Commenter 76 – Matt Langan

Minnesota Department of Natural Resources
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Minnesota DEPARTMENT OF NATURAL RESOURCES

January 9, 2008

Bill Storm
Department of Commerce
85 7th Place East, Suite 500
St. Paul, MN 55101-2198

RE: Mesaba Energy Project Draft Environmental Impact Statement
Docket #E6472/GS-06-668

Dear Mr. Storm:

The Department of Natural Resources (DNR) has reviewed the Draft Environmental Impact Statement (Draft EIS) for the proposed Mesaba Energy Project in northeastern Minnesota. We offer the following comments for your consideration. The comments are categorized as general comments, comments on the proposed West Range Site, and comments on the proposed East Range Site.

General Comments

76-01

It is clear from this Draft EIS that water quality standards for the Canisteo Mine Pit (CMP) and Holman Lake would be exceeded and Mesaba Energy (Mesaba) intends to request a variance during permitting. In other words, the proposal is to use waters of the state (CMP, Holman Lake, and Swan River) as part of the power plant's water treatment facility in order to meet standards at some distant, downstream location.

Mesaba is proposing to discharge an average of 600 gpm to 825 gpm blowdown to Holman Lake, and the remainder (900 gpm to 3,500 gpm) to the CMP. The Final EIS should describe the reason for this difference in distribution of discharge. It seems apparent that the justification for release of blowdown water to the environment, and its distribution to CMP and Holman Lake, is to use waters of the state as treatment facilities to accomplish dilution. If Mesaba can propose enhanced zero liquid discharge (ZLD) treatment at the East Range Site, the Final EIS should describe the potential for ZLD to be used at the West Range Site. The DNR is concerned with the use of state waters for dilution, and the dependence on getting a variance from meeting water quality standards at the West Range Site.

The Draft EIS references the reduced flooding potential and increased bank stability that will result from reducing the water level in the CMP (p. 4.5-11). Public concern has been expressed that the CMP could suddenly breach (through soil piping and subsequent mass failure, or over-topping and rapid head-cutting), causing serious flooding in part of Bovey. The real potential for mass failure has not been evaluated or demonstrated. Further, the rate of water level rise in the CMP in recent years has been significantly less than modeled in 2005, even considering the recent dry conditions, suggesting that the pit water may never rise high enough to form a surface water outflow. Re-modeling of expected future water levels is presently being conducted by DNR. This re-modeling shows that substantially higher ground water outflow is occurring from the CMP than was modeled in 2005. Mesaba has not demonstrated that lower CMP water levels will result in greater CMP wall stability. Although wave action on the glacial pit walls has an accelerating effect on pit wall erosion, the lack of wave action does not eliminate pit wall erosion since direct precipitation, wetting and drying, and freeze-thaw cycles will eventually lay the pit walls back to their angle of repose, regardless of the water level in the pit. Mesaba has not demonstrated the basis for these claimed benefits.

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Responses

Comment 76-01

The project proponent announced its commitment on January 21, 2008 to undertake a major regional water quality improvement program in connection with the Mesaba Energy Project Phases I and II. As stated in response to Comment 6-01, the program would include the installation of additional equipment to enhance the planned ZLD system at the power plant, which would result in all water used in the plant being recycled, thus eliminating all process water and blowdown discharges into the Upper Mississippi River watershed. In addition, as discussed in response to Comment 26-02, Excelsior has agreed to make significant capital improvements to the CBT WWTF when construction commences on the power plant. Excelsior has also proposed to fund for as long as the project is operative the addition of flocculants to the CBT WWTF and the disposal of the biosolids collected, which would significantly reduce phosphorus loading to the Swan River from the CBT WWTF. Finally, Excelsior has also proposed to fund studies to determine whether sand filters would be effective for treating mercury at the CBT WWTF. New text has been added to Section 4.14.3.3 (Volume 1) regarding Excelsior's commitment to improvements and potential impacts to the CBT WWTF.

Regarding the comment on reduced flooding potential and increased bank stability of the CMP, the Mesaba Energy Project's use of water on the West Range Site would maintain water levels in the CMP at approximately 1,290 ft MSL, which is below most or all of the town of Bovey, MN. This is the primary basis for the statement that flooding potential is reduced and was intended to address localized flooding from pit overflow. DOE recognizes that higher water levels do not constitute the likelihood of flooding or pit wall destabilization and agrees with MNDNR that, without additional stabilization measures, some bank erosion would still occur at the proposed operation levels due to natural processes that MNDNR references. Ultimately, the Canadian National Railway (CN) – the owner of the rail track adjacent to the CMP – would determine how to stabilize its rail track to allow for future commercial operations of the CN rail line.

