Summary Response to Comments
Back Forty Project Mining Permit Amendment Application November 2018 – MP 01 2016
Oil, Gas, and Minerals Division
December 12, 2019

On November 5, 2018, the Oil, Gas, and Minerals Division (OGMD) of the Department of Environment, Great Lakes, and Energy (EGLE) received a request from Aquila Resources Inc. (Aquila) to amend Mining Permit MP 01 2016, issued under Part 632, Nonferrous Metallic Mineral Mining (Part 632), of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA) through submittal of the Mining Permit Amendment Application (MPAA). OGMD determined on December 5, 2019, that the amendment request constitutes a significant change from the conditions of the approved mining permit. A public meeting was held on January 9, 2019, and OGMD posted a 28-day written public comment as directed under the statutory timeline for processing a significant amendment request. OGMD accepted written public comments until February 15, 2019, in response to requests from the public to extend the written public comment period. Comments received were reviewed and technical comments relevant to the MPAA were taken into consideration in a proposed decision to approve the amendment request. The MPAA was approved with amended and additional conditions and issued on May 20, 2019. In response to requests from the public, and as authorized by Part 632, EGLE held a consolidated public hearing on June 25, 2019, regarding the proposed decision to approve the MPAA with conditions, the proposed conditional approval of Permit to Install (PTI), and the application for the Dam Safety permit. EGLE accepted written comments for 28 days following the hearing.

During the amendment review process, OGMD was informed on May 3, 2019, that the final decision and order in the contested case challenging the issuance of MP 01 2016 was to approve the mining permit with some minor modifications. On November 12, 2019, the permit review panel assigned to review the contested case hearing on Aquila's mining permit voted to adopt the administrative law judge's findings of fact, conclusions of law, and proposed modifications affirming the issuance of the mining permit. Although all comments received during the hearing and posted comment period were reviewed and considered, those that refer to aspects of the project outside the scope of the MPAA include, though may not be limited to: (1) mining activities not proposed to be amended, (2) aspects of the project that have been addressed through the contested case hearing and final ruling, and (3) concerns and issues appropriately addressed by other permitting determinations. As such the following is a summary response to public comments received by EGLE that pertain to the MPAA and proposed decision.

1. **Comment:** Aquila plans to use the "upstream" design for development of the Tailings Management Facility (TMF), which is the least expensive and most risky.
   Response: *EGLE understands the concerns and risks associated with tailings disposal facilities and has thoroughly reviewed the proposed design of the TMF submitted in the MPAA, including the permittee's responses to requests for additional information and clarification regarding the TMF construction and design. Other types of dam raise options were*

considered by the permittee and determined to not be suitable due to the required capacity for tailings disposal and land area available. The TMF proposed design submitted in the MPAA has taken into consideration the known risks of traditional upstream raised tailings facilities, and has incorporated mitigation of those risks. Considering the mitigation measures and contingencies incorporated in the proposed design, as well as construction and monitoring requirements, the level of detail provided in the conceptual design meets the requirements of Part 632 in terms of containment of reactive materials intended to protect groundwater and surface water resources. However, prior to construction of the TMF, written approval of the final engineered designs is required, as well as a Dam Safety Permit. Full analysis of the safety of the proposed design submitted in the Dam Safety Permit application is pending. Whereas a preliminary Potential Failure Mode Analysis submitted by Aquila concludes low risk for TMF embankment failure, an emergency action plan for the TMF, including a full analysis of impacts associated with potential failure modes, is evaluated by Dam Safety. EGLE is required to take into account the extent to which other permit determinations afford protection to natural resources when making Part 632 permit decisions, and a mining permit is not effective until all other permits required under NREPA are obtained. Therefore, EGLE has determined that further assessments of dam safety and impacts of potential embankment failures fall under the Dam Safety Permit review.

Plans for final closure were also reviewed and found by EGLE to meet the standards for reclamation under Part 632 (R425.204). The closure plan for stabilizing the TMF under the mining permit requires standing water to be removed, amendment of the waste rock with limestone as determined to be necessary to neutralize acid generation, the application of a multi-layered cover system to reduce water infiltration into the tailings after closure, a drainage system to be constructed to safely convey surface runoff water from the TMF into an external sedimentation pond, and a vegetation cover to be established over the closure cover system to prevent erosion and promote a self-sustaining plant community.

2. **Comment:** Seismic activity can trigger a failure on the TMF.
   Response: *Seismic analyses were carried out to confirm the stability of the TMF. Slope stability analysis of the TMF design includes consideration of earthquake loading prescribed by the United States Geological Survey to estimate a factor of safety for design under conservative conditions. Earthquake hazard is considered very low in the Upper Peninsula of Michigan, as it is part of a tectonically stable region. A full analysis of impacts associated with potential failure modes of the TMF embankment is pending under the Dam Safety permitting requirements, and the mining permit is not effective until all other permits under NREPA are obtained.*

3. **Comment:** The amendment was filed during Christmas holidays, imposing time restraints on people who had family or religious commitments.
   Response: *An amendment of a mining permit may be initiated by a permittee through submittal of a request to address anticipated changes to the mining, reclamation, and environmental protection plan. EGLE has an obligation to process applications in a timely manner as prescribed by statute regardless of the time in which they are submitted. In response*

to requests from the public, EGLE extended the written public comment after the public meeting to provide additional time for the public to submit comments.

