



GRETCHEN WHITMER  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF  
ENVIRONMENT, GREAT LAKES, AND ENERGY  
LANSING



LIESL EICHLER CLARK  
DIRECTOR

December 12, 2019

Mr. David Anderson  
Director, Environment and Regulatory Affairs  
Aquila Resources Incorporated  
E807 Gerue Street  
Stephenson, Michigan 49887

Dear Mr. Anderson:

**SUBJECT: Back Forty Project - Mining Permit Amendment Application – Final Decision  
MP 01 2016**

The Department of Environment, Great Lakes, and Energy (EGLE), Oil, Gas, and Minerals Division (OGMD) has determined that the request to amend Mining Permit MP 01 2016 submitted by Aquila Resources Inc. (Aquila) on November 5, 2018, meets the requirements of the statute and rules of Part 632, Nonferrous Metallic Mineral Mining, of the Natural Resources and Environmental Protection Act, Act 451 of 1994, as amended (Part 632). Therefore, a final decision to approve the amendment request is hereby issued, and the terms and conditions that are set forth in the Mining Permit Amendment Application (MPAA), including all supplemental documents supporting, amending, clarifying, or revising the initial submittal of the MPAA are incorporated in and become a part of MP 01 2016.

In accordance with Rule 425.201(5) of Part 632, the department may impose terms and conditions in a mining permit, in addition to those specified in the application, that are necessary to implement the rules and statute. In making this determination, the following added and amended permit conditions are hereby in effect as of the date of this letter:

- SPC K27A: Wetland monitoring as approved in accordance with Part 301/303 Inland Lakes and Streams and Wetlands Protection Permit WRP011785 shall continue during all phases of the project including operations, project closure, and post-closure. A copy of the approved wetland monitoring plan shall be provided to the Oil, Gas, and Minerals Division (OGMD).
- SPC L22A: The permittee shall provide for back up pumping capacity for LLCS3 and LLCS4 to mitigate the risk of overtopping the sumps and a pump capable of dewatering the pit within two weeks in the event it floods. Back up pumping systems shall be tested biannually at a minimum.

- SPC O18A: Infrastructure constructed in the mining area as part of the power supply for the mine shall be removed once it is no longer necessary, unless the permittee enters into an agreement with another party in which a property end use is established that includes beneficial use of the electrical service.
- SPC K4(g)A: Sampling location AQ1 specified in Table 4-1 and Figure 4-2 of the MPAA/EMP shall be relocated downstream of the White Rapids Dam some distance to be out of the direct effects of a dam discharge, but upstream of the proposed mining activities.
- The following references in the Mining Permit shall be revised to the following:
  - a) Department of Environmental Quality (DEQ) to Department of Environment, Great Lakes, and Energy (EGLE).
  - b) Office of Oil, Gas, and Minerals (OOGM) to Oil, Gas, and Minerals Division (OGMD).
  - c) Tailings Waste Rock Management Facility (TWRMF) to Tailings Management Facility (TMF).
- SPC B1A: The permittee shall operate the Back Forty Project in conformance with all applicable NREPA permits: Michigan Air Use Permit – Permit to Install, National Pollutant Discharge Elimination System (NPDES) Permit, Wetland Permit, Dam Safety Permit, Notice of Coverage for storm water management during construction activities, Notice of Intent for storm water management during operations.
- SPC E3A: Ore Storage Areas shall meet the requirements for containment under R425.409(a). Concentrate storage shall be maintained to prevent leachate generation.
- SPC E11A: The backfilled pit shall be amended with limestone as specified in the Response, June 2016. Limestone amendment to waste rock shall be applied in the development of the TMF to maintain circumneutral pH on the liner. The department may approve modifications to the limestone amendment plan, including an alternative buffering material other than limestone, provided that the permittee demonstrates that pore water in the backfilled pit and leachate from the TMF will be maintained at circumneutral pH. Modifications to the limestone amendment plan may be necessary as determined by facility water quality monitoring and/or data collected per Special Permit Condition E12.
- SPC F1 through F9 shall apply to the TMF, the South Waste Rock Facility (SWRF) and the North Waste Rock Facility (NWRF).
- SPC F10A. Prior to placement of tailings into the TMF, the permittee shall submit to EGLE for written approval the final detailed plan for construction and

performance monitoring of the perimeter wall raises over deposited tailings. The plan shall include, but not necessarily be limited to:

- a) Tailings testing prior to construction of each perimeter raise to determine the state of the tailings foundation. Information and explanation in support of locations of tailings testing shall be included in the plan. A report of tailings testing shall be submitted to EGLE prior to perimeter raise development.
- b) Continuous monitoring of tailings foundation through installation of vibrating wire piezometers (VWP) and Vibrating Wire Liquid Settlement System (VWLSS). Information and explanation in support of spacing and locations of monitoring devices shall be included in the plan.

Annual TMF inspection reports signed by the Engineer of Record for the mine shall be included in the Annual Mining and Reclamation Report. As-built reports for each TMF perimeter wall raise shall be submitted to EGLE following completion of each raise. Monitoring and reporting required by other issued permits may satisfy this condition as applicable.