Regarding the comment about water availability, DOE understands that Excelsior consulted MNDNR Waters Division staff and used MNDNR data to derive sustainable flow rates for use by the Mesaba Energy Project. The derived rates for the West Range Site are conservatively low (average inflow into mining pits was estimated based on data taken in recent years when water in the pits was being increasingly "lost" through fractured rock and/or unconsolidated soils in mining pit walls). Concerns about water availability at the East Range Site are addressed

Commenter 76 – Matt Langan

Mr. Storm
January 9, 2008
Page 2

76-01 (cont'd)

The analysis of available water is inaccurate and draws incorrect conclusions, especially for the East Range Site. Mesaba is relying on many alternative water sources being available for their use, but has not addressed existing, competing water uses, has not demonstrated control of riparian land needed to allow permits to be issued for them to appropriate water, and in many cases, has not addressed significant impacts or left them for the permitting process.

The Draft EIS does not address remediation of residual impacts if plant operations shut down either permanently or for extended time periods. Procedures for an unanticipated closure, and the associated impacts, should be described in the Final EIS.

Surface and mineral ownership of the CMP is controlled by a variety of parties. There is always the potential that the CMP will be proposed for mining again and need to be totally dewatered. The Draft EIS does not address any contingency plans should mining be proposed again.

Many issues seem to have been oversimplified, or briefly stated with little discussion. Effects of expected increases in pollutant discharges should be addressed. The Final EIS should also address potential impacts from pit dewatering on nearby surface waters and wetlands.

West Range Site

76-02

Table 2.2-3. Process Water Requirements (p.2-29)
This table states that the East Site will use, on average, 1,100 gpm to 2,900 gpm LESS water than the West Site, yet pg. 2-70 and p. 4.5-31 state that "water appropriations (for the East Site) can be reduced by up to 700 gpm per phase" (1,400 gpm total) by using enhanced ZLD technology. The numbers (and associated impacts) are conflicting (2,900 gpm is more than twice 1,400 gpm.)

76-03

Figure 2.3-1. West Range Plant Site (p. 2-51)
This figure shows water being pumped from the west end of the Gross Marble Pit (GMMP). This pumping location will not capture enough water to meet the stated Phase I and II combined demand (3,500 gpm). Further, there are conflicting numbers relating to the proposed amount of water anticipated to be pumped from the Hill Annex Mine Pit (HAMP). Figure 4.5-3 and Table 4.5-5 state 3,500 gpm, yet Table 4.5-2 states 2,000 gpm. Also, p. 4.5-14 states that there are no competing uses for the HAMP water. The Minnesota Steel (MSI) EIS concluded that MSI will need approximately 1,200 gpm from the HAMP by year 5 of their operation. The MSI EIS did not thoroughly evaluate potential impacts on Panasa Lake because there would still be at least 1,600 gpm available water after their use to be discharged to the lake. Even using the lower of the two stated water demands from the HAMP, it seems plausible that there will not be enough water for MSI and this project, let alone any surplus for Panasa Lake. The Draft EIS states (p. 3.5-7) that the HAMP can produce 3,230 gpm to 4,030 gpm, but does not show how these rates were determined. Again, the proposed pumping location in the Gross-Marble Mine Pit (GMMP) will not allow them to pump this much water on a continuous basis. Present DNR pumping from the HAMP does not support the high end of this range. Mesaba will need to work out a water use plan with MSI and should address impacts to Panasa Lake in the Final EIS. The DNR is concerned that the proposed plan relies on water that is not readily available to the project, and does not address all of the issues or impacts. For example, if less water is available from the HAMP, then it is probably that more water would have to be pumped from the Prairie River, further affecting water quality in the CMP.

Responses

Comment 76-01 (cont'd)
further in responses to Comments 76-30 through 76-36. Also, new text has been added to Section 4.5.4.1 (Volume 1) that discusses water withdrawals and potential impacts for the East Range Site.

Regarding the remediation of residual impacts during permanent/temporary plant shut-downs, presumably relating to CMP water levels, MNDNR plans to construct a gravity outflow device from the CMP to the Prairie River that would allow stabilization of the CMP water level at 1,313 ft msl. The proposed outflow would eliminate the need for the Mesaba Energy Project to provide an outfall from the CMP pumping station to Holman Lake as discussed in Section 4.5.3 (Volume 1).