4. **Comment:** Why are many of the plans pending? Detailed drawings or plans are still not yet available on some major mine site components. These plans may take considerable time to develop – why are we reviewing this project without the site-specific information? To use the answer that "widely accepted", "widely accepted" or "industry Standard" has not merit as the State of Michigan Legislature said mining of this type of ore is unlike mining any other types mined in Michigan – so there can be no industry standard or widely accepted if Part 632 requires the EGLE to specifically address this deposit. The Legislature even requires "ASSURING" what is in place will be sufficient – something that can't be done without site specific and detailed information.
   Response: *A Part 632 permit application requires descriptions of proposed measures, design, construction, and operations. EGLE determines the level of detail required for approval of plans submitted in a permit application. It is standard that the details of some plans proposed by an applicant are finalized after a permitting decision is made to meet the standards set forth in the conditions of a permit. Therefore, additional approvals provide the added oversight necessary to ensure finalized plans are consistent with the approved conceptual design and meet the expectations for compliance with the rules and conditions of the permit. Certification of the design, construction, and testing of all liners, covers, and leachate collection systems are required prior to commissioning of storage facilities. Part 632 does not require details of widely used and accepted methods, materials, and techniques. Many of the components of the mine plans are widely used and accepted in mining and other industries.*

5. **Comment:** What is the contingency plan for a catastrophic failure?
   Response: *A contingency plan under Part 632 includes an assessment of risk to the environment or public health and safety of potential accidents or failures and response measures. Included in the contingency plan is a procedure for notifying the public, public authorities, and safety agencies in the event of an emergency. The contingency plan is required to be tested to assure its effectiveness and to be updated annually.*

   The risk assessment considers mitigation measures incorporated into the mining, reclamation, and environmental protection plan and design plans. The assessment of risk also considers the required extensive monitoring of all aspects of the mine project from construction to beyond closure and for the detection and correction problems well before they become larger issues, and engineer certifications are required for lined facilities prior to commissioning. The permittee is required to notify EGLE of conditions, data, or information which is anomalous or does not comport with assumptions, models, monitoring requirements, or construction standards as soon as practicable, and EGLE staff will conduct regular inspections and review reports and data to assess compliance with the conditions of the issued permits. Although risk analysis concludes that failures of a catastrophic nature are not likely, and the amendment request has been determined to meet the rigorous requirements of Part 632 for approval, a pending Dam Safety Permit required for the Contact Water Basin (CWB) and TMF will further address potential

failures of those facilities. Dam Safety requires an emergency action plan for the TMF, including an analysis of impacts associated with potential failures (see response to Comment #1).

6. **Comment:** Concerns that there is no mention of the Lake Township special land use permit in the amendment and insist a special permit condition be added to require the Lake Township special land use permit.
   Response: *A local unit of government may enact ordinances, regulations, or resolutions as long as they do not duplicate, contradict, or conflict with requirements of Part 632 [Sec. 63203 (4)]. A local unit of government may regulate reasonable hours of operations and routes used by vehicles in connection with mining operations. A local unit of government is not authorized to regulate or control mining or reclamation activities that are subject to Part 632, including construction, operation, closure, postclosure monitoring, reclamation, and remediation activities [Sec. 63203(3)]. The issuance of this mining permit does not relieve the permittee from obtaining other applicable permits or permissions outside the scope of Part 632. <u>The Part 632 permit will be subject to the following permit condition:</u>*

   - *General Permit Condition B5: Compliance with the provisions of this Mining Permit or of Part 632 of the NREPA does not relieve the permittee of the obligation to comply with all other applicable tribal, state, federal, or local statutes, regulations, or ordinances."*

7. **Comment:** The proposed mine site was not properly surveyed for cultural resources.
   Response: *The Michigan State Archeologist conducted a thorough review of the cultural resource assessment provided in the Mining Permit Application (MPA) and concluded it was conducted using appropriate methods. The Environmental Impact Assessment Amendment (EIAA) of the MPAA describes the results of an updated literature review which conclude that there are no listed cultural resources in the mining area as defined by Part 632:*

   R 425.102 (1)(g) "Cultural, historical, or archaeological resource" means a structure or site that meets any of the following requirements:

   > *(i) Is listed as a national historic landmark under the historic sites, buildings, and antiquities act, chapter 593, 49 Stat. 666, 16 U.S.C.461 to 467 as of the effective date of these rules.*
   > *(ii) Is listed on the national register of historic places pursuant to the national historic preservation act of 1966, Public Law 89-665, 16 U.S.C.470 to 470a, 470b, and 470c to 470x-6 as of the effective date of these rules.*
   > *(iii) Is listed on the state register of historic sites pursuant to 1955 PA 10, MCL 399.151 to 399.152.*
   > *(iv) Is recognized under a locally established historic district created pursuant to the local historic districts act, 1970 PA 169, MCL 399.201 to 399.215.*

   Additional cultural survey work for the expanded facility footprint on Aquila's land was completed during 2019 utilizing methodology consistent with that set forth for previous archaeological surveys and pending results will be reported to OGMD and the State Archeologist.

The survey work on the Eastern Corridor required a Permit to Perform Archaeological Exploration on State-Owned Land. OGMD is aware of the tribal interest in this information and, since this information would be public record, intends to provide a copy to interested tribes and/or post the information on our website. Although Part 632 does not specifically govern unanticipated discovery of cultural resources, under the recommendations of the State Archaeologist and affirmation of the contested case ruling, mining permit conditions that require implementation of the Unanticipated Discovery Plan and reporting remain valid. As such, the Unanticipated Discovery Plan shall be amended to provide that both the Menominee Tribal Historic Preservation Officer and the State Archaeologist be consulted with respect to appropriate disposition and potential repatriation of any human remains or associated funerary objects discovered in the project area.

8. **Comment:** There is no bond for the Back Forty project.
   Response: *The mining permit is not effective until the permittee establishes financial assurance in an amount in accordance with the mining permit as issued and Part 632 requirements.*

9. **Comment:** In the amendment request Aquila uses terms "essentially the same and similar; facts are needed.
   Response: *Those terms in the MPAA refer to aspects of the project that either have not changed or proposed minor changes to the operation with reference to the 2015 MPA and associated documents.*

10. **Comment:** Is it the responsibility of the EGLE to confirm the financial assurance estimates represent reality? How does EGLE accomplish this?
    Response: *EGLE staff evaluate the estimated cost provided by the permittee to administer, and hire a third party to implement, reclamation and postclosure monitoring activities that apply to mining and reclamation operations subject to the mining permit to confirm consistency with the approved plans. These costs may be compared with estimated costs to widely used engineering cost guidebooks, local contractor estimates, and experience with these types of activities. Once operations begin, updated estimates are required a minimum of every three years, or as determined to be necessary by EGLE.*

11. **Comment:** Will lead be processed on site?
    Response: *Lead is a by-product of the processing for the Back Forty Project that will be shipped off-site. The MPAA states that a lead concentrate will be produced.*

12. **Comment:** Aquila should update their models using up to date rainfall data.
    Response: *Monitoring of facility water use and storage is required during operations to confirm and update the water balance for the site and predictive models. Predicted seasonal and long-term variations of the meteorology were identified for the affected area. Part 632, R425.203(xx) requires that plans and schedules ensure that 24-hour 100-year precipitation events do not cause releases of water that are not in compliance with the conditions of the mining permit. Contingencies are included in the mine plan to address outlier events, and an update of the*

Contingency Plan is required to be included in the Annual Mining and Reclamation Report (R425.501). EGLE has the authority to require a mining permit to be amended if it can be demonstrated that the terms and conditions of the mining permit are not providing the intended reasonable protection of the environment, natural resources, and public health and safety.