- SPC H7A: Prior to operations, the permittee shall develop a harassment/hazing plan to reduce the use of the CWB's by aquatic birds, and this plan shall be implemented throughout operations. This plan shall also be implemented as necessary to the central decant area of the TMF.
- SPC K2A: The permittee shall monitor groundwater quality and elevations at leachate and compliance monitoring well locations that meet the requirements of R425.406(5), and as identified in the May 2019 revised Figure 1-2. Alternative groundwater monitoring locations require written approval from OGMD. Well boring logs and final surveyed locations for monitoring wells installed during construction shall be submitted to OGMD.
- SPC K3A: The permittee shall monitor surface water quality quarterly at locations specified in the amended MPAA/EMP Figure 2-1. Alternative surface water monitoring locations require written approval from OGMD.
- SPC K4(e)A: Measurement of flow shall be reported during ambient water sampling events.
- SPC K6A: The permittee shall collect and analyze water samples as specified in Tables 1-4 and 2-2 of the MPAA/EMP. Quantification levels for surface water sample analysis shall be consistent with those required by the NPDES permit. Modification of sampling collection and analysis shall require OGMD written approval.

- SPC K8A: The permittee shall collect and analyze operations water quarterly from the mine pit, TMF, NWRP, SWRF, and CWB for the parameters listed in Table 5-1 of the MPAA/EMP, with addition of Barium, Beryllium, Boron, Total Chromium, Hexavalent Chromium, Total Cobalt, Lithium, Molybdenum, Strontium, Thallium, and Vanadium to the parameter list for consistency with wastewater discharge effluent monitoring required by the NPDES permit. Quantification levels for operations water sample analysis shall be consistent with those required by the NPDES permit. Modifications of sampling collection and analysis shall require OGMD written approval. The permittee shall include the results of facility water quality and quantity monitoring in the Annual Mining and Reclamation Report. If TMF operations water quality monitoring results show constituent concentrations that exceed those predicted by the water quality model and/or available cyanide concentrations that exceed water quality standards, the permittee shall report those results to OGMD as soon as they are available, including correction/mitigation measures implemented and/or planned. The permittee will also update the predictive model as required by SPC E12 and provide a report to OGMD that includes the results of the updated model, an explanation for the exceedances, and correction/mitigation measures implemented or planned as determined to be necessary.
- SPC K16A: The permittee shall conduct facilities monitoring as specified in Module 6 of the MPAA/EMP. Modifications of facilities monitoring shall require OGMD written approval.
- SPC K25A: Postclosure environmental monitoring of groundwater and surface water shall continue to be conducted quarterly until a request to modify the postclosure plan is approved by OGMD. Postclosure monitoring of flora, fauna, fish, and wildlife habitat shall continue to be conducted until a request to modify the postclosure monitoring plan is approved by OGMD. A written request to terminate the postclosure monitoring shall be provided to OGMD not less than 18 months before the proposed termination date, including technical data and information demonstrating the basis for termination, as required by R425.407.
- SPC L18A: If mining operations are suspended, or are expected to be suspended, for a continuous period exceeding 90 days, a cover shall be employed to isolate materials determined to be reactive as defined by R425.103(j) from precipitation and air as soon as practicable, as required by R425.404(i)(F).
- SPC L22A: The permittee shall notify EGLE as soon as practical following identification of conditions, data, or information which is anomalous or does not comport with assumptions, models, monitoring requirements, or construction standards and shall not wait until required reporting timeframes for submittal to EGLE.

- SPC M2 shall also apply to NWRF, SWRF, and CWB.
- SPC O11A: A multi-layer composite cover system shall be constructed over the disposed tailings in the Final Closure TMF with a grade that will provide adequate surface water drainage as specified in the amended Treatment and Containment Plan in the MPAA. A registered professional engineer or other qualified individual shall certify the proper design, construction, and testing of the cover system as required by R425.409 (a) (i)(G).
- SPC K28A: In addition to SPC K7, beginning prior to commencement of blasting activities and continuing during operations through completion of reclamation, surface soil quality sampling shall be conducted biannually at undisturbed locations within, or in close proximity to, the mining area, and downwind of mining activities that have potential to generate dust emissions. Soil samples shall be analyzed for copper, zinc, lead, mercury, cadmium, arsenic, and selenium. Results of soil monitoring shall be included in the Annual Mining and Reclamation Report.
- SPC K29A: The Environmental Monitoring Plan shall include mussel tissue sampling to be conducted on the same schedule as for fish tissue sampling, both at the WWTP outfall and at a location upstream of the outfall. Tissue shall be analyzed for selenium, mercury, lead, zinc, cadmium, copper, and arsenic. Monitoring results shall be included in the Annual Mining and Reclamation Report.
- SPC H8A: Annual updates of the water balance for the mining area shall be included in the Annual Mining and Reclamation Report during operations.

R 425.301(1) of Part 632 stipulates that a mining permit shall not be effective until the permittee establishes financial assurance in accordance with the mining permit as issued. The total financial assurance amount as of the date of issuance of this mining permit amendment to administer and hire a third party to implement reclamation activities and postclosure monitoring, including cost estimates and allowances for indirect costs, reasonable contingency, and administrative costs, is hereby approved for:

- End of construction: \$27,500,000
- Life of the Mine: \$145,300,000

The permittee shall submit an update of financial assurance cost estimates for life of the mine in accordance with R 425.308 either in three years as of the date of issuance of this amendment or one year prior to the beginning of operations (Year 0 in the project timeline), whichever comes first.

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Thank you for your attention and consideration in this regard. If you have any questions, please feel free to contact Ms. Melanie Humphrey, Area Geologist, Oil, Gas, and Minerals Division at 906-250-7564; humphreym@michigan.gov; or you may contact me.

Sincerely,

A handwritten signature in blue ink, appearing to read "Adam W. Wygant". The signature is fluid and cursive, with a large, sweeping flourish at the end.

Adam Wygant, Division Director  
Oil, Gas, and Minerals Division

cc: Mr. Mark Snow, EGLE  
Mr. Rick Henderson, EGLE  
Ms. Melanie Humphrey, EGLE  
File: Back Forty Project – OGMD files