Regarding surface and mineral ownership of the CMP, it is unlikely that the CMP would be mined within the economic lifetime of the Mesaba Generating Station. The ore under the CMP is largely oxidized (non-magnetic) taconite, and there are large reserves of oxidized taconite on the Iron Range that could be more economically recovered than that found under the CMP. Section 4.5.3.1 (Volume 1) discusses water source alternatives other than the CMP and identifies additional mine pits and the Prairie and Mississippi Rivers as viable alternatives.

Regarding dewatering impacts, see responses to Comments 76-02 and 76-12, which discuss the water balance and impacts from water level fluctuations to nearby surface waters, respectively. New water balance diagrams and text have been added to Section 4.5 (Volume 1) that reflect use of the enhanced ZLD system at the West Range Site.

Comment 76-02
The average annual water appropriation rate for the East Range IGCC Power Station shown in Table 2.2-3 of the Draft EIS (Volume 1) was stated incorrectly, and "7,400 gallons per minute" has been changed to "7,000 gallons per minute." The table has also been updated to reflect the implementation of the enhanced ZLD system at the West Range Site (e.g., average annual demand for Phase I is now 3,500 gallons per minute). Also in Sections 2.3.2.3 and 4.5.2.2 (Volume 1), text has been corrected to state that by using the enhanced ZLD system, the average annual water appropriation rate can be reduced by 900 gallons per minute per phase (1,800 gallons per minute total) in comparison to operating at five cycles of concentration with discharge of cooling tower blowdown.

Before the decision by Excelsior to use the enhanced ZLD system at the West Range Site, the cycles of concentrations (COCs) were reduced from five for the Mesaba Energy Project (i.e., Phase I only) to three for

Commenter 76 – Matt Langan

Responses

Comment 76-02 (cont'd)
the Mesaba Generating Station (i.e., both Phases I and II) to meet state water quality standards for the cooling tower operation. This reduction of COCs would have resulted in a greater than doubling of water requirements as stated in footnote "a" of Table 2.2-3 (Volume I) in the Draft EIS and is the reason for the "discrepancy" noted in the comment.

The Final EIS has been updated to reflect the project proponent's announced decision, to be reflected in a revised permit application to MPCA, to utilize an enhanced ZLD system at the West Range Site, comparable to the system proposed for the East Range Site, which would eliminate discharges of process water and cooling tower blowdown into any water bodies. The Final EIS has been updated to describe the use of the enhanced ZLD system at the West Range Site in Sections 2.2.1.4 and 2.3.1.3 (Volume 1). Also, new text and water balance diagrams have been added to Section 4.5.3 (Volume 1) to reflect the use of the enhanced ZLD system at the West Range Site.

Comment 76-03
The addition of an enhanced ZLD system has changed the water balance for the West Range Site (see response to Comment 76-02, which includes updated water balance figures). The average amount of water required from the HAMP complex is reduced to approximately 2,000 gallons per minute during Mesaba Phases I and II. It is estimated that this rate of appropriation would be sustainable at current pit levels (additional hydrologic modeling would be conducted during the water appropriation permitting process to confirm these estimates). Since Gross Marble and Hill Annex mine pits are hydrologically-connected at this level, it is expected that 2,000 gallons per minute would be available at the proposed pumping location. Minnesota Steel has identified a potential need for 1,300 gallons per minute for water augmentation in the latter stages of its operations. The HAMP complex could meet both needs if water levels were maintained at lower elevation. At that level, land bridges would be exposed, which would require pipelines or pumping between pits in the HAMP complex to balance water levels. The ultimate level at which each pit could feasibly be maintained during operation of the Mesaba Energy Project would be established during the water appropriation permitting process.

Alternatively, Minnesota Steel could meet its augmentation flows from other sources as identified in its Final EIS (p. 4-47 of MSI Final EIS). Another alternative is for Mesaba Phases I and II to appropriate more water from other sources (the estimate of 2,800 gallons per minute from the CMP is assumed to be conservative, and the Prairie River could

