November 18, 1997

Mr. John Griffin
Sokaogon Chippewa Community
Route #1, P.O. Box 625
Crandon, WI 54520

RE: Comments on Mole Lake Interim Report entitled "Investigation of Swamp Creek Baseline Conditions and Metals Toxicity to Aquatic Species"

Dear Mr. Griffin:

I wish to thank you for the opportunity to participate in the presentation on the Mole Lake Reservation on September 11, 1997 in which the above referenced interim report was introduced. I, and others within the EPA, have had an opportunity to review the report and have the following questions and comments to hopefully clarify some areas of the report. EPA supports the continuation of this study and believes that the future work recommended by this report and the final conclusions will provide valuable input to the evaluation process of the project.

I have also received and reviewed the comments regarding this report from George Meyer, Secretary of the Wisconsin Department of Natural Resources (WDNR), dated October 14, 1997. I also had an EPA specialist on water quality standards and a quality assurance expert review the WDNR comments and the report as well. Based on these reviews, EPA believes that the WDNR has many valid concerns regarding the work and results of the study. The results of your study raises many interesting points and the WDNR comments for the most part either question these points or state that they will look into the issue further. Since your report is an interim report, many of the WDNR's concerns can be addressed in subsequent sampling/data analysis and revised reports. A revised report should provide more detailed objectives and sampling methods and should highlight concerns regarding potential pathways that the mine may contribute to increases in sediment loading or metal concentrations in Swamp Creek or to other surface water bodies.

An EPA water quality specialist, Dave Pfeifer, reviewed both documents and believes that the WDNR comments regarding water quality criteria are on track from a water quality perspective. Al Alwan, an EPA quality assurance specialist, also reviewed the documents and believes that there is a need to establish the chemistry baseline for the potential impact area. He provided the following observations/comments regarding project objectives and methods: 1) The USGS interim report provides a good approach to study the issue of establishing the Swamp Creek baseline conditions and metals toxicity; 2) The results indicate the need for further study to establish the gaps; 3) The WDNR does not share the findings on the chemistry results; 4) There is no indication that someone else has done a toxicity test; 5) The USGS has done real testing on the impact of copper on wild rice growth which is very significant to the study on the impact of the Crandon Mine; 6) There was a lot of seasonal variation with the results of the metals; and 7) The USGS findings were much different from the results of WDNR/CMC, but the comparison is like comparing apples to oranges. In meeting with Mr. Alwan after receiving the above comments, he stated that the use of "clean techniques" is the preferred method for sampling for low level inorganics but depending on a projects data quality objectives and other quality assurance/quality control procedures (i.e., use of field sample blanks), it may not be a necessity.

He pointed out that if the sampling techniques used by USGS were contributing to the higher levels of inorganics, then the field sample blanks should show this and that the sampling round conducted in October 1996 (Table 10) should have shown elevated levels as well. He did not believe, based on the WDNR letter, that there is enough information to be able to compare the Report's findings with past WDNR/CMC findings due to a number of variables such as sample location, time/season of sample and sample techniques. He stated that the data presented by the WDNR is not enough to establish a baseline to be able to determine that the Report's findings are outside the range of reasonable values. The differences in sampling results only supports the need to establish seasonal baselines to determine natural fluctuations in biodiversity and low-level inorganic concentration trends.

An additional comment was received from Jean Chruscicki regarding sediment sampling and is as follows:

SEDIMENT METHODOLOGY ISSUES
There are several operating procedures that the report does not state that would be helpful in relation to the metal concentrations in the sediment. 1) The atomic absorption spectroscopy (AA) method can also be used for leachate, as metals are potentially leached off the sediment in the lab and concentrations measured. The anionic/cationic attraction between the clays (finest size sediment) and metals can be strong and effectively removed from the sediment for analysis. When this is done with all the same size and quantity of sediment, the results are comparable with other data and are reproducible. 2) The sediment size issue is a critical question that needs more explanation. The attraction of metals to finer-sized sediment again is critical, there is no understanding of how the sediment samples were collected in relation to the sites, or separated in the lab. The ratio of the gravel to fines collected would make a big difference in concentrations. Furthermore, since the rice grows more in the finer "muck" in the substrate of the lake, the metal-to-clay attractions and concentrations are much more important than gravel. 3) Tables 6 and 7 merely state "gravel/sediment", with no mention of size within the text or table. The numbers in the final column "Duck Lake Drainage Gravel/Sediment" appear to be the concentration of metals in each, but it is not understood why these numbers are presented as a ratio, nor is there a resultant correlation with the dissolved metal concentration of Table 3.