13. **Comment:** With the increase in the footprint of the mine site, will there be adequate spacing for monitoring wells?
    Response: *Part 632 requires compliance wells and leachate wells to be located no more than 150 feet from the mining activity being monitored. EGLE may approve an alternative location if it is determined to be protective of the environment and public health and safety and a closer location is not feasible. The location of groundwater monitoring wells has been updated in the Environmental Monitoring Plan for the change in site layout.*

14. **Comment:** Biological monitoring should include mussels, and sampling and analysis of mussel tissue sampling for metals.
    Response: *The Environmental Monitoring Plan requires biological monitoring to include surveys of freshwater mussels and was amended to include monitoring for metals in mussel tissue. Aquila plans to conduct additional aquatic biota baseline studies to include mussel tissue sampling prior to start of mining activities.*

15. **Comment:** The groundwater model should be updated.
    Response: *The mining permit requires regional hydrologic monitoring during operations and post-closure to continue to evaluate local and regional stream flows and groundwater elevations, and additional onsite data are continuing to be collected prior to construction. These data will be used to confirm and update predictive models as necessary.*

16. **Comments:** Why is Aquila allowed to re-do their permit?
    Response: *Part 632 allows for a permittee to request to amend their mining permit to address anticipated changes to the mine plan. If EGLE determines that a proposed amendment constitutes a significant change from the conditions of the approved mining permit, the request may be subject to the same review process as provided for a new permit application.*

17. **Comment:** EGLE already determined Aquila's plan of operations was based on the "best" and substantiated that decision on that site plan as having the "least" amount of negative impact possible? Yet, now there are significant changes being made to that plan and these are now the "best" and "least negative impacts". You can't have two (2) "least" as there can only be one least as it is the lowest. The same is true with "best"; there can be only one (1) best. Now we're being told (2) the first plan was not the "best" and did not provide for the "least" amount of pollution? Certainly, this proves EGLE got it wrong the first time around doesn't it?
    Response: *Part 632 allows for a permittee to request to amend their mining permit to address anticipated changes and amendment requests are reviewed under the same provisions as for a new permit. For any given project there may be multiple designs that meet the requirements of Part 632. It is the understanding of EGLE that Aquila acquired additional land extending to the*

east of the operations which allowed for alternative design considerations that were not previously feasible.

18. **Comment:** The Back Forty mine project would potentially harm or destroy cultural resources that are critical to the Menominee Indian Tribe. Aquila's archaeological report has underestimated the actual number of culturally significant sites found within the footprint of the project. Furthermore, the Tribe was not involved in formal consultation during any surveying activity with the Commonwealth Cultural Resources Group (CCRG) or Section 106 group on the project site. Although Aquila states they have provided a detailed cultural resource study of the proposed mine site and surrounding area, which was reviewed by the Michigan State Archeologist. Since this was submitted new discoveries were made and what Aquila presented is being disputed as being incomplete and biased towards their mine site plan disproving that the mine was designed to avoid impacting all documented resources. Further, the unanticipated discovery is inadequate as it is impossible for a person on a bulldozer working in high grass and vegetation to see cultural resources and artifacts until it is too late or at not at all
Response: *EGLE is committed to continuing efforts to understand and consider tribal concerns that are within our authority when making permitting decisions related to mine projects and will continue to be open to requests for consultation. Regarding cultural resources, the Michigan State Archeologist conducted a thorough review of the cultural resource assessment provided in the Mining Permit Application (MPA) and concluded it was conducted using appropriate methods. The Environmental Impact Assessment Amendment (EIAA) of the MPAA describes the results of an updated literature review which conclude that there are no listed cultural resources in the mining area as defined by Part 632:*

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> *(i) Is listed as a national historic landmark under the historic sites, buildings, and antiquities act, chapter 593, 49 Stat. 666, 16 U.S.C.461 to 467 as of the effective date of these rules.*
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Additional cultural survey work for the expanded facility footprint on Aquila's land was completed during 2019 utilizing methodology consistent with that set forth for previous archaeological surveys and pending results will be reported to OGMD and the State Archeologist. The survey work on the Eastern Corridor required a Permit to Perform Archaeological Exploration on State-Owned Land. OGMD is aware of the tribal interest in this information and, since this information would be public record, intends to provide a copy to interested tribes and/or post

the information on our website. Although Part 632 does not specifically govern unanticipated discovery of cultural resources, under the recommendations of the State Archaeologist and affirmation of the contested case ruling, mining permit conditions that require implementation of the Unanticipated Discovery Plan and reporting remain valid. As such, the Unanticipated Discovery Plan shall be amended to provide that both the Menominee Tribal Historic Preservation Officer and the State Archaeologist be consulted with respect to appropriate disposition and potential repatriation of any human remains or associated funerary objects discovered in the project area. OGMD is not aware of newly discovered cultural, historical, or archaeological resources in the vicinity of the Back Forty Project, and any new discoveries of cultural, historic, and archeological interest should be reported to the State Archeologist.

