

Message

**From:** donsutton@spectrum-eng.com [donsutton@spectrum-eng.com]  
**Sent:** 5/24/2017 3:59:36 PM  
**To:** Wenz, Zach (DNR) [zach.wenz@state.mn.us]; Olson, Michael (DNR) [michael.c.olson@state.mn.us]; Engstrom, Jennifer N (DNR) [jennifer.engstrom@state.mn.us]; Boyle, Jason (DNR) [jason.boyle@state.mn.us]; Jordan, Julie E (DNR) [julie.jordan@state.mn.us]; Liljegren, Michael W (DNR) [michael.liljegren@state.mn.us]; Herr, Erika S (DNR) [erika.herr@state.mn.us]; Henderson, Joseph (DNR) [joseph.henderson@state.mn.us]; Arends, Heather (DNR) [heather.arends@state.mn.us]; Sellner, Jim M (DNR) [james.sellner@state.mn.us]  
**CC:** 'Cecilio Olivier' [colivier@eorinc.com]; 'Stu Grubb' [sgrubb@eorinc.com]; Woldeab, Irina (DNR) [irina.woldeab@state.mn.us]; Kunz, Michael (DNR) [michael.kunz@state.mn.us]  
**Subject:** RE: NorthMet: Appendix review

Appendix 2 : Waste characterization. I only did a quick review. I would like to see a detailed plan and commitments regarding how they intend to track the Cat 1,2,3,4 waste. Including blast hole sampling, dynamic dispatching, etc. I would like to see a commitment that if they don't have the waste rock sampled then can't be placed in the Cat 1 pile.

They still haven't identified any of the construction rock sources, so we need to modify the financial assurance to assume the worst case. They talk about using Cat 1 for construction, but will they? I don't see any plan to separately stockpile really clean waste rock for construction or reclamation. My fear is that unless they use cherty rock from the taconite waste piles, they won't find any suitable material nearby, and may want to use something that may generate sulfates. If they construct any roads, pads, etc. with marginal material, then I think they will need to backfill it into the pit lakes during reclamation. The FA would need to be adjusted to reflect the cost.

I have a concern with the way they intend to store water on the highwall between the highwall crest and the overburden. This will encourage water to drain down and oxidize the sulfides in the highwall.

Appendix 4: I reviewed the Golder stockpile drawings. They are acceptable. Some additional Geotech data needs to be collected before construction. The permit should require that the additional data be collected and the drawings and plans modified by a P.E., and that a P.E. must supervise the construction and sign (certify) the as-built drawings.

Appendix 6: The FTB plan gives me severe indigestion because a lake on top of a pile of sand is inherently unstable, and irresponsible. The dam embankments are a stair step arrangement that is inherently geomorphologically unstable, and will erode and cause the ponded water and tailings to escape if it is not maintained and repaired forever.

I have some questions about the utility of the underdrain on lifts 1 and 5, because they appear to direct run-off back into the embankment. If this saturates the embankment, then I am not sure how this affects the embankment stability.

I have some questions about the FTB groundwater capture. It requires significant pumping, so will require multiple passive systems at each low point.

Appendix 7: No comment

Appendix 17 Previously commented on this

Donald G. Sutton P.E.  
Spectrum Engineering & Environmental  
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**From:** Wenz, Zach (DNR) [mailto:zach.wenz@state.mn.us]  
**Sent:** Wednesday, May 24, 2017 9:52 AM  
**To:** Olson, Michael (DNR) ; Engstrom, Jennifer N (DNR) ; Boyle, Jason (DNR) ; Jordan, Julie E (DNR) ; Liljegren, Michael W (DNR) ; Herr, Erika S (DNR) ; Henderson, Joseph (DNR) ; Arends, Heather (DNR) ; Sellner, Jim M (DNR) ;

donsutton@spectrum-eng.com

**Cc:** 'Cecilio Olivier' ; Stu Grubb ; Woldeab, Irina (DNR) ; Kunz, Michael (DNR)

**Subject:** RE: NorthMet: Appendix review

**Importance:** High

Hello Section 10 Review Team,

During our last review session we ran out of time to finish going over all the comments and I recall a few of us who had not yet finished review of appendices: 2, 4, 6, 7, and 17. We are currently working on scheduling a final appendix review session for section 10 and would like to confirm whether or not you have finished your review to allow for adequate time to complete prior to meeting.

Please respond to this email indicating whether or not you have reviewed these appendices. We will then set an appropriate meeting time to finish the review.