Commenter 76 – Matt Langan

Mr. Storm
January 9, 2008
Page 3

3.5.1.1 Surface Water Sources – Canisteo Mine Pit Complex (p.3.5-6).

76-04 The Draft EIS states that there can be ground water outflow from the CMP in the area between the CMP and Trout Lake where the City of Coleraine has two municipal wells. These wells, and others for Taconite and Bovey (Pg. 3.5-11), are down-gradient of the CMP. Although the Draft EIS reasonably demonstrates that the use of the CMP will not affect the available water supply in any of these municipal wells, it has not addressed potential, long-term water quality impacts to these wells. Table 4.5-6. (p. 4.5-42) states that "lowering of the water levels in the CMP should limit any migration of mine pit water into the local aquifers." This statement is not defended with any data or analysis. In fact, page 3.5-13 states that the static water levels in all of the wells down-gradient of the CMP (1267 ft to 1290 ft) will be below the expected, normal operating elevation of the CMP (range of 1250 ft to 1300 ft, normal 1290 ft.), which strongly suggests that any of these wells could ultimately be pumping CMP water. Page 4.5-3 discusses mercury loading and concentration in the CMP. Present mercury concentration in the CMP is reported to be 0.9 ng/l (Table 3.5-4, Pg 3.5-9) while the estimated mercury concentration of the discharge water to the CMP is 4.7 ng/l for Phase I, and 6.6 ng/l for Phase II (Table 4.5-6, Pg. 4.5-16). The Draft EIS's mercury modeling for the CMP shows a progressively increasing concentration (Figure 4.5-4). The Final EIS should describe the model used to produce these results, including the assumed hydrologic input parameters. This should include the degree to which CMP water quality will have deteriorating long-term impacts on municipal water supplies and mercury accumulation in fish tissue. Table 4.5.6. (p. 4.5-41) states, "use of the CMP (by Mesaba) may prevent its current use as a recreation facility." The Final EIS should more fully describe what that statement means, including the circumstances under which this would happen and how Mesaba intends to keep people out of the CMP and prevent them from taking fish. This is an important public impact that is not addressed in the Draft EIS.

Table 3.5-4. Current Water Quality for West Range Water Bodies (p.3.5-9)

76-05 This table summarizes the current water quality of each water source; however, there was a lot of missing data in the table. To better evaluate impacts of the cooling tower blowdown (CTB) at both the West Range and East Range Sites, it is important that the Final EIS collect more base level water quality data from possible receiving waters. In addition to Figures 4.5-5, and 4.5-6 (*Chapter 4*), and Figures 3, 4,and 5 (*Appendix H*), more data is needed to model long-term discharges of mercury (and other water quality parameters) to Canisteo Mine Pit (CMP), Holman Lake, and Prairie River at the West Range Site. Collecting more water quality data from possible receiving waters will improve the accuracy of these graphs.

76-06 3.8.1.1 Biological Resources – West Range Site (p.3.8-8)
At the end of the "Wildlife Protected Areas" section, there is mention of an unnamed designated trout stream east of the proposed HVTL corridor. This stream is Pickerel Creek.

3.8.2.1. Aquatic Communities – West Range Site (p.3.8-12)

76-07 This section does not adequately describe the fisheries in Trout Lake, Holman Lake, or Panasa Lakes. The DNR has specific information for Swan and Prairie River in the vicinity of either the discharge or intake structures that could be included in the Final EIS. The DNR also has detailed information on the lakes in the vicinity of the project area. These are important resources and need to be considered with this project. This section of the Draft EIS references a publication BWCAW, 2007 but the citation is not listed in the reference section.

Responses

Comment 76-03 (cont'd)
provide 2,000 gallons per minute more than shown in the updated water balance figure in response to Comment 76-02). In the event of a contingency (e.g., an extended drought), under Minnesota Statute 103G.261, which dictates water allocation priorities, Mesaba Phases I and II would be either a first or fourth priority water use, while Minnesota Steel would be considered either a fifth or sixth priority use. Note that because of the complexities of analyzing water use impacts, water appropriation priorities cannot be confirmed at this time; however, the project proponent will participate in ongoing discussions with MNDNR and other stakeholders, including Minnesota Steel, to ensure that water use conflicts are resolved and impacts to water resources are minimized. See response to Comment 76-11, which discusses potential impacts to Panasa Lake.

Comment 76-04
The concern regarding the Mesaba Energy Project's long-term impact on wells hydrologically connected with the CMP has been eliminated through the project proponent's decision to use an enhanced ZLD system at the West Range Site. The project proponent has stated its need to secure the proposed intake structure on the CMP from potential post-9/11 threats, which may result in a request to close the CMP for public access in conjunction with the water appropriations permitting process. However, the proponent recognizes that demands for recreational access to the CMP would affect MNDNR's decision and expects further discussion with the agency on the issue. In general, the project proponent would work with stakeholders to identify options in providing security measures for the proposed cooling water intake structure and pump house (e.g., establishing a designated exclusion zone within the CMP cordoned off with buoys and posted with "No Entry" signs). Section 4.13.3.2 (Volume 1) of the Final EIS has been updated to address this issue.