19. **Comment:** After discovering the multitude of erroneous issues with this application, this permit should not have been considered "administratively complete" initially due to its excessive lack of required data.
    Response: *Part 632 specifies the items required to be submitted for a mining permit application to be administratively complete. EGLE staff have 14 calendar days to check that the required submittals are included in the application, and review for its technical accuracy or adequacy takes place after a determination of administratively complete. A determination that an application is administratively complete does not preclude the department from requiring additional information from the applicant.*

20. **Comment:** I have very little faith in the 2-liner system that Aquila states. The liner is allowed to leak 25-gpd per acre. The facilities site is large covering between 150-200 acres. Over a period of time that equates to millions of gallons of toxic waste in the ground water. EGLE states these liners are a proven technology utilized as containment systems for both mining and solid waste facilities. EGLE has avoided addressing that EGLE has litigated against landfills and mine sites where these liners have failed.
    Response: *The 25-gpd per acre refers to leakage from the primary liner of which an exceedance would be indicative of a leak and initiate an investigation of the source and development of a corrective action plan to address the leakage. Below the primary liner is another liner preventing leakage from entering the groundwater. Any water collected in the leak detection system must be treated before discharge. To ensure proper installation, it is imperative that rigorous testing on the system be conducted prior to commissioning the facility. The mining permit for the Back Forty Mine Project requires the permittee to conduct a QA/QC program during the installation of the liner systems, leachate collection and cover systems in conformance with the Construction Quality Assurance (CQA) procedures under Michigan's Solid Waste Management Rules, R 299.4916. Final design certifications of liners, covers, and leachate collection systems are required to be submitted to EGLE, and the permittee shall not begin placement of ore, waste rock, overburden, or tailings in storage facilities until approved. Utilization of modern composite liner systems is a widely used and accepted practice for minimizing impacts on groundwater or surface water from waste materials and is in compliance with the requirements of the Nonferrous Metallic Mining Regulations.*

21. **Comment:** No cumulative impact analysis considers the perpetual care nature of the site post mining. This included trees and vegetation growing on the caps and into the liners. The application estimates it will take approximately 50 years for tailings pore water to drain from the capped tailings to the leachate collection system.
    Response: *The closure plan for the TMF has been determined to reasonably minimize the actual and potential adverse impacts on groundwater and surface water and meets Part 632 specifications for containment of reactive materials (R425.409). Long term care and maintenance will continue in the mining area during the postclosure monitoring period, including monitoring of the condition of the TMF cover, and may only be terminated upon determination that there is no significant potential for water contamination resulting from the mining operation. The TMF closure cover is designed to include a vegetative cover of which the purpose is to prevent erosion and inhibit tree growth. Since the TMF is designed to be free draining to a leachate collection system, reduction in drainage will be significant within 5 years of installation of the cover system.*

22. **Comment:** No matter how the tailings are stored they cannot not be guarded against perpetually generating acid. The TMF cover and embankments are not maintenance free and so facilities requiring such "perpetual care" is not permitted by Part 632.
    Response: *The addition of lime amendment, dewatering, and capping of the TMF will remove the need to continuously treat leachate, which has been determined to meet the requirements for permanent tailings disposal under Part 632. Long term care and maintenance will continue in the mining area during the postclosure monitoring period, including monitoring of the condition of the TMF cover, and may only be terminated upon EGLE determination that there is no significant potential for water contamination resulting from the mining operations.*

23. **Comment:** The tailings waste at the Back Forty should utilize plate-and-frame filters and dry stacked tailings technology as these techniques were fully evaluated as "feasible alternatives" and these would increase the environmental benefit. Again, there is nothing in Part 632 that requires the SOM to authorize a lesser degree of pollution control for the sake of the company to make more money.
    Response: *Part 632 requires an applicant to provide a feasible and prudent alternatives analysis and an explanation why the chosen method will meet the standards in Part 632. In this case, the applicant provided a defensible explanation for utilizing a semi-wet tailings disposal method. Dry stack tailings disposal raises concerns regarding potential increased rate of acid generation and dust issues.*

24. **Comment:** The MPA and draft mining permit include no details on how materials would be transported to and from the mine. EGLE cannot determine whether the environment, natural resources, and public health and welfare are adequately protected without information on Aquila's plans for transportation. There is no information on the capacity of haul trucks or truck traffic. Aquila Resources does not have the authority to upgrade roads without approval of the local government bodies. Unless roads are upgraded to primary road standards, reagents and mill outputs would have to be stockpiled at the mine site during road restrictions.

Response: *EGLE does not have the authority under Part 632 to regulate transportation of material outside of a mining area. However, EGLE does agree that it is the permittee's responsibility to obtain applicable approvals to upgrade roads. Storage of reagents, concentrates, and other materials are required to be properly contained within the design capacity of the facilities.*

25. **Comment:** The Amended TMF Water Quality model assumes that most tails are not subject to leaching because they sit underwater. That assumption is not entirely correct because oxygen availably is based on depth in the water column. It is likely that there are varying oxygen levels in the TMF and leaching may occur within the profile of disposed tails. Modeling may have not also considered that such ponds often freeze over and during spring break-up the water column "turns over" and such a phenomena may increase the likelihood of tails leaching more metals than the model indicates.
Response: *The application recognizes the potential for leaching of waste rock and tailings, and therefore the plan calls for the TMF to be double-lined, including full leak detection, and for the application of limestone amendment to maintain circumneutral pH on the liner. Part 632 and the mining permit require continued evaluation of the geochemical characterization of the waste rock and tailings throughout the life of mine, including sampling and analyzing leachate for metals, which will determine whether adjustments need to be made to the limestone amendment and closure plan.*

26. **Comment:** Waiting four years into operation to submit a plan to maintain pH levels of the TMF is unacceptable.
Response: *The standard set forth in the mining permit for the TMF and waste rock facilities is to maintain circumneutral leachate pH on the liner during operations and post-closure, and amendment of the TMF with limestone during development is required. The department may approve modifications to the limestone amendment plan, including an alternative buffering material other than limestone, provided that the permittee demonstrates that leachate from the TMF will be maintained at circumneutral pH. The mining permit requires continued evaluation of the geochemical characterization of the waste rock and tailings throughout the life of mine, which will determine whether adjustments need to be made to the limestone amendment plan and/or waste rock segregation is necessary. Aquila proposes to submit a plan to EGLE prior to Year 4 utilizing real time geochemical and leachate data collected in accordance with MP 01 2016 Special Condition E12 for maintaining compliance with this standard.*

27. **Comment:** The fact that Aquila will not be required to continue recording data for all aspects of the reclamation site for the entirety of the mine's lifespan is extremely concerning.
Response: *Postclosure monitoring is required for a minimum of 20 years after completion and approval of reclamation and may only be terminated upon EGLE determination that there is no significant potential for water contamination resulting from the mining operations. Modifications to the postclosure monitoring plan may be requested and require OGMD approval. Postclosure monitoring may be extended in increments of up to 20 years and financial assurance remains in place until the mining permit is terminated.*

