as s. 295.53(3), Stats., allows. Further, while the studies and data collection recommended by the department may fulfill similar informational needs of other local, state and federal agencies, particularly the U.S. Army Corps of Engineers, it is GTAC's responsibility to identify those informational needs and work with the appropriate agencies to ensure all necessary data is collected.

We encourage you to work with us as you develop more detailed information on your proposed project. Please feel free to contact me if you have questions or would like to discuss any of the information we have provided in this letter.

Sincerely,

A handwritten signature in cursive script that reads "Lawrence J. Lynch".

Lawrence J. Lynch, P.G., Hydrogeologist
Hazardous Waste and Mining Section
Bureau of Waste & Materials Management

Attachments