Comment 76-05
The addition of enhanced ZLD treatment has negated the water quality issues as noted in the comment and, thus, precludes the need for more precise water quality data.

Comment 76-06
The stream name has been added to Sections 3.8.1.1 and 4.8.3.2 (Volume 1).

Commenter 76 – Matthew Langan

Mr. Storm
January 9, 2008
Page 4

76-07 (cont'd)

The connection with Trout Lake is very important. The Canisteo Mine Pit is hydrologically connected to Trout Lake through ground water. As the pit water level exceeds 1304 msl, this connection is more evident. Approximately 40% of the Canisteo watershed is also in the historic Trout Lake watershed. In the last two years there has been below normal precipitation. While other surface waters experienced declining water levels, Trout Lake was maintained near normal. The hydraulic residence time in Trout Lake is currently estimated at over 30 years. As some of the point sources of pollution have been eliminated and with the increased addition of pit water (through groundwater), the frequency, duration and severity of algal blooms has decreased. Severing the connection between the pit and Trout Lake because of water needs at the power plant has the potential for effects on Trout Lake that need to be studied in the Final EIS.

Canisteo Pit is currently managed for lake trout. The pit was stocked with marked yearlings annually from 1995 through 2005. Larger surplus broodstock from State hatcheries were also stocked. Evidence of natural reproduction is present and the current stocking plan is yearlings every other year.

Lake trout spawn in the fall in water depths ranging from 1 to 40 feet in inland waters (Scott and Crossman, 1973). The eggs incubate for four to five months and hatch in March or April. Significant water level reductions during this time period has the potential to interfere with lake trout natural reproduction.

76-08

3.13.3.1. Parks and Recreation – West Range Site and Corridors (p.3.13-2)
This section mentions an estimate of fishing pressure and recreational boating use on the pit. It is important to remember that the estimates are from summer 2001 and winter 2001-2002. This was at a time when the lake trout fishery was still developing. As this fishing opportunity has become more widely known, and a bass fishery has developed, there is likely more fishing pressure now than there was in 2001.

There is similar data on fishing and recreational boating pressure available for Trout Lake, Lower and Upper Panasa, Diamond, Oxhide and Twin. The DNR does not have any fishing pressure data from Prairie River or Holman Lake.

76-09

4.5.2.1. Industrial Wastewater Treatment/Discharges – Mercury and Phosphorus (p.4.5-1)
The Draft EIS states the generating station would not use any chemicals that would add phosphorus to the discharges of cooling or other waters. Introducing Prairie River water into the Canisteo Pit is a net addition of phosphorus. Based on available data, phosphorus concentrations in Canisteo are on the order of 5 ppb while the Prairie River is about 30 ppb. Over time, this will increase phosphorus levels in Canisteo and subsequently also Holman, Swan River and potentially Trout Lake. This is in contradiction to the final statement in this section, as it relates to the West Range Site.

Additionally, while the document states that mercury concentrations will stay below the threshold of 6.9 ng/l, there will be an increase that may lead to greater impairment and more restrictive consumption guidelines. This is directly related to Canisteo Pit, Holman Lake, Swan River and the Mississippi River as receiving waters, but also to other surface waters in the plume from the stacks. This impact should be more fully discussed in the Final EIS.

Responses

Comment 76-07
Information on fisheries in Trout Lake, Holman Lake, and the Upper and Lower Panasa Lakes has been added to Section 3.8.2.1 (Volume 1). The BWCAW, 2007 reference is listed in the reference section of the Draft EIS as follows:

"Boundary Waters Canoe Area Wilderness (BWCAW). 2007. "Fish of the Northwoods. Flora, Fauna, Earth, and Sky. The Natural History of the Northwoods." Accessed March 16, 2007 at http://www.rook.org/earl/bwca/nature/fish/index.html."

No impact on Trout Lake (at a water elevation of approximately 1,288 feet msl) is anticipated given the project proponent's intent to maintain water levels in the CMP at 1,290 ± 2 feet msl. In the unlikely circumstance in which no recharge of the CMP occurred over a five-year period, water levels would drop to a level of 1,260 feet msl. However, even as CMP levels rose dramatically following cessation of mining activity (from 1,250 feet in 1989 to over 1,310 feet at present), there has been no discernible impact on Trout Lake water levels, which over the same time period remained between 1,287 and 1,289 feet as reported by MNDNR (See http://www.dnr.state.mn.us/lakefind/index.html).