28. **Comment:** Has the impact of climate change and recent history of severe weather been taken into account in designs and safety provisions? There is concern of potential of acid mine drainage discharging into the Menominee River in the event that the Waste Water Treatment Plant can't handle the amount of water from the Back Forty Mine during a severe storm. How much water would be contained in the pit due to overtopping of the Contact Water Basin? How long would it take to pump it out? SPC L22A: Back up pumping capacity will not be adequate in the event of yet another extreme storm event.
    Response: *Plans for controlling drainage of water meet the requirements of Part 632, R425.203(xx) which requires that plans and schedules ensure that 24-hour 100-year precipitation events do not cause releases of water that are not in compliance with the conditions of the mining permit. Unauthorized discharges would be a violation of the mining permit and the NPDES permit. Contingencies for larger storm events include conveyance of contact water to the mine pit by way of emergency spillways for temporary storage, back-up diesel operated pumping system that meets pumping requirements up to the 1,000-year, 24-hour storm, additional pumping capacity for sumps and the pit if it becomes flooded. Whereas perimeter ditches for the TMF are designed to convey a 24-hour 100-year storm event, adding the capacity of the leachate collection system exceeds the probable maximum precipitation (PMP) for water conveyance. For perspective, the capacity of the pit at final, full build-out phases, which is considered the stage in the project that would pose the most risk, would be less than 1% of the total volume capacity of the CWB. In addition, water balance models are required to be updated annually utilizing the most current data to reevaluate contingencies and make adjustments as necessary.*

29. **Comment:** Cut off Wall: The wall is to be keyed a minimum of 1.6 feet into bedrock which has greatly decreased from the original Mining Permit Application (MPA) there the cutoff wall would be keyed a minimum of 6 feet into weathered bedrock. The application also notes the upper part of the bedrock is weathered to at least the top 6.6 feet. It is unclear how the state will oversee compliance with Special conditions K20-K24.
    Response: *The updated cutoff wall design calls for it to be keyed 1.6 ft to 6.6 feet into bedrock. This range of depth was determined based on the site geotechnical data. The minimum penetration depth was determined to ensure that the slightly weathered bedrock at the interface with the overburden is sealed to reduce the risk of preferential flow path. The wall will continue deeper depending upon bedrock characteristics. The penetration depth for the cutoff wall will be determined during construction as established by actual site conditions and must meet the standards set forth in the mining permit. EGLE staff will conduct site inspections and review the required reports for determining compliance.*

30. **Comment:** If a surety bond is used, the state should require that the surety company have adequate financial resources to back the bond should it be called upon. The state should investigate the corporate financial stability of the surety company prior to approving FA.
    Response: *EGLE has experienced financial assurance staff, and they will evaluate all proposals by applicants and determine their ability to fulfill the requirements as specified in Part 632.*

31. **Comment:** The FA plan should be updated each year based on actual mining activity. Since the mine life is quite limited, such updates would assure that adequate FA amounts reflect actual mining conditions.
    Response: *Financial assurance is required to be updated every three years at a minimum, or as determined to be necessary by EGLE to account for a change in conditions at the mine site or amendments to the Mining, Reclamation, or Postclosure Monitoring Plans.*

32. **Comment:** It is assumed that after the TMF is closed pumping of TMF leachate to the CWB will be terminated. The company should be required to submit bi-annual monitoring results throughout the mine life of actual TMF leachate volumes to confirm that the modeling of such flows can be verified with actual field data.
    Response: *Flow of water from the TMF will be measured with a continuous flow meter as part of the Operations Water Monitoring Plan, and a site wide water balance is required to be submitted in the Annual Mining and Reclamation Report. This information will be used to verify/update predictive models and to reevaluate final closure plans.*

33. **Comment:** Mine Pit Backfill plan notes that prior to Year 6 a backfill plan will be submitted to the state. Such an approach is not sound. Based on existing coring results the company should be required to submit a proposed backfill plan at the commencement of mining and have that plan updated every year based on results from pit ore and overburden acid mine drainage testing.
    Response: *The previously approved plan to backfill the mine pit is not proposed to be changed as part of this amendment request. Part 632 and the mining permit require the permittee to continue to evaluate and monitor the geochemical characterization of the waste rock. Prior to commencement of reclamation of the mine pit, this real time information is required to be utilized in reevaluating and developing the details of the final closure plan, including addition of limestone or other approved neutralizing material.*

34. **Comment:** The State has an obligation to require real time acid mine drainage testing starting during construction and lasting throughout the mine life.
    Response: *Part 632 and the permit require on going geochemical characterization of waste and leachate monitoring, along with site wide environmental monitoring, which represents real time testing of acid generation.*

35. **Comment:** Appendix D Treatment and containment Plan for Mine related Materials: The data clearly shows that tailings have the potential to generate acidic conditions leading to the leaching of heavy metals into the environment. The mining company has proposed that it submit to the state by year 4 a plan to maintain the pH of effluents. That is not a reasonable approach to addressing the potential for acid mine drainage at the [proposed mine. As clearly noted in the GARD Guide {Global Acid Rock Drainage Guide) the mining company should be required to test waste rock and tailings throughout the life of the mine using static, kinetic and column tests to verify metal mobility modeling noted in the original permit application. It

should also be noted that the only published study comparing predicted and actual water quality at hard rock mines.
Response: *Part 632 and the permit require the permittee to continue geochemical testing on all mine waste throughout the life of mine. EGLE recognizes the tailings have the potential to become acidic and generate leachate. Therefore, the permittee is required to deposit them on a lined facility and apply limestone amendment during the development of the TMF. EGLE may approve modifications to the limestone amendment plan, including an alternative buffering material other than limestone or segregation of waste rock, provided that the permittee demonstrates that leachate from the TMF will be maintained at circumneutral pH. Aquila proposes to submit a plan to EGLE prior to Year 4 utilizing real time geochemistry and leachate data collected in accordance with MP 01 2016 Special Condition E12 for maintaining compliance with the standard for maintaining a circumneutral pH on the TMF liner.*

