STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
UPPER PENINSULA DISTRICT OFFICE

JENNIFER M. GRANHOLM
GOVERNOR

STEVEN E. CHESTER
DIRECTOR

June 21, 2006

Mr. Jonathan Cherry
Kennecott Eagle Minerals Company
1004 Harbor Hills Drive, Suite 103
Marquette, Michigan 49855

Dear Mr. Cherry:

The Department of Environmental Quality (DEQ) Mining Team has conducted an initial review of the Eagle Project Mining Permit Application for adequacy and accuracy. The application was submitted to the Office of Geological Survey of the DEQ on February 22, 2006, by Kennecott Eagle Minerals Company (KEMC) under the requirements of Part 632, Nonferrous Metallic Mineral Mining, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

The Mining Team has identified a number of areas where supplemental information and data are needed to complete a thorough, accurate, and comprehensive review of your application. Part 632 provides for the submission of additional information and data to supplement and clarify information supporting the application. This is necessary and appropriate given the complexity of the regulated activities that would be authorized by a permit.

Please respond by addressing the following:

1. Provide a plan for non-lethal harassment or exclusion of wildlife at the contact and non-contact water basins.
2. Provide the citation to White et al. 2005.
3. Clarify how many samples were used for the Acid-Base Accounting (ABA) analysis.
4. Provide a list or table of the ABA data for the samples used for all 15 long-term column tests, and a comparison of the column test samples to the range of Acid Production Potential (AP) and Neutralization Potential (NP) values determined for the various rock types.
5. Provide a legend for Figure 2-2 in the Phase II Geochemistry Study.
6. Clarify the X-axes symbols on Figures 3-2, 3-3, 3-4, and 3-5 in the Phase II Geochemistry Study.
7. Confirm that the classes shown on the X-axis of Figure 3-5 are correct in the Phase II Geochemistry Study.
8. Clarify how the proportions of the development rock (sedimentary vs. intrusives) were estimated.

9 Provide the AP values for "high-sulfur" and "low-sulfur" samples and a comparison with the range for the rock types
10 Provide results from calculated time to consumption of the neutralization capacity using long-term column leaching data.
11. Clarify how the estimate of 20% of precipitation infiltration rate for the rock on the Temporary Development Rock Storage Area (TDRSA) was determined in the geochemical analysis.
12. Provide details of which solution compositions were used to initialize the leachate mixture calculations.
13. Clarify what the difference is between Table 4.1 in Appendix D-2 and Tables 2 and 3 in Appendix D-3.
14. Provide details on the calculation used for data presented in Tables 1 and 2 in Appendix D-3.
15 Clarify the difference between Table 1 in Appendix D-4 and Table 1, Appendix D-5.
16. Provide details on the calculation used for data presented in Table 2, Appendix D-4.
17. Clarify if 70 weeks of column leaching tests were conducted or 50. If 70 weeks of tests were conducted, then provide data from the column leaching tests.
18. Provide analysis of the effects wash-off of acidic salts will have on groundwater composition during mine reflooding.
19. Clarify how the compositions calculated for the underground workings compare to background groundwater compositions.
20. Clarify what the effect will be on the water quality in the TDRSA from seasonal spikes and periods of drying and rewetting followed by rapid spring flushing
21. Clarify why the calculation to determine the amount of limestone needed for the TDRSA was not based on the total amount of material that would be stored over the life of the TDRSA and whether the safety factor is sufficient to prevent acid generation at a Neutralization Potential (NP) value of 1.0. (Appendix D-3, Pages 10 – 11).
22. Provide a plan describing how fish, fish habitat, and aquatic macroinvertebrate populations will be monitored from the time of mine construction through reclamation. This plan should include information on methods and frequency of monitoring events
23. Clarify what measures will be taken to prevent blockage resulting from remineralization within the limestone in the TDRSA.
24. Provide a plan that provides for leak detection throughout the entire TDRSA.
25 Provide a plan for increasing the thickness of the contact water collection layer to 2 feet of granular material.
26. Provide a plan for evaluating storm events on the TDRSA using a 24-hour, 25-year storm event or equivalent.
27. Provide an action water level in the contact water collection sump and leak detection collection sump in the TDRSA and a contingency plan if the action water level occurs.