Though water level variations in the CMP would normally be expected to occur very slowly and not disturb the incubation of eggs, text has been added to Section 4.8.2.2 (Volume 1) of the EIS to address potential impacts of water level reductions on lake trout reproduction.

Comment 76-08
Section 3.13.3.1 (Volume 1) has been revised in the Final EIS to note that the boating and fishing data were collected in summer 2001 and winter 2001-02 and that fishing pressure has increased since that time as the trout fishery has become established and a bass fishery has developed.

Comment 76-09
Re-modeling of phosphorus levels in the CMP, based on the updated water balance, was conducted to analyze impacts to water quality in the CMP. In general, use of the enhanced ZLD system at the West Range Site would eliminate discharge and phosphorous levels in the CMP would be within state standards. New text has been added to Section 4.5.3.2 (Volume 1) regarding new analysis on phosphorous levels in the CMP.

Regarding other water quality impacts, the use of an enhanced ZLD system at the West Range Site would preclude any concerns of impacts from mercury discharges.

Commenter 76 – Matt Langan

Mr. Storm
January 9, 2008
Page 5

76-10

4.5.2.1. Industrial Wastewater Treatment/Discharges – Total Dissolved Solids (p.4.5-3)
TDS concentration in Holman Lake will reach the 700 mg/l standard within the first two years of operation and Mesaba is expected to request a variance for exceeding this threshold. CMP TDS concentration is expected to reach the standard in 26 years. The company should have a plan to mitigate for this and not be expecting to receive a variance.

76-11

Figures 4.5-2 and 4.5-3 Phase I and II Water Balance: West Range Site (p.4.5-8)
This figure illustrates the water balance under phases I and II. In phase I, there would be an augmentation flow of 700 gpm to Panasa Lake from HAMP, while in phase II augmentation would be 0 gpm. The Draft EIS does not describe potential impacts to water quality in Panasa Lake if the flow from HAMP is reduced to 700 gpm and then to 0 gpm. These should be described in the Final EIS.

76-12

4.5.3.1 Process Water Supply Systems – Water Resources Management Plan (p.4.5-11)
The Water Resources Management Plan includes dropping water levels in CMP to stabilize the rail line. The DNR asks that the Final EIS describe the method and efficacy of stabilizing that bank. A large amount of fill will likely be required and this connected action should be evaluated in the Final EIS.

"Several pits" are filled, overflowing, being pumped or threatening to overflow. There should be a discussion on the specific pits, the receiving waters of each pit and whether or not receiving waters do or will benefit from the discharge. Water may be discharging not from just the surface of pits, but also subsurface discharge may be occurring which may benefit nearby receiving waters.

Unknown flow from CMP pumped during mining to Holman Lake is "expected" to exceed the amount to be pumped during Phase I & II. This statement should not be made when the amount of flow pumped to Holman Lake during mining is "not known."

76-13

4.5.3.1 Process Water Supply Systems – CMP Pumping Station (p.4.5-12)
The Draft EIS states that the intake structure would be located at least 200 feet below the water surface and below the thermocline to prevent the inadvertent transfer of smelt to Holman Lake. The figure on page 4.5.5 shows a conceptual design of the caisson structure with a caisson bottom at elevation 1215 msl with the intake tunnel just below the emergency buffer elevation, not 200 feet below the surface. Based on our dissolved oxygen/temperature profiles there is a rapid drop in temperatures between about 20 and 35 feet but dissolved oxygen is sufficiently high to support fish. While the length of cable on our probes extends to only 200 feet, there is still adequate dissolved oxygen at that depth in mid-August. Wenck and Associates was hired by the Western Mesabi Mine Planning Board to develop engineering designs for a conveyance system from CMP to Swan River. They worked with Alden Research Laboratory to investigate fish exclusion strategies for the intake. One strategy was to have a deep intake, however, it was concluded that this did not provide adequate safeguards against the transfer of smelt and was rejected. The Final EIS should also more fully discuss construction techniques for a 10-foot diameter, horizontal shaft through bedrock below 200 feet of water.