36. **Comment:** Aquila wrote EGLE that these amendments are needed to align the Part 632 Permit with their Feasibility Study. Has EGLE looked at that study and scrutinized what Aquila call facts? Most specifically has EGLE looked into the prudent and feasible alternatives that would pollute less – but were not applied due to negative economic impacts to Aquila's bottom line?
Response: *EGLE staff reviewed the submitted materials thoroughly and concluded the information met the requirements of Part 632. Although a feasible and prudent alternatives analysis must evaluate economic viability, the chosen alternative also must meet regulatory requirements and be protective of the environment to be approved.*

37. **Comment:** Aquila has made statements to the public, tribes, and investors that Aquila intends the mine to be a combined open-pit and underground mine. This fact is not included in the MPAA.
Response: *The mining permit only authorizes open pit mining and has not been amended to include underground mining. The mining of additional ore outside the limits of the proposed pit would require an amendment to the mining permit, and possibly modifications to other permits.*

38. **Comment:** Overburden stockpile is not lined and water from this facility is considered non-contact. Mercury in the overburden will leach after it is excavated and methylate once it is exposed to bacterial activity. Additional mercury from dust deposition and leaching from overburden stockpiles would be a new source for the Great Lakes basin.
Response: *The overburden at the mine site is not considered a reactive waste as defined by Part 632 as evident by the mineral composition of the glaciofluvial and till deposits overlying bedrock in the mining area. The storage of overburden will require soil erosion and sedimentation control measures to be applied as specified in the Soil Erosion and Sedimentation Control Plan. An air deposition analysis for the Back Forty Project concludes that impacts, including from mercury deposition, will not be measurable outside of the mining area. However, in response to recommendations, OGMD has added permit conditions to include sampling and analyzing for metals in mussel tissue and soils in the Environmental Monitoring Plan for evaluating impacts of mining operations. The overburden will be used for reclamation of the site at closure and so will not be stored permanently.*

39. **Comment:** There is nothing in the MPAA or EIAA on the cumulative impacts of this and other regulated or unregulated discharges to the Menominee River. Cumulative impacts should include impacts of the transmission line, drawdown impacts of pit dewatering and pumping of water wells, air emission impacts including off-site concentrate processing, impacts on the Menominee River of the project with upstream discharges, and impacts of underground mining and life of mine.
    Response: *Part 632 requires an analysis of potential cumulative impacts that shall consider additive effects of released discharges from mining activities within the mining and affected area. The only authorized release of discharges is the discharge of treated water to the Menominee River and air emissions. Impacts of surface water discharge are considered in the standards required in the National Pollutant Discharge Elimination System permit, and the MPAA included an update to air depositional analysis which addresses potential impacts of air emissions. The processing of concentrate off site is not a mining activity. The mining permit only authorizes open pit mining and has not been amended to include underground mining.*

40. **Comment:** There is no method of water treatment proposed in the MPAA.
    Response: *In response to OGMD request for additional information, Aquila anticipates that water treatment technologies will include pH adjustment and chemical precipitation of metals, flocculation and clarification, filtration, and mercury polishing. Approval of final design of the water treatment plant is required prior to construction.*

41. **Comment:** The NPDES permit application cited in the MPAA needs to be provided for review in conjunction with the MPAA and EIAA.
    Response: *The NPDES permit is available to the public in the MiWaters database: www.mi.gov/miwaters*

42. **Comment:** The MPAA does not refer to complying with the International Cyanide Code which outlines industry standard practices covering the transport, use, and destruction methods. Concentrations of cyanide flowing to the CWB should be described and cyanide monitored prior to the CWB during operations.
    Response: *The mining permit specifies the requirements of the cyanide management plan, and there is no request, nor it is necessary, to amend the requirements of the plan.*

43. **Comment:** Information on measures for protecting waterfowl and other wildlife from cyanide and other toxics in the CWB need to be included. What is being done to protect migratory birds and other wildlife from mine waste?
    Response: *The CWB and TMF would be in commission during active phases of the mine project. Frequent monitoring, maintenance, inspections, and general activity are expected to deter wildlife from long term use of ponded water within the mining area. If wildlife is observed in the CWB or TMF, the mining permit requires nonlethal harassment to further restrict access.*

44. **Comment:** The Part 303 Wetlands review team in their document entitled "Finds of Fact and Conclusion of Law" address deficiencies with the part 632 Permit. Does this review take those negative comments into consideration for determining if these amendments still have the same flaws as point out by the Part 303 Wetlands Permit review team?
    Response: *A team of experts was assigned to review the Back Forty Project MPA. The Part 632 permit was issued after a thorough review of the MPA and recommendations from the Mining Team participants, and while questions were raised during the review, OGMD is not aware of objections to issuing the permit. The issuance of Mining Permit MP 01 2016 was affirmed both through a final decision and order in the contested case challenging the permit issuance and a permit review panel assigned to review the contested case hearing. In addition, Part 632 allows for amendments to the permit if deemed necessary to address an oversight.*

45. **Comment:** Is it acceptable to see concentrations of mercury increase by 21% in surrounding water bodies?
    Response: *An evaluation of the air depositional analysis indicates that the estimated air emissions of mercury from the Back Forty Project and their subsequent deposition to the surrounding area are not expected to exacerbate background concentrations. The air emissions of mercury are relatively minor compared to other facilities in Michigan and may be considered a high-end estimation. However, existing mercury water concentrations in the area show values above the water quality standard. Although measurable additive impacts are not expected, thorough facility inspections and environmental monitoring are warranted to evaluate any potential impacts.*

46. **Comment:** If Aquila proceed with underground mining, the TMF will need to accommodate additional waste. Strict impoundment limits were not defined in the MPAA. Will the current TMF design accommodate additional tailings? Would the TMF walls be raised or would additional TMF need to be constructed? Would the external "downstream" footprint of the TMF wall need to be expanded or reinforced to support additional raises?
    Response: *The mining of additional ore outside the limits of the proposed pit would require an amendment to the mining permit, and possibly modifications to other permits. The TMF is designed for the volume of tailings to be generated by the open pit as defined in the MPAA and additional tailings storage has not been authorized. Any change in TMF design would require an amendment of the mining permit.*

47. **Comment:** How will Aquila ensure that the embankment itself does not contribute to acid and metal leaching? Monitoring wells should be placed to ensure the tailings facility embankment is not contributing acid or metal leaching to groundwater.
    Response: *The Mining Plan includes amendment of the TMF embankment with limestone for the purpose of adding neutralization potential and/or segregation of waste rock to develop the embankment with rock types that are not considered acid generating. In addition, the entire TMF is double lined, including the embankment, and is designed to capture and convey any leachate that forms to the CWB, which can either be recycled for processing or treated prior to*

discharge. The compliance and leachate monitoring wells are required to be located with 150 feet of mining activities being monitored, including the TMF.