28. Clarify how the requirement of not more than one foot of head over the liner will be met if an extreme snow melt condition occurs and if the TDRSA is used as a temporary holding basin for water.
29. Provide a plan to include monitoring for volatile and semi-volatile organic compounds for groundwater around the main surface facilities on an annual basis.
30. Provide a plan for disposing and handling of materials not exempt from the definition of solid waste.
31. Provide plans for a containment building for the pump discharge area at the TDRSA to prevent freezing of pumps.
32. Clarify what standards will be used for testing frequency for grain size and hydraulic conductivity in the Construction Quality Assurance (CQA) plan for the TDRSA.
33. Clarify what standards will be used for testing the Geosynthetic Clay Liner (GCL) and liner materials in the CQA plan.
34. Provide in the CQA plan the requirement that seam testing of 5 of 5 samples pass the minimum peel and shear requirements.
35. Provide in the CQA plan construction records that include inspection and testing of the contact water removal and detection equipment, and any other associated equipment or structures to ensure that the design specifications, including material and equipment specifications, coating specifications, and mechanical and electrical equipment specifications are met.
36. Clarify what measures will be used to prevent/control leaks in the conveyance systems to the Waste Water Treatment Plant (WWTP).
37. Provide a plan for monitoring water quality downgradient of the Non-Contact Water Infiltration Basins (NCWIBs).
38. Provide a plan for inspecting and cleaning sediment from the NCWIBs.
39. Provide a plan to prevent and address any leaks of potential contaminants in concrete floors and sumps.
40. Clarify the frequency for which pumping rates will be calculated for mine dewatering and Contact Water Basins (CWB) pumps
41. Provide a plan for calibration of the pressure transducer in the leak detection system sump at the TDRSA.
42. Clarify what measures will be taken to stabilize stockpiled soil that will be in place for less than one year
43. Clarify what measures will be taken to manage grease, oil, metal shavings, and other debris generated from machinery.
44. Identify the entire transportation route and location of the loadout facility.
45. Provide information in the EIA on characterization of seasonal or long-term variations in conditions or features as prescribed by Rule 202(3).
46. Clarify how water will be managed during the postclosure monitoring period if the TWIS is removed 5 years prior to removal of the WWTP.
47. Clarify how the backfill rock (273,079 tons) is accounted for in the Financial Assurance (FA), Table 4-4 (page 15)

48. Clarify why Table 7-6 (page 83) indicates that in year 10, reclamation costs for 250,000 yd3 from the TDRSA are recognized. Why is the cost for the TDRSA removal indicated in year 8 if the backfill costs are recognized in year 10?
49. Clarify where the source for the on-site backfill material described in the description of the underground mine design for use in secondary stopes for uncemented backfill is located.
50. Identify the costs associated with disposal of dewatered sludge and sludge removal, during operations and postclosure, from the CWBs and where they are accounted for in the FA
51. Clarify when the activity of reflooding the mine occurs, Table 7-2.
52. Clarify how land fill costs were developed for disposal of 262,000 ft2 each of geomembrane liner, geotextile/GCL and cover geomembrane.
53. Provide analysis for potential changes in upward vertical hydraulic gradients due to the removal of the ore body and subsequent backfill partially using uncemented rock.
54. Provide a plan for disposal of the sludge and brines from the WWTP.
55. Provide a detailed timeline describing the relationship between closure activities and operation of the wastewater treatment plant – sludge and brine management, and subsequent costs
56 Provide a plan for the disposal of dewatered sludge from the filter press and brine solids and associated costs
57. Provide a plan for monitoring levels of nitrates in the mine from blasting and address the possibility of migration of nitrates upward into the shallow groundwater.
58. Provide data and results from Unconfined Compressive Strength (USC) test used to calibrate the point-load test results
59. Provide data and results from sensitivity tests to determine crown pillar behavior under a variety of possible horizontal stress conditions.
60. Provide data and results using a three-dimensional, non-linear modeling code to assess the stability of the crown pillar.
61. Provide data and results of a rigorous analysis technique that encompasses all of the possible failure mechanisms to determine stability of the crown pillar.
62. Provide the derivation of the deformation modulus used throughout the modeling analyses for the crown pillar [?].
63. Provide data and results from analyses conducted using plasticity theory to predict shear and tensile failure of the rock mass.
64. Provide data and results from the Phase^2 model specifying 10 three-noded triangle elements.
65. Clarify how the sub-vertical fault plane that intersects the Eagle deposit was analyzed for effects on the crown pillar.
66. Provide analysis for potential impacts of mine dewatering in the D-zone recharge area, where the C-zone confining layer may not be present, southwest of the ore body.
67. Provide more detail for groundwater contours in the groundwater divide in the ore body and surface facility area.