76-14

Table 4.5-5. Discharge Flow Rates for the West Range Site (p.4.5-15)
This table provides estimated average and peak flows to CMP as 3,500 gpm and 6,000 gpm during Phase I and II, respectively. Discharge flows to Holman Lake are listed as 6,000 gpm at peak for Phase II. Thermal impacts were modeled using a flow rate of 2,400 gpm. In the Final EIS, thermal impacts should be modeled using the higher anticipated flows to more accurately describe the size of the mixing zone.

Responses

Comment 76-10
The use of an enhanced ZLD system would preclude concerns of water quality impacts from proposed wastewater discharges at the West Range Site. See response to Comment 6-01, which addresses the use of the enhanced ZLD system.

Comment 76-11
New text has been added to subsection *Water Levels and Water Balance During Operations* (under Section 4.5.3.1 [Volume 1]) which describes potential impacts to Panasa Lakes. The absence of any reported discharge to Panasa Lakes over the two year period 2000 to 2001 (see Table 4.5-8, Volume 1), coupled with the coincidental lack of complaints regarding water quality in Panasa Lakes, suggests that operation of a new wastewater treatment plant installed to improve treatment of domestic sewage from the cities of Marble and Calumet has reduced the likelihood of significant impacts occurring as a result of eliminating discharges from the HAMP to the Panasa Lakes. Additional hydrologic modeling and consultation with MNDNR would be conducted during the water appropriation permitting process to confirm this presumption.

Comment 76-12
Stabilization of the rail line is not within the scope of the EIS. CN Railway owns the rail line along the part of the bank that is in closest proximity to the track and would be responsible for restoring the rail to service (CN had determined that repairs to this line were not appropriate in the absence of a long term solution to keep water levels from rising [MEP Env Supplement, 2006]). The specific stabilization method would be determined by CN in the event the Mesaba Energy Project is constructed on the West Range Site. In general, the method would depend on the water level at the time of bank stabilization and the erosion that occurs in the interim, and could involve rip rap or construction of a retaining wall to stabilize the bank at an angle steeper than natural repose, as well as the use of fill material to restore the eroded bank. See also Comment 76-01.

Regarding impacts to water resources resulting from use of mine pit waters, for the West Range Site, new text has been added to subsection *Water Levels and Water Balance During Operations* (under Section 4.5.3.1, Volume 1). The new text also addresses pumping estimates for the CMP and potential impacts to Holman Lake (no discharge to Holman Lake would occur during normal operating conditions). In general, use of the enhanced ZLD system at the West Range Site would eliminate

Commenter 76 – Matt Langan

Responses

Comment 76-12 (cont'd)
discharges and decrease water demand and, thus, reduce most of the water quality and quantity concerns discussed in the Draft EIS. For the East Range Site, text has been added to Section 4.5.4.1 (Volume 1), which provides updates on the water supply alternatives.

Comment 76-13
The use of an enhanced ZLD system at the West Range Site would eliminate the need for an outfall to Holman Lake for regular operations of the proposed plant. Also, the gravity outflow device proposed by MNDNR from the CMP to the Prairie River to reduce water levels in the CMP (see also Comment 76-01) would negate the need for an emergency outfall from the CMP intake pumping station to Holman Lake as originally proposed for the Mesaba Energy Project and discussed in the Draft EIS. The project proponent originally proposed to prevent the transfer of rainbow smelt larvae from the CMP to Holman Lake by withdrawing water at depths greater than 250 feet. However, based on comments received from MNDNR on the Draft EIS and research conducted by Alden Research Laboratory, oxygen levels appear to be adequate to support smelt larvae throughout the entire CMP water column (Wenck, 2006). Therefore, a 200-foot or deeper intake structure would not necessarily prevent the transfer of smelt larvae. Instead, Excelsior proposes to install four directionally drilled angle-wells to a depth of approximately 20 feet below the summer thermocline or approximately 60 feet below the surface of the lowest estimated future water level. New figures and text have been included in Section 4.5 (Volume 1) that describe the proposed intakes structures.

Comment 76-14
The use of an enhanced ZLD system would negate the majority of water quality concerns at the West Range Site as initially discussed in the Draft EIS, including thermal discharges and concentration of solids. See response to Comment 6-01, which addresses the use of the enhanced ZLD system at the West Range Site. Text has been added/revised in Sections 2.2.1.4, 2.3.1.3, and 4.5 (Volume 1), which reflects the use of the enhanced ZLD system.