Thank You,

Zach

**Zach Wenz**

Research Scientist | Lands and Minerals Division

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**From:** Wenz, Zach (DNR)

**Sent:** Tuesday, April 11, 2017 7:29 AM

**To:** Olson, Michael (DNR) <[Michael.C.Olson@state.mn.us](mailto:Michael.C.Olson@state.mn.us)>; Engstrom, Jennifer N (DNR) <[jennifer.engstrom@state.mn.us](mailto:jennifer.engstrom@state.mn.us)>; Boyle, Jason (DNR) <[jason.boyle@state.mn.us](mailto:jason.boyle@state.mn.us)>; Jordan, Julie E (DNR) <[julie.jordan@state.mn.us](mailto:julie.jordan@state.mn.us)>; Liljegren, Michael W (DNR) <[michael.liljegren@state.mn.us](mailto:michael.liljegren@state.mn.us)>; Erika S (DNR) <[erika.herr@state.mn.us](mailto:erika.herr@state.mn.us)>; Henderson, Joseph (DNR) <[Joseph.Henderson@state.mn.us](mailto:Joseph.Henderson@state.mn.us)>; Arends, Heather (DNR) <[heather.arends@state.mn.us](mailto:heather.arends@state.mn.us)>; Sellner, Jim M (DNR) <[James.Sellner@state.mn.us](mailto:James.Sellner@state.mn.us)>; 'maehl@spectrum-eng.com' <[maehl@spectrum-eng.com](mailto:maehl@spectrum-eng.com)>

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**Subject:** FW: NorthMet: Appendix review

Good Morning Section 10 Review Team,

For section 10 of the NorthMet PTM application we have been asked to focus our attention on review of appendices #2, 4, 6, 7, and 17. I will set up a meeting appointment for the first week of May to review our comments. Please continue

your review and add any comments you may have in the appropriate comment spreadsheets. Feel free to contact me with any questions.

-Zach

**Zach Wenz**

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**From:** Woldeab, Irina (DNR)  
**Sent:** Monday, April 10, 2017 4:18 PM  
**To:** Wenz, Zach (DNR) <[zach.wenz@state.mn.us](mailto:zach.wenz@state.mn.us)>  
**Cc:** Kunz, Michael (DNR) <[michael.kunz@state.mn.us](mailto:michael.kunz@state.mn.us)>  
**Subject:** NorthMet: Appendix review

Dear Zach,

As previously discussed, following upon our review of PTM sections, we now continue with the review of appendices. Please see below the appendices that are relevant to the sections of PTM application where you are review team lead.

We realize that the information is a bit confusing, but in general:

- At this time please review ONLY the highlighted appendices (others may change for version 2 of the application, so it makes sense to wait with that review).
- Some instances where appendices are mentioned within a section can be very general – if that is the case, we have probably already asked PolyMet to provide greater specificity. These cases would fall under the “lead-only” category listed in the estimated time column, but we can make a note of those instances in the appropriate appendix comment spreadsheets, found here:  
<\\2K8FS2\Projects\ALL\NorthMet\In Progress\01 Permit to Mine\Permit Application\PTM comment spreadsheets>
- For all other instances, the entire team should be involved in the review, much like the section review for the PTM has taken place. Please contact your team members, use the comment spreadsheets, and feel free to schedule an internal meeting to discuss comments. I am also happy to schedule those for you and attend/take notes.

- For a full list of the appendices and the times they are mentioned in each section (thank you Mike Olson!) please see:

[\\2K8FS2\Projects\ALL\NorthMet\In Progress\01\\_Permit to Mine\Permit Application\2017 0215 Appendix refs in PTM app.pdf](\\2K8FS2\Projects\ALL\NorthMet\In Progress\01_Permit to Mine\Permit Application\2017 0215 Appendix refs in PTM app.pdf)

Please let us know if the timing will not work as suggested. Thank you so much in advance!

Irina & Mike

PTM Section	Team Lead	Team Members	Estimated Time
10 – Characterization & Management of Mine Waste	Zach Wenz	<ul style="list-style-type: none"> <li>• Mike Olson</li> <li>• Mike Kunz</li> <li>• Jennifer Engstrom</li> <li>• Jason Boyle</li> <li>• Julie Jordan</li> <li>• Mike Liljegren</li> <li>• Erika Herr</li> <li>• Joe Henderson</li> <li>• Heather Arendt</li> <li>• Jim Sellner</li> <li>• Bill Maehl (copy Stu Grubb and Cecilio Olivier in all communications)</li> </ul>	<p>April 24 if lead-only</p> <p>May 1 for team involvement</p>
<b>Appendices:</b> 2 & 17 (mentioned 6 times); 4 & 16.16 (mentioned 8 times); 6 & 16.7 (mentioned 4 times); 7 & 16.8 (mentioned 5 times); 12 (mentioned 12 times); 16 (mentioned twice); 16.5 & 16.22 (mentioned once); 16.12 (mentioned 11 times); 16.15 (mentioned 10 times); 16.17 (mentioned 7 times)			

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