Enclosure:
Combined EPA, FWS, and Corps comments on the
Michigan Wetlands and Inland Lakes and Streams Application for the Back Forty Project
March 7, 2018

Background

The proposed project is located in Sections 1, 11, and 12 of Township 35 North, Range 29 West; Sections 4-9 of Township 35 North, Range 28 West; Section 2 of Township 35, Range 27; Sections 2 and 3 of Township 34, Range 28, Section 27 of Township 36, Range 27, and Sections 32-26 of Township 36 North, Range 28, Lake Township, Menominee County, Michigan.

As described in the public notice and the application, the purpose of the proposed project is to develop and mine a new polymetallic resource containing zinc, gold, silver, and copper. The project includes an open-pit mine with above-ground tailings disposal and rock management facilities, onsite wastewater management facilities, and operations and stormwater management facilities. Aquila proposes to fill 5.9 acres of wetlands and 253 linear feet of stream channel, and to discharge riprap to construct an outfall in the Menominee River, which acts as the boundary between Michigan and Wisconsin. Other impacts associated with the proposed project include dredging 5.3 acres of wetlands, and hydrologic impacts to 17.2 acres of wetlands and 297 linear feet of stream channel.

EPA objected to a wetlands permit for the Aquila Back 40 Mine in 2016, and the applicant withdrew its application. The applicant resubmitted its application in 2017. Although some issues identified in EPA's August 15, 2016, comment letter have been addressed in the current application, many have not been fully addressed, and the new application contains additional deficiencies.

MDEQ has requested significant clarification regarding the document titled "Potential Indirect Wetland Hydrology Impact of the Back Forty Project" and in response to questions and concerns identified during the public comment period (MDEQ letters dated January 19, 2018 and March 2, 2018). Both of these letters identify deficiencies in the application and describe how the applicant has not demonstrated compliance with the CWA Section 404(b)(1) Guidelines (Guidelines). EPA shares MDEQ's concerns regarding the permit application, the answers to which may also address EPA's comments.

Pursuant to the Guidelines, the applicant bears the burden of clearly demonstrating that the preferred alternative is the least environmentally damaging practicable alternative (LEDPA) that achieves the overall project purpose, minimizes impacts to the aquatic environment to the maximum extent practicable, and does not cause or contribute to significant degradation of waters of the U.S.

Incomplete Project Description of Lack of Final Plan

A concern highlighted in EPA's 2016 letter that has been partially addressed in the 2017 application is that the application did not contain a final site plan. A final site plan is needed to complete an impacts analysis, determine the LEDPA, and aid in review of compensatory

mitigation. The applicant has addressed this concern by including a proposed site layout associated with the preferred alternative identified in the Alternatives Analysis (Application, Section 6). However, some concerns remain. For example:

- The wetland application shows a Mine Waste Storage Area directly south of the proposed pit, while the Permit to Mine identifies that area as an overburden and soil stockpile area.

- The layout in the Wetlands Application does not include contact water management features that are in the Permit to Mine, such as perimeter ditches and liners to collect and transport contaminated water.

Even if siting these features will not influence the direct footprint of the project's aquatic resource impacts, their siting will likely affect the potential for the mine features (tailings, spoil, overburden) to have secondary impacts on water quality of the adjacent aquatic resources, including adjacent wetlands and the Menominee River.

To ensure that all impacts to aquatic resources, including water quality and other potential secondary impacts, are sufficiently evaluated, MDEQ should verify that the mine features and impact areas are the same as those approved in the Michigan Part 632 Permit to Mine.

An additional concern is that the application may not identify all work associated with the project, which is necessary to adequately assess impacts to aquatic resources and consider alternatives. The U.S. Army Corps of Engineers (Corps), in its February 27, 2018 letter to EPA, notes that activities associated with the mine not listed in the application include:

- future underground mining,
- a power plant (substation) planned east of the mine,
- contact water management features, and
- any road realignments/widening required because of the proposed project (although EPA understands there is no plan to relocate River Road).

The Corps identified some of the parcels listed in the Application at Table 1 as within the project area and which are not located contiguous to the proposed Mine. Since these areas are included as part of the Back Forty Project Area, the application should identify which activities will occur in those locations and any aquatic resource impacts associated with the activities.

