



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5

77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

WW-16J

JUN 19 2009

Ms. Colleen O'Keefe
Land and Water Management Division
Michigan Department of Environmental Quality
P.O. Box 30028
Lansing, Michigan 48909

Dear Ms. O'Keefe:

This letter is in response to the Michigan Department of Environmental Quality's (MDEQ) Public Notice for file No. 08-52-0104 in which Kennecott Eagle Minerals Company is proposing to place fill in a lake, construct two water intake structures, and discharge treated effluent into wetlands as part of the re-commissioning of the Humboldt Tailings Disposal Facility (HTDF). The HTDF is a steep sided lake that was created as a result of prior mining activities. A total of approximately 2,359,007 cubic yards of tailings will be placed in the HTDF. Treated mill effluent and displaced lake water will be discharged to adjacent wetlands through an 8 inch pipe. When the facility is operational the discharge to the wetland will increase from 246 gallons per minute to 352 gallons per minute. The project site is located in Humboldt Township, Marquette County, Michigan. The comments that follow are the combined comments of the U.S. Environmental Protection Agency (EPA) and the U.S. Fish and Wildlife Service(FWS).

We have reviewed the permit application and the additional information provided with the application. We support the proposal to re-commission an existing tailings facility to receive tailings from processed nickel and copper ore, rather than develop a new mill and tailings disposal facility. We do, however, have a number of concerns regarding the impacts the operation of the HTDF will have on the wetlands receiving effluent from the facility and the potential for tailings contaminants to adversely impact fish and wildlife resources.

Our first concern relates to the impact the increase in discharge from the lake into the adjacent wetlands will have on the existing emergent and scrub-shrub wetland communities. It has been well documented that increases in volume and/or frequency of surface water inputs to wetlands can degrade wetland plant communities. In this case, the addition of a significant amount of water to the wetlands is likely to result in the degradation and/or destruction of the vegetated wetland community, possibly resulting in the creation of a large open water area. The conversion of a vegetated wetland community to open water would result in wetland habitat loss

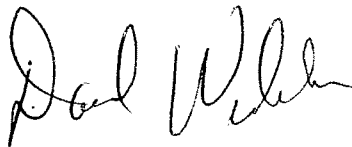
and possibly water quality benefits as well. The applicant needs to demonstrate that there are no alternatives available that would be less damaging to these wetlands. If no alternative is available, than pursuant to the Section 404(b)(1) Guidelines, the applicant needs to mitigate for unavoidable adverse impacts.

In a May 27, 2009 letter, the FWS asked a number of detailed questions and expressed concerns regarding the impacts the tailings disposal facility would have on both fish and migratory birds. Rather than reiterating all of their concerns in this letter, we have enclosed a copy of the FWS letter and are incorporating their questions and concerns into this letter by reference.

For the reasons outlined above and in the enclosed FWS letter, we are concerned that the currently proposed project may have significant adverse impacts on the aquatic ecosystem. Until we receive the additional information requested we cannot make a determination regarding whether this project complies with the Section 404(b)(1) Guidelines, and we object to the issuance of a permit for this project. Once the requested information is provided to both EPA and the FWS for review, we will make a final determination regarding compliance with the 404(b)(1) Guidelines and reassess our objection to the project.

Thank you for the opportunity to comment on this public notice. If you have any questions regarding these comments please contact Sue Elston at 312/886-6115.

Sincerely yours,



for Kevin M. Pierard, Chief
Wetlands and Watersheds Branch

Enclosure

cc: Barb Hosler, USFWS, Lansing MI (w/o enclosure)
Mike Smolinski, MDEQ, Gwinn, MI





United States Department of the Interior

FISH AND WILDLIFE SERVICE
East Lansing Field Office (ES)
2651 Coolidge Road, Suite 101
East Lansing, Michigan 48823-6316

IN REPLY REFER TO:

May 27, 2009

Ms. Sue Elston
U.S. Environmental Protection Agency
Wetlands and Watersheds Branch (WW-16J)
77 West Jackson Boulevard
Chicago, Illinois 60604-3507

Re: State of Michigan File No. 08-52-0104-P, applicant Kennecott Eagle Minerals Company

Dear Ms. Elston:

We have reviewed the Public Notice for the above referenced file, concerning an application for a Michigan Department of Environmental Quality (MDEQ) permit under the authority of Part 301, Inland Lakes and Streams, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA). We provide these comments under the authority of the Fish and Wildlife Coordination Act and the Endangered Species Act of 1973, as amended (Act), and in accordance with the Service's Mitigation Policy.