68. Clarify how the hydraulic conductivity for the northeast area where the A and D-zones combine was derived and used in the model
69. Provide data and results from a groundwater modeling run using the most current data.
70. Clarify what theoretical approach was used to determine transmissivity for specific capacity test data.
71. Provide match points and exact type curves used to analyze constant-rate drawdown data for the unconfined A-zone aquifer and match points for the Theis analysis for the confined D-zone drawdown data.
72. Identify the D-zone interval in QAL006.
73. Clarify the approach used to identify/select private wells during the well survey.
74. Clarify what measures will be taken to prevent results from groundwater quality monitoring at the main surface facility location from being masked by discharge in the TWIS.
75. Provide groundwater model outputs that show modeled vs. observed heads.
76. Provide tables and maps clearly describing the impacts to hydrology (base case and upper-bound case) in the area around the ore body.
77. Clarify methods used to define the affected area for the conditions or features outlined in the Environmental Impact Assessment (EIA).
78. Clarify the differences in water chemistry (Table 1, Appendix D-5) between semi-massive and massive sulfide.
79. Clarify what measures will be taken to control fugitive dust at the loadout facility and from haul trucks in their return route to the mine from occurring.
80. Provide information or analysis that demonstrates that sealing of the lower mine levels will accomplish the proposed objective.
81. Clarify the procedures followed for identification of the Yellow-pond Lily.
82. Clarify the rationale for determining cumulative and additive impacts.
83. Provide clarification on why the exhaust fan could not be constructed underground.
84. Provide a plan for controlling light from the main surface facilities.
85. Provide a plan for controlling noise from the power generators.
86. Provide clarification on reported selenium values.
87. Clarify where statistical analysis methods were used and provide the analysis and results.
88. Provide a description of the basis for determining the sensitive noise receptors in section 3.18 of the EIA.
89. Provide clarification on what road material from the crushed ore bins to the truck wash will be used.
90. Provide results from modeling/calculations of predicted water quality at the seeps on the north terrace.

91. Provide information on the potential impact that the Eagle Project could have on the Kirkland's Warbler, an endangered species

Thank you for your attention and cooperation in this regard. Should you have any questions or concerns, please feel free to contact me

Sincerely,

Steven E. Chester for Joe Maki

Joe Maki
UP District Geologist
Office of Geological Survey
906-346-8563

cc: Mr. Dan Beattie, Governor's Washington Office
Ms. Dana Debel, Governor's Office
Mr. Matt Johnson, Governor's Northern Michigan Office
Mr. Steven E. Chester, Director, DEQ
Mr. Stanley F. Pruss, Deputy Director, DEQ
Ms JoAnn Merrick, Senior Executive Assistant to the Director, DEQ
Ms. Carol Linteau, Legislative Liaison, DEQ
Mr. Robert McCann, Press Secretary, DEQ
Mr. Harold R. Fitch, DEQ
Mr. Steven E. Wilson, DEQ