Ensuring Mine Pit Integrity

In response to concerns regarding the overall stability of the cut-off wall that were raised in the context of the previous application, Aquila produced and revised "Memorandum B-4," which describes the design criteria for the cut-off wall and the mine pit wall. Memorandum B-4 includes a slope stability analysis under normal conditions and during the 100-year flood.

The federal agencies have continuing concerns regarding the stability of the Menominee River bank. Comparing the Part 632 Permit approval and the current application, we note that the average width of the land between the pit and the ordinary high water mark and 100-year floodplain has decreased, resulting in siting the proposed cut-off wall closer to the river. The closer proximity of the pit to the Menominee River bank further increases the risk of impacting the Menominee River and downstream waters because there is less margin for error simply

because rivers are dynamic and flow can be unpredictable due to precipitation, snowmelt, and ice.

The U.S. Fish and Wildlife Service (FWS), in its February 27, 2018 letter to EPA, notes that an increased frequency of heavy rain events has been documented in the United States (Walsh et al. 2014) and should be considered in all project design plans. For example, FWS states that on July 12, 2016, 8 to 12 inches of rain fell in a matter of hours across northern Wisconsin, causing widespread flooding (http://readywisconsin.wi.gov/).

Therefore, EPA recommends that MDEQ consider the increased frequency of heavy rain events, as described by FWS, in evaluating the application. Specifically, MDEQ should require an erosion potential evaluation for the Menominee River bank that is sufficient to demonstrate that the integrity of the mine pit wall and cut-off wall would not be compromised by a greater-than 100-year flood or erosion of the land between the River and the cut-off-wall.

Potential Project Impacts to Water Quality

Consistent with the Guidelines, the applicant must identify any potential adverse impacts to water quality of the adjacent aquatic resources, and verify that secondary water quality impacts to wetlands and streams have been avoided, minimized, and mitigated. The applicant has provided some data pertaining to water quality, but has not provided sufficient information to demonstrate that the Guidelines have been met.

Baseline water quality is described in Appendix B-2 for the Shakey River, Menominee River, Pike River, Squaw Creek, wetlands, and groundwater. The application also includes baseline macroinvertebrate and P-51 assessment data for the stream segments on-site (Appendix B-9). These data, along with the wetland delineation, help inform the agencies of the functional loss of aquatic resources. Appendix B-10 contains the monitoring and adaptive management plan, which includes wetland and groundwater quality metrics. However, the applicant should continue to monitor at these baseline locations throughout and after the life of mine to identify potential water quality impacts.

The Application, at Appendix B-10, also needs to include specific adaptive management metrics and impact thresholds. These should be based on the baseline data and would be the trigger for corrective actions which need to be identified in the adaptive management plan.

In addition, MDEQ should verify that water quality monitoring is sufficient to detect any leaching of toxic compounds into wetlands adjacent to mine storage facilities (e.g. additional monitoring locations may be needed).

The Corps noted in its comments that the proposed work may affect water quality in the Menominee River during the life of the mine and after its closure, and that the application failed to address the potential water quality impacts of constant drawdown from and restricted release to the Menominee River. Specifically, the application estimates seepage rates at 32,500 – 125,500 gallons per day from the Menominee River to the mine pit, during the life of the mine. EPA agrees this concern must be addressed. The applicant should also address potential water quality impacts from mine seepage to the river post-closure, once pumping and water treatment cease. If there is a possibility that untreated flows could enter the river via the outfall, we recommend the applicant consider the removal of the outfall at mine closure.

Potential Project Impacts to Wetlands

EPA is concerned with the accuracy of the applicant's estimate that 17.2 acres of wetlands would be impacted by changes in hydrology. Specifically, the term "upland wetlands" used in the application is not a recognized classification, and it is not clear from the soil survey information, piezometer, and monitoring well data that these wetlands are not influenced by groundwater.

The Corps' letter states that some of these wetlands contain streams and off-site surface connections to the Menominee River and Shakey Rivers, and the applicant's threshold of indirect "proximity" impacts where the project causes the loss of more than 50% of a wetland's watershed is not adequately supported. Additional documentation, and potentially additional well and soil data, are needed to demonstrate that pit dewatering will not also lower the water table within these wetlands.