Specific comments on the report are as follows:

<u>Results of Baseline Studies Conducted in Spring, 1996:</u>
1) This section needs more explanation of quality assurance samples such as splits, duplicates and blank samples for the water quality tests. Field blank results should be included on the appropriate tables, such as in Table 3, so that they can be compared to the test sites. Some tables have Recon results listed, the text needs to explain the significance of these samples.
2) Why was E. crusgallli, the barnyard grass used in this study if it is not found in the test area?
3) On page 3, the 1st sentence of the 1st paragraph needs further explanation. It states, "Because of naturally occurring acidic streams in the study area, a drainage flowing from Duck Lake (Figure 2) was selected for analysis ...". In Table 2, pH readings do not indicate that the local streams are acidic. Also, why does that statement justify sampling Duck Lake versus choosing other water bodies in the area? Text needs to explain the significance of Duck Lake.
4) Figures 1 and 2 need to be labeled and have a North indicator.
5) Table 3 is labeled as Total metals, as does the 3rd paragraph on Page 2, yet this paragraph states that all samples were filtered through a 0.45 micron filter and acidified, making all the samples analyzed for dissolved metals. This was mentioned in the September 11 presentation as well.

<u>Results of Baseline Studies Conducted in the Fall, 1996:</u>
6) The 1st paragraph stated that samples sites were reduced to SC1, SC2 and SC5, but later in the 4th paragraph, mention is made of the Duck Lake sample.

7) Need more explanation as discussed above in comment #1 on the blanks and recon samples.

Test Results of Natural Waters Spiked with Metals:
8) This section needs more explanation of the procedures and set up of the tests, for example, why the organisms tested were chosen, what is the difference between soft and moderately soft and why are these type of waters being used, etc.
9) In the 3rd paragraph, explain the method that calcium or magnesium and carbonates in the mineral salts can act as detoxifying influence. What reaction takes place? Is this found in the natural water samples as well? More explanation needs to be given prior to making the statement that Swamp Creek has a uniquely different geochemistry than other streams in the watershed.

Summary of Findings:
10) The summary should explain further why sample results from the Spring were higher than the results from the previous Fall.

Future Research:
11) Is a study needed to compare impacts to copper alone vs copper with other metals as found in natural waters and as projected may be found in project area runoff?
12) Why wasn't zinc tested? Should a future study include zinc?
13) Should a future study look at how pH changes to the stream waters may impact these organisms and if this will release more metals within the stream?

Figures/Tables:
Figures 1 and 2: Label, add in hwy 55 to Figure 1 for reference, add North arrows.
Table 5: Add in blank sample results
Photo of Wild Rice: label

Table 12: It was explained during the 9/11 presentation but still not understood why LC50 for SC2 is 14 ug/l instead of just below 40 ug/l?
Table 15 and Table 17: These tables should have the chemical parameters listed as well as is done in the pairing of Tables 8 and 10. Also need to see concentration of metals in natural waters prior to spiking.
Table 18: Page 5 states that the LC50 for Mod-hard recon was 182 ug/l for walleye, but the table shows 230 ug/l and 182 EC50. Table needs to include EC50 in the legend. Also, is the * the same for EC50 as it is for LC50? Also, spell out LC50 and EC50 in the legend.
Graphs: Need Figure #'s on the Graphs. Are these referenced anywhere within the text? Also, the two reds in the Swamp Creek vs Gliske Creek graph are to close in coloration.
Questions: These need to be further explained in the text. What is the significance of the answers to these questions?

Again, thank you for the opportunity to provide comments on this report. EPA supports the continuation of this study and hopes that the above comments can assist the Tribe in making the final work product a more solid technical document based on good science. If you have any questions regarding these comments, please call me at 312-886-7252. If I can be of any other assistance to you regarding this study or the recommended future work, please let me know.

Sincerely,

Daniel J. Cozza
Crandon Mine Project Manager

U.S. Environmental Protection Agency

cc:
D. Ballman, COE
B. Tans, WDNR
J. Trick, FWS
D. Cox. Menominee
A. McCammon Soltis, GLIFWC
J. Coleman, GLIFWC