48. **Comment:** What is the expected life of the liners? Liners will be affected by acidic chemistry of the TMF.
    Response: *The liner systems proposed in the MPAA were reviewed by a licensed engineer and are considered a widely used and accepted practice for long term storage to reasonably minimize the actual and potential adverse impacts of surface water and groundwater. High density polyethylene (HDPE) has a good compatibility rating with most chemicals, including acids. Durability testing of HDPE liner material has indicated that it can have a service life for hundreds of years provided it is installed properly and not exposed to heat and sunlight. Long term exposure is not a concern for the TMF as it will be covered, and average temperatures are below 20°C in this region. For added protection, limestone or other neutralizing material is required to be added to the TMF to mitigate acid formation and maintain circumneutral pH on the liner, and the TMF utilizes a double lined system with layers that will be protective of the liner. Postclosure monitoring may be terminated only if there is no significant potential for water contamination resulting from the mining operation.*

49. **Comment:** How much mercury will be used in processing? What is the volume of mercury expected to be generated as waste and how will it be disposed of?
    Response: *Aquila is anticipating mercury generation of less than 75 liters per year.*
    The permittee is required to manage and dispose of any waste in accordance with all applicable regulations and industry best practices.

50. **Comment:** Has Aquila secured temporary or permanent easements for the Eastern Corridor access road, which passes though Escanaba State Forest Lands? All road and utilities related to mining activity, under Part 632, are entirely attributable to the applicant and must be assessed in detail in the EIA. This was not done.
    Response: *It is OGMD's understanding that easements for the Eastern Corridor road have not been secured and are anticipated to be sought once final permitting decisions are issued. Aquila states that "..the final decision to develop the corridor still requires approval/concurrence with the Michigan Public Service Commission, utility provider(s), Michigan Department of Natural Resources and the Menominee County Road Commission. The road development expense and maintenance would be the responsibility of the company; however, the preference at this time would be to allow for public use of road to allow for enhanced access to public lands for recreation and timber management, pending further agency and public input."*

    OGMD has reviewed the Part 632 rules as they pertain to the proposed Eastern Corridor access road. Previous Part 632 decisions have set a precedent that transportation routes and utilities structures outside of the mining area are not regulated under Part 632, and so impacts of those activities would not be required to be included in an EIA. "Mining activities," as defined in Part 632, include "transportation of overburden, waste rock, ore, and tailings." The mining plan as proposed does not include transporting overburden, waste rock, ore, or tailings outside of the

mining area, including the proposed Eastern Corridor road. Therefore, since the proposed road is not within the "mining area" and does not fall under the definition of a "mining activity," its development is outside the purview of Part 632. However, OGMD agrees that local concerns and feasible alternatives regarding transportation should be considered and evaluated, and the issuance of the mining permit amendment does not alleviate the permittee from securing required permissions and adhering to applicable laws.

51. **Comment:** The MPAA does not include the potential for pipeline spills, tailings spills, and other releases of hazardous materials.
    Response: *Tailings transport was addressed in the issuance of the mining permit, and permit conditions and rules regarding tailings spills remain valid. Immediate response to spills at the mine site is required.*

52. **Comment:** How does the proposed dewatering of the tailings provide adequate liquid to ensure pumping of the slurry in all weather conditions?
    Response: *Thickened tailings will be pumped via high capacity pressure displacement pumps to the TMF. Although general flow will inhibit freezing, pipe and pump freezing will be prevented by installing insulation and/or heat tracing in locations vulnerable to freezing.*

53. **Comment:** Will the tailings liquify and breach the dam?
    Response: *Stability of the TMF will be evaluated by Dam Safety staff in the Water Resources Division. However, results of a liquefaction analysis reported in the MPAA indicates that tailings are not prone to liquefaction.*

54. **Comment:** Bald eagle habitat exists in the mining area.
    Response: *The MPA indicated that the mining area is within favorable habitat for bald eagles. The United States Fish and Wildlife Service provided information regarding more recent data of bald eagle nesting sites. Although there are known nesting sites within the township/range of the project (which is consistent with surveys from 2007-2009 that identified suitable habitat in the area), there are no known nesting sites within the mining area. Impacts to bald eagles from mining activities are considered unlikely.*

55. **Comment:** For County Road 356 will local traffic be affected or diverted?
    Response: *It is recommended that questions regarding traffic concerns and truck routes be directed to Aquila and/or the Menominee County Road Commission.*

56. **Comment:** Aquila should be required to provide an irremovable letter of credit in the amount of $50,000,000 to hold Aquila responsible for any environmental and/or related damages they may incur.
    Response: *An irrevocable letter of credit is one financial assurance instrument option. Commensurate with risk, the financial assurance required for the construction phase is $27,500,000 and full mining operations is $133,200,000. Financial assurance estimates are required to be updated a minimum of every three years or as determined to be necessary.*

57. **Comment:** Recommendation that an independent citizen oversight committee be established to independently monitor the impact this mine will have on the local environment.
    Response: *Part 632 does not require nor inhibit third party environmental monitoring of a mine and permission to allow access would have to be granted by the landowner and/or leaseholder.*

58. **Comment:** My big concern is my well water getting contaminated.
    Response: *Due to the safeguards in place, private water wells outside of the mining area are unlikely to be contaminated due to mining operations. Under Rule 425.406 of Part 632, groundwater monitoring wells are located downgradient in close proximity of mining facilities, and if results show levels that exceed drinking water standards, a source investigation is conducted to determine the cause of the change in water quality. If it is determined that the change is caused by a release associated with a mining activity, a plan for response activity as approved by EGLE is implemented. The intent of this rule is to discover and correct groundwater impacts before they become larger issues outside of the mining area. However, it is recommended that private water well owners regularly test their well regardless of whether a mine is constructed, contact the permittee for requests to provide this service if a mine is constructed, and report any problems or questions regarding private wells to EGLE.*