The application does not address secondary impacts to wetlands, streams, and the Menominee River other than those due to dewatering. Additional secondary impacts may include, for example, fugitive dust or stormwater impacts. These may be addressed, in part, in the Michigan Part 632 Permit to Mine, but the layout in the proposed wetlands permit is different than that in the Permit to Mine. Certain measures to address potential transport of contaminants to other surface waters such as lining spoil piles and perimeter ditches are not specified in the wetlands permit and are not consistent with the Permit to Mine.

The January 19, 2018, MDEQ "Request for Clarification & Amplification" letter identifies a need for more information pertaining to secondary/indirect impacts to wetlands from changes in hydrology. MDEQ has identified discrepancies between the groundwater contours determined by the MODFLOW model, the projected contours presented in the Wetlands Application, and the measured contours. The Corps letter notes other concerns regarding dewatering, including a concern that sumps placed in constructed basins may impact the hydrology of adjacent wetlands. Also, the applicant has not supported its assertion that alteration of surface water and groundwater flows to wetlands would be minor during the spring, and larger drawdowns during the rest of the growing season would not cause more than minimal impacts to wetlands; negative impacts may occur to hydrophytic vegetation, invertebrate, and vertebrate species that rely on wetland hydrology to complete their life cycles. Answers to these technical questions are necessary for the agencies to assess and quantify wetland impacts.

Alternatives Analysis

The project purpose, as described in Section 6 "Feasible and Prudent Alternatives," defines the project narrowly, limiting the consideration of off-site alternatives with fewer aquatic resource impacts. Although the alternatives analysis includes a conceptual alternative that would place the ore processing and tailings disposal off-site, the applicant does not identify or evaluate any specific potential locations. Aquila eliminated Alternative B as not being economically viable primarily due to transportation costs, but it is not clear how that was determined without consideration of a specific site, as a nearby alternative would reduce that cost. Several other alternatives were eliminated due to economic feasibility, but the application lacks sufficient documentation to demonstrate that alternatives are not practicable due to the asserted costs. The applicant needs to provide a complete alternatives analysis, including its rationale for its decision to eliminate alternatives as not being practicable.

To pursue the preferred alternative, Aquila was able to obtain additional land from private entities and through a land swap with the State of Michigan. There are other State of Michigan lands east of project boundary that contain Aquila Mineral Leases and that are comprised of mostly upland. To demonstrate that alternatives with fewer aquatic resource impacts are not practicable, Aquila must describe what consideration was given to alternative upland areas near the site, e.g., state land east of the site, or other nearby properties.

Monitoring and Adaptive Management

In addition to the monitoring and adaptive management comments regarding water quality listed above, the Corps notes, and EPA agrees, that more details are needed to support the effectiveness of the proposed adaptive management to minimize and mitigate wetland impact during the life of the mine. The basic strategy proposed in the application is that the wetlands may be augmented by water from the Menominee River or groundwater withdrawals if drawdown is found to have adverse impacts on the wetlands. The applicant should verify that this would be a viable long-term strategy and include this information as a supplement to its application. The Corps also recommends that monitoring reports be submitted at least bi-annually and reference wetlands should be included in the impacts monitoring plan. The reference wetlands should be used along with the baseline data to create impact criteria to better detect impacts to wetland water levels and wetland functions.

Compensatory Mitigation

Under the CWA Section 404(b)(1) Guidelines, the agencies may only consider compensatory mitigation after an applicant has demonstrated avoidance and minimization of adverse aquatic resource impacts. The applicant has not demonstrated avoidance and minimization; however, in anticipation of this demonstration, EPA provides the following preliminary comments regarding the proposed mitigation.

To compensate for aquatic resource impacts, the public notice describes the preservation of a 507.74-acre parcel of property in Lake Township, which contains 294.24 acres of wetland, 7,864 linear feet of perennial stream, and 4,794 feet of Menominee River frontage. The mitigation plan also includes wetland enhancement and stream restoration activities, but preservation makes up a majority of the compensatory mitigation being proposed.

FWS noted that although preservation of wetlands could be of conservation value, the proposed parcel does not meet the goal of no-net-loss of in-kind habitat value. The application includes the detailed site selection criteria, and describes the lack of wetland mitigation opportunities near the impact site. However, we recommend the applicant consider opportunities for stream restoration nearer to the site to compensate for the proposed stream impacts.