Regarding use of the GMMP (and HAMP Complex), the average amount of water required from the HAMP complex has been reduced from 3,500 gallons per minute (as stated in the Draft EIS) to approximately 2,000 gallons per minute for the combined Phases I and II. It is estimated that this rate of appropriation would be sustainable at current pit levels (additional hydrologic modeling and consultation with MNDNR would be

Commenter 76 – Matt Langan

Mr. Storm
January 9, 2008
Page 6

76-14 (cont'd)

It is difficult to determine the actual location of the discharge point in the figures, but it appears to be in an embayment very near a spot used as an access point. Additional detail is necessary in the Final EIS to describe the impact to the actual location. This description should cover the biological impacts as well as potential impacts to angler access from a safety perspective if winter discharge is to occur. Also, it might be possible to pump a sustained 2,000 gpm from the HAMP (as previously suggested, the Draft EIS misnames the GMMP as the HAMP - since Mesaba is not proposing to install a pump in the HAMP) for Phase I, but the GMMP will not yield 3,500 gpm needed for Phase II. The Final EIS should state how much water could be pumped continuously from the GMMP. Also, on pg. 4.5-15 it is stated that water will be pumped from the CMP in order to keep the concentration of solids from building up in the pit. Since Mesaba will not be able to pump as much water from the GMMP for Phase II as they need, it seems probable that water quality within the CMP will exceed standards quicker and more frequently than the Draft EIS anticipates. According to the proposed plans, this problem will be transferred downstream to Holman Lake. These water availability numbers and plans should be re-run in the Final EIS.

76-15

4.5.3.2. Process Water Discharges and Water Quality Criteria (p.4.5-15)
The Draft EIS states that water hardness, TDS, sulfate and conductivity are expected to exceed water quality standards. The company questions whether MPCA would apply the standards to CMP and Holman Lake because they believe these standards do not apply to these "unlisted" waters. If these standards do apply, the company would have to apply for a variance. As mentioned earlier, the company should propose other water treatment options instead of requesting a variance.

There is research that suggests high sulfate levels may have some influence on the methylization of mercury, especially in wetlands. Since the Swan River and Mississippi River are already listed as impaired because of mercury in fish tissue, some analysis of the effect of raising sulfate levels on mercury needs to be included in the Final EIS.

Page 4.5-17 of the Draft EIS states that the "Generating Station would not add mercury, phosphorus or other pollutants that are associated with impairment concerns to the receiving waters." This is a misleading statement, as blowdown from the Generating Station would concentrate certain constituents, including mercury and certain salts, in addition to substantially reducing the volume of water in the CMP, further concentrating certain constituents to the point of potentially exceeding state water quality standards. Further, on this page it is stated, "the proposed operation of the Phase I Mesaba Generating Station would not increase the mass of mercury or phosphorus over that currently permitted from the HAMP complex under NPDES Discharge Permit MN0030198. Mesaba is apparently concluding that project discharge would not send any greater load of mercury or phosphorus to the Swan River than is presently permitted under the DNR's NPDES permit for the Hill Annex State Park. This is another misleading statement. First, the NPDES permit held by the Hill Annex State Park will soon expire. The MN Pollution Control Agency has concluded that the permit is not necessary since the Park does not discharge any water resulting from industrial processing, as described in the Mesaba plans. Second, the discharge from the HAMP flows to Panasa Lake and has no hydrologic connection with the CMP or Holman Lake. Finally, the implication of "no increased loading = no impact" is misleading since Mesaba is concentrating constituents of concern in the CMP water, which has a direct connection to the Biwabik Iron Formation (an important regional aquifer for municipal water use), and Holman Lake, which is a designated public water.

Responses

Comment 76-14 (cont'd)
conducted during the water appropriation permitting process to confirm these estimates). The GMMP would typically be operated in the range of 1,220 to 1,230 ft msl. It is expected that the GMMP and HAMP are hydrologically-connected within the planned operating levels and 2,000 gpm would be available at the proposed pumping location. New text has been added to subsection *Water Levels and Water Balance During Operations* (under Section 4.5.3.1, Volume 1) that discusses potential impacts to the GMMP and HAMP Complex.

Comment 76-15
The use of an enhanced ZLD system would negate the majority of water quality concerns at the West Range Site, including water hardness, TDS, sulfate and conductivity issues. See response to Comment 6-01, which addresses the use of the enhanced ZLD system at the West Range Site. Text has been added/revised in Sections 2.2.1.4, 2.3.1.3, and 4.5 (Volume 1), which reflects the use of the enhanced ZLD system. Section 4.5.3.2 (Volume 1), *Process Water Discharges and Water Quality Criteria*, has been revised to reflect use of the enhanced ZLD system.