59. **Comment:** There is a nearby rail that could be utilized to ship ore offsite for processing.
    Response: *Shipping ore offsite for processing has been evaluated by Aquila for the Back Forty Project and determined not to be economically prudent.*

60. **Comment:** Has a new study been provided covering Threatened and Endangered Species?
    Response: *An update to Threatened and Endangered Plant Species Surveys was included in Appendix E of the EIAA.*

61. **Comment:** Part 632 does not address processing or beneficiation on site. Wouldn't it be more appropriate to permit the mine and mill under different Part 632 permits?
    Response: *Beneficiation is listed as a mining activity in Part 632 and is a mining industry term referring to any process that improves the economic value of an ore by removing gangue minerals to result in a higher-grade product. Beneficiation activities require a separate mining permit if the site of the proposed beneficiation activities is not within or adjacent to the site of other associated mining activities or the operator that will be processing the ore is not the same as the operator mining the ore. This provision clearly states the intent that beneficiation activities are regulated by Part 632. However, aspects of the processing may fall under other regulations, such as storage of chemicals, air emissions, and waste generation other than tailings. Currently, the Back Forty Project does not meet the criteria for requiring separate permits for mining and milling.*

62. **Comment:** The permit lists water monitoring test sites that are located on private land and access has not been permitted.

Response: *Although EGLE encourages and recommends environmental baseline and monitoring for impacts to be conducted on lands adjacent to the mining area as warranted, the monitoring plan shall consider access and other practical limitations. EGLE does not have the authority to require monitoring in locations where assess to private property is not permissible.*

63. **Comment:** The additional destruction of wetlands as a result of development of the proposed Eastern Corridor solely for access and utilities for the mine must be considered.
    Response: *It is the understanding of OGMD that wetlands impacts will be avoided in the development of the Eastern Corridor Access; however, if wetlands are expected to be impacted, the permittee would be required to obtain a wetland permit. See Comment #50 regarding the Eastern Corridor access road.*

64. **Comment:** SPC K27A: The Wetland Permit is currently being appealed in court due to alleged inadequacies. This permit should not be approved until the Wetland Permit in question is found to be adequate and fully compliant with EPA's federal trust responsibilities.
    Response: *Part 632 does not authorize final decisions to be based on court challenges outside of its purview. This condition was added to the Mining Permit to include a long-term requirement for monitoring of wetland levels.*

65. **Comment:** The facilities are in a Flood Hazard Zone.
    Response: *Flooding of the mining area has been demonstrated to be highly unlikely.*

66. **Comment:** Quarterly sampling of groundwater, surface water and facility water quality is unacceptable.
    Response: *Quarterly sampling of surface water and groundwater quality provides for seasonal variation of conditions. Quarterly sampling of facility is considered reasonable to monitor leachate characterization; however, water from the CWB will be sampled more frequently to inform the Water Treatment Plant. More frequent sampling requires justification and can be implemented if determined to be necessary. Part 632 specifically requires additional monitoring if sampling of leachate monitoring wells or compliance monitoring wells detects concentrations of a solute 2 standard deviations above the long-term average background level for 2 consecutive sampling events or an action level is reached.*

67. **Comment:** Mine site diagrams show "realignment" for a short section of River Road north of the open pit, north of the proposed termination of River Road.
    Response: *The River Road north of the pit boundary is not proposed to be realigned. The figures show a second existing road in that area.*

68. **Comment:** Explain how SPC L18A will be enforced since the applicant has already declared that it is not practicable.
    - 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).

Response: *Part 632 requires that a cover be employed on stockpile or storage facilities to isolate reactive materials from precipitation and air as soon as practicable. This applies to the waste rock and ore storage facilities at the Back Forty Project and it should be noted that it does not apply to disposal facilities (TMF and pit) and stockpiles or storage facilities that contain materials that do not meet the Part 632 definition of reactive.*

It is not considered operationally practicable to cover the facilities due to continuous activity during operations as pointed out by the permittee. However, if no mining activity is occurring for an extended period, it is plausible that it would be practicable to apply a cover for added protection if materials are determined to produce a leachate. Processing ore and commencement of reclamation are both mining activities, so therefore the mine operations would not be considered suspended if those activities are occurring.

69. **Comment:** General comments that the MPAA should be denied; opposition to the project due to concerns of environmental risks to water and other natural resources; land values will decrease; tourism will be negatively affected; the majority of local people are opposed to the mine.
Response: *All comments were reviewed; however, not all were technical comments that can be considered in a final decision to grant or deny a permit which is ultimately based on the applicable statute and rules.*

70. **Comment:** It is requested that additional monitoring parameters (barium, beryllium, boron, total chromium, hexavalent chromium, total cobalt, lithium, molybdenum, strontium, thallium, and vanadium) should be added for surface water quality monitoring at this time.
Response: *The amended mining permit requires that facility water, or influent (from CWB, waste rock facilities, and TMF), will be monitored for the constituents listed as that is reasonable for consistency with the NPDES permit monitoring requirements for effluent. If facility water quality analysis shows detections for the parameters listed, it would be reasonable to require monitoring for those constituents, both for surface water and groundwater. EGLE may require additional monitoring as determined to be necessary.*

71. **Comment:** Why was GOSSAN excluded from geochemical kinetic testing? Why did the applicant claim that GOSSAN would be "removed as ore?"
Response: *Gossan is a geological term for an iron-rich secondary deposit that occurs above a metallic mineral deposit. Part of a geochemical analysis is identifying the mineralogy of the rock and conducting whole rock analysis. Since the gossan has been oxidized and is gold ore that will be mined and not stored as waste rock, proceeding to kinetic testing was not warranted. However, representative tailings testing included the gossan ore types.*

72. **Comment:** General comments that the MPAA should be issued; project will provide jobs; modern mining can be done safely and be protective of the environment; Part 632 rules and regulations are stringent and provide for environmental protection.
    Response: *All comments were reviewed; however not all were technical comments that can be considered in a final decision to grant or deny a permit which is ultimately based on the applicable statute and rules.*