Additionally, the information included with the public notice is insufficient to demonstrate that the proposed preservation wetlands will meet the 2008 Federal Mitigation Rule[1] or MDEQ requirements to be considered as compensatory mitigation. Those requirements include that the wetlands to be preserved are under a demonstrable threat, perform exceptional physical or biological functions, and will be permanently protected. Additional support regarding the value

[1] 40 C.F.R. § 230.93(h)

of lumber on the property and any real estate inquiries should be provided to support the premise that the wetlands are under demonstrable threat.

While we understand that the Michigan Department of Natural Resources (MDNR) would be the long-term land steward, which MDEQ and EPA have approved in the past, we note that MDNR's mission for land use/conservation may differ from that of MDEQ. To ensure that the land management plan will meet the requirements for compensatory mitigation, prior to permitting, MDNR should agree to the standard MDEQ requirements for Conservation Easements, including the prohibition of logging within both the uplands and wetlands and perpetual protection from threats (including invasive species).

Endangered Species: Northern Long-eared Bat

FWS notified EPA that the proposed project is within the range of the federally threatened northern long-eared bat *(Myotis septentrionalis;* NLEB), and removal of trees could impact this species. During the summer, NLEB typically roost singly or in colonies underneath bark or in cavities, crevices, or hollows of both live and dead trees (typically ≥3 inches dbh). The species has also been found roosting in structures, such as barns, sheds and bridges, occasionally. These bats roost and forage in upland and lowland woodlots, tree-lined corridors, and forested wetlands. During the winter, NLEB hibernate predominantly in caves and abandoned mine portals.

According to FWS, the proposed action is likely to be exempt from take prohibitions pursuant to the "4(d) rule" for the NLEB; therefore, any incidental take of NLEB that may occur as a result of removing trees will not be not prohibited. Although not required, FWS recommends that cutting potential roost trees occur only between October 1 and March 31 while bats are not present on the landscape to avoid direct take of NLEB, and minimize any effects to bats returning after April 1.

Trust Responsibility Species

In its letter to EPA, FWS documents the conditions that sustain Lake Surgeon, and how the project may affect the trust responsibility species:

> Lake Sturgeon (*Acipenser fulvescens*), inhabit large river and lake systems primarily in the Mississippi River, Hudson Bay and Great Lakes basins. Lake sturgeon are listed as either threatened or endangered by 19 of the 20 states within its original range in the United States, but they are not federally listed in Michigan. Lake sturgeon can be considered a nearshore, warmwater species with water temperature and depth preferences of low 50s to mid-60F and 15-30 feet, respectively. These fish are benthivores, feeding on small invertebrates such as insect larvae, crayfish, snails, clams, and leeches. Adult sturgeon habitually return to spawn in streams where they were born, often migrating long distances up rivers in the spring. After hatching, some young sturgeon have been observed to remain in their natal rivers for their first summer of life.

Additionally, the FWS letter describes the agency's extensive involvement in restoration efforts for lake sturgeon in the Menominee River, which include providing fish passage for sturgeon upriver and downriver around existing dams. These efforts to ensure the health and continued

recovery of the species and the river that supports them have been a high priority of FWS, involving many projects and state, tribal and local partners have been involved to ensure long-term success of the species. The goals and objectives for these efforts span a 50-year timeframe and management will be ongoing beyond meeting these goals.

As previously indicated by FWS, any development in the watershed that could potentially harm the water quality of the Menominee River and thus reduce the viability and success of sturgeon reproduction, growth, survival or health is a concern.

FWS echoes EPA's and the Corps' general concerns that MDEQ ensure the measures and adaptive management plans to prevent contamination or unanticipated discharge from the proposed project are sustainable, long-term, and are fully sufficient to impede contamination from occurring.

Cultural and Archeological Resources

The Corps provided EPA the following advisory comments:

> Previous archaeological surveys identified cultural resources in the project area. The applicant has not provided sufficient information to support the assertion that the proposed project would likely not impact potentially eligible or eligible resources. Historical and cultural resources should be addressed for the entire expanded project site.

EPA concurs with the Corps' recommendation that MDEQ ensure that historical and cultural resources are adequately addressed within the full extent of the expanded project site.