According to the information provided in the Public Notice, the applicant proposes to utilize the existing Humboldt Tailings Disposal Facility (HTDF) to dispose of approximately 2,359,007 cubic yards of mine tailings from the milling of nickel and copper ore. The HTDF is a steep-sided lake, created from prior mining activities, with a surface water area of 67 acres. The applicant also proposes to construct two intake pipes in the HTDF and a waste water outfall structure with riprap in an adjacent wetland. The applicant proposes to discharge approximately 13,500 cubic feet of water per day into the adjacent wetlands. The proposed project would occur in T47N, R29W, Sections 2 & 11, Humboldt Township, Marquette County, Michigan.

Fish and Wildlife Coordination Act Comments

Discharge of Tailings at the Humboldt Tailings Disposal Facility

We have reviewed the permit application and supporting documents, including Appendix B, *Hydrologic and Geochemical Mass Balance Modeling Report*. In support of the proposed project, the applicant claims that subaqueous disposal of the tailings in the HTDF at the proposed depths would minimize availability of metals by preventing or greatly reducing sulfide oxidation

because the HTDF exhibits a chemocline of low dissolved oxygen (DO) levels below 100 feet and a persistent thermocline that prevents mixing in the lake and maintains an anoxic zone at the bottom of the HTDF.

The applicant has documented the presence of a fish community, consisting primarily of minnows, white suckers, and northern pike, in the HTDF. Our records indicate that bald eagles nest within 2.5 miles of the site. The applicant has not provided any information about use of the HTDF by birds, but we expect eagles and waterfowl may forage on the HTDF and surrounding lakes. Should the proposed disposal of mine tailings in the HTDF result in elevated levels of metals, these metals could accumulate in the tissues of the resident fish, causing mortality or affecting the fish's health. We have concerns that this may make these fish available to scavengers or more vulnerable to predators, resulting in ingestion of these metals by piscivorous birds foraging in the HTDF.

Based on our concerns for potential impacts to migratory birds, we present the following questions and information needs to ascertain the likelihood of the proposed mine tailings undergoing oxidation in the HTDF:

1. The applicant proposes to place the nickel and copper tailings in slurry form subaqueously through a discharge boom from a barge floating on the surface of the HTDF. The applicant states that this means of discharge would reduce physical mounding of the tailings. Leveling of the tailings would occur over a period of time, due to consolidation and gravity. Assuming complete leveling of the tailings, the final elevation of the tailings would be near 1,420 ft, leaving approximately 118 feet of water over the tailings, based on a surface water elevation of 1,538 ft.
 - a. The applicant indicates that sampling in May 2007 showed a chemocline in the HTDF, with low DO levels below 100 feet in depth. We have concerns that 18 feet of water is a marginal layer of protection between the tailings and higher levels of DO, particularly if the tailings are not leveled as the applicant assumes. What is the likelihood that the tailings will not level and may actually rest at a higher elevation?
 - b. Will the discharge boom place the tailings directly on the bottom of the HTDF, or will the tailings settle, at least partially, through the well-oxygenated water column above 100 feet? If the tailings do settle through the water column, how will this affect the chemical equilibrium of the HTDF? Will this increase the bioavailability of metals?
2. The applicant indicates the HTDF does receive some inflow from groundwater.
 - a. Will adding 75 feet of mine tailings to the HTDF alter the groundwater flow into the HTDF? If the groundwater inflow is decreased, is precipitation enough to maintain the surface water elevation at 1,538 feet? If the surface water elevation decreases, will the water cover over the tailings be sufficient to prevent oxidation?

- b. We anticipate that the groundwater contains dissolved oxygen. How does this affect the potential oxidation of the tailings? Will the oxygenated groundwater mobilize metals, and will these metals enter the groundwater?
 3. The applicant proposes to construct a slurry wall and berm to prevent groundwater and surface water from leaving the HTDF. We have concerns that groundwater could leave the site and gain access to surface waters. Is there fractured bedrock that would allow groundwater seepage at other locations than the proposed slurry wall? We recommend the applicant clarify the potential for groundwater seepage from the HTDF.
 4. In Appendix B, the applicant states that N_{DF} in equation (4) is very small, indicating significant temperature stratification in the HTDF; however, the applicant does not provide any values used for the variables in the equation. Moreover, the equation suggests that N_{DF} should decrease as the average depth increases. But, the applicant provides information that in 1984, prior to placement of tailings from the Ropes Mine, the DO levels were much higher at the bottom of the pit, even though the HTDF was much deeper then, indicating mixing of the waters during spring and fall turnover. Thus, we question the validity of the calculated value for N_{DF} and the assertion that the HTDF is not likely to mix due to insufficient turbulence. We recommend the applicant provide the data used to calculate N_{DF} and answers to the following questions:
 - a. Has equation (4) been field validated for applicability to temperate lakes?
 - b. How are wind forces taken into account in the inputs to equation (4)?
 - c. Why did mixing apparently occur in the past (as evidenced by high DO levels at the bottom) when the HTDF was deeper? How will decreasing the depth of the HTDF by another 75 feet affect the N_{DF} ?
 - d. The equation indicates that N_{DF} should become larger as the volume flow (Q) increases. How will the displacement of water from the discharge of tailings affect the value of Q and ultimately N_{DF} ?
 - e. With wind, decreased depth, and increased outflow taken into account, would you still predict a stable system?
 5. Appendix B provides a model for chemical concentrations in the HTDF in the event of complete mixing. The applicant indicates this represents a "worst-case" scenario and should aid in the design of the proposed waste water treatment plant. Table 4 presents the expected concentrations of chemical constituents with complete mixing. Several of these expected concentrations, including those for barium, cobalt, copper, iron, lead, manganese, mercury, and nickel, exceed the freshwater chronic screening values for aquatic life (Buchman 2008). Although the applicant can presumably design a treatment plant to remove these chemicals before waste water is discharged from the HTDF, the applicant does not consider the potential impacts of these concentrations while in the HTDF. As we have concerns about the likelihood of complete mixing occurring in the

HTDF, we recommend the applicant provide an analysis of the impacts to aquatic life and effects at higher trophic levels from these expected concentrations in the HTDF.

Discharge of Waste Water into Adjacent Wetlands

In addition to our concerns about disposal of the tailings in the HTDF, we also have concerns about the applicant's proposal to discharge 13,500 cubic feet of treated water per day into adjacent wetlands. We have concerns that this increased volume of water into the wetlands will make the area too wet to continue to support an emergent/scrub-shrub community, changing the wetland to an open water system. We recommend the applicant demonstrate that this increased volume would not affect the plant community or else consider alternatives to discharging treated water into the wetlands. We recommend compensatory mitigation for any unavoidable impacts to the adjacent wetlands, including conversion to another wetland type.

We understand that issues related to water quality of the proposed discharge will be considered under a National Pollutant Discharge Elimination System (NPDES) permit; therefore, our concerns, as outlined above, relate only to the increased volume of water entering the wetlands. Our lack of water quality comments under review of this permit application should not be construed as a lack of concern.

Endangered Species Act Comments

Our records indicate that Canada lynx (*Lynx canadensis*) and Kirtland's warbler (*Dendroica kirtlandii*) occur in Marquette County. The Canada lynx is listed as threatened and Kirtland's warbler as endangered, pursuant to the Act. The known breeding sites for Kirtland's warbler do not occur within the vicinity of the proposed project. Canada lynx preferred habitat consists of mature stands of boreal forests or other conifer stands. The proposed project site does not provide suitable habitat for the Canada lynx.

At this time, we do not require any actions to protect federally listed species. If, however, more than six months pass, project plans change, or new information becomes available that indicates listed species, proposed species or critical habitat may be affected, you should conduct further coordination with our office. This information is provided as technical assistance only and does not constitute consultation under section 7 of the Act.

Summary Comments

We have concerns that the proposed project may result in adverse environmental impacts, affecting federal trust resources, such as migratory birds. We recommend the applicant provide more information regarding the potential for oxidation and release of metals, as outlined in our series of questions. We also recommend the applicant consider potential impacts to the adjacent wetlands and mitigation measures. We request that the MDEQ not issue a permit for the proposed work until the applicant provides additional information and we can conduct a thorough analysis of the potential impacts.

We appreciate the opportunity to provide our resource protection recommendations. For further discussion, please contact Barbara Hosler of this office at 517/351-6326 or the above address.

Sincerely,



Acting for Craig A. Czarnecki
Field Supervisor

cc: MDEQ, Land and Water Management Division, Lansing, MI
(Attn: Colleen O'Keefe)
MDEQ, Land and Water Management Division, Gwinn, MI (Attn: Mike Smolinski)

Literature Cited

Buchman, M. F., 2008. NOAA Screening Quick Reference Tables, NOAA OR&R Report 08-1, Seattle, WA, Office of Response and Restoration Division, National Oceanic and Atmospheric Administration, 34 pages.

