Johnson, Bill H (DNR)

From: Fred Marinelli <[redacted]
Sent: Tuesday, November 29, 2011 3:14 PM
To: Olson, Michael (DNR)
Cc: Kramka, Larry R (DNR); Engstrom, Jennifer N (DNR); Wenz, Zach (DNR); Carlson, Erik (DNR); Johnson, Bill H (DNR)
Subject: CNN for PolyMet

All,

I'm at a dis N

Sent from my iPhone

On Nov 29, 2011, at 7:04 AM, "Olson, Michael (DNR)" <[redacted] wrote:

> Morning Fred,
> Dave Blaha has expressed concern that the proposed concentration cap and scaling factor inputs (attached) might be overly conservative from a probabilistic modeling standpoint. We were hoping to get your input on this subject. If you could look over Dave's comment (see below) and get back to us as soon as you can, we'd really appreciate it.
>
> Thanks,
> Mike Olson
> Project Analyst
> Minnesota Department of Natural Resources
> Division of Lands and Minerals
> 500 Lafayette Rd.
> St. Paul, MN 55155-4045
> [redacted]
>
> ---
>
> **From:** Kramka, Larry R (DNR)
> **Sent:** Tuesday, November 29, 2011 8:36 AM
> **To:** Olson, Michael (DNR); Wenz, Zach (DNR)
> **Cc:** Engstrom, Jennifer N (DNR)
> **Subject:** FW: Concentration cap and scaling factor memo for PolyMet
>
> We should share this with our Goldsim expert and see what he thinks. This needs to get done today. This is not a rehash of the geochemistry principals, but how to effectively use the data within the probabilistic model.
>
> ---
>
> **From:** David Blaha
> **Sent:** Tuesday, November 22, 2011 2:07 PM
> **To:** Carlson, Erik (DNR)
> **Cc:** Johnson, Bill H (DNR); Kramka, Larry R (DNR); Houston Kempton; Al Trippel
> **Subject:** RE: Concentration cap and scaling factor memo for PolyMet

Erik, Larry, Bill

As you may know, I have been at the periphery of these conversations, so I appreciate the opportunity to review these memos, as these two assumptions are critical ones. I have also gotten input from Houston who has participated in some of the conference calls about these two issues.

After reviewing these memos, I have one major concern – both memos acknowledge that the recommendations they are making may err on the conservative side. In most cases, that is good. For this modeling exercise it is not, as we don't want conservatism built into the input assumptions because we are really applying the conservatism in using the 90% probability of the final outputs. if we build conservatism into the assumptions and then apply the 90% probability, we wont know how conservative we are really being, but it would be something greater than 90%. Being overly conservative could easily put us where we were last time with predictions indicating exceedances of WQ standards and possibly requiring long-term treatment.

I am not trying to influence this so that we inappropriately meet WQ standards, what I want are a set of reasonable input assumptions that are not skewed one way or the other so that we have confidence that in applying our 90% probability we are being appropriately conservative, and not overly conservative.

Up till now through the IAP process we have been able to basically achieve consensus amongst all parties regarding the probabilistic input distributions. For these two input variables we have not. I know that PolyMet wants to start modeling, but I don't think we should give them the ultimatum of using these recommendations or delay the project.

I don't pretend to be an expert in these areas, but as an objective player in this process with a good sense of the big picture and in the interest of trying one last time to try and move forward the discussion and reach consensus, assuming we are not trying to be conservative at this stage, I offer the following suggestions:

- Scaling factors – there appears to be weaknesses with using both PolyMet's proposed bin model and LAMs Dunka Mine empirical data – bottom line we don't have great data, but it appears to me that LAM thinks PolyMet is using too low a factor and is admitting its value may be too high. Couldn't we use the LAM range (0.03 to 0.38) and use the average of the PM and LAM averages (0.0.55 and 0.16 = 0.11) as the central tendency value?

- Concentration Cap pH values – the modeling predicts a pH of 7.5, can we use that as the central tendency with a range of 7.0 – 8.0?

- AMAX Concentration Cap values – I think I was one of the ones who stated that I was uncomfortable using the entire range of concentration values from the AMAX data as representing concentration caps. I do think we should use values reflecting the higher concentrations. In this case I do not think I am being conservative as I don't believe the lower values necessarily represent true concentration caps. But I also have concerns using the 95-100% values from the AMAX data as I have seen many times the extreme tails of these distributions may not reflect reality (e.g., lab error). I would recommend using lower, but still high values – perhaps a range of 75 – 95% from the AMAX data?

- I know that some of the proposed concentration caps come from other mines (e.g., Whistler) and I don't have the data available to me to suggest some middle ground

To the extent that there are any reservations about any of these suggestions, we still have the ability to do sensitivity analysis on the results to better understand how much either conc caps or scaling factors are influencing the final results.

I don't want to prolong this discussion, but also recognize that these are critical assumptions. I offer these suggestions simply as an objective party trying to help reach consensus.

I am happy to discuss as desired

From: Carlson, Erik (DNR) [mailto:
Sent: Tuesday, November 22, 2011 7:57 AM
To: David Blaha
Cc: Johnson, Bill H (DNR); Kramka, Larry R (DNR)
Subject: FW: Concentration cap and scaling factor memo for PolyMet
Importance: High

Dave,
These memos from LAM will communicate a decision to PolyMet on concentration caps and scaling factors. Would you please take a look at them today ASAP? We want to know if you foresee any issues with these decisions on your end. Thanks.
-Erik

From: Kramka, Larry R (DNR)
Sent: Monday, November 21, 2011 8:44 PM
To: Carlson, Erik (DNR); Johnson, Bill H (DNR)
Subject: FW: Concentration cap and scaling factor memo for PolyMet

Can you send this to Dave Blaha and make sure that this doesn't cause us any issues in the write up?

From: Engstrom, Jennifer N (DNR)
Sent: Monday, November 21, 2011 1:33 PM
To: Kramka, Larry R (DNR)
Cc: Wenz, Zach (DNR); Olson, Michael (DNR); Lapakko, Kim A (DNR); Berndt, Mike (DNR)
Subject: Concentration cap memo for PolyMet

Larry,

Here is the finalized version of the memo describing the proposal/decision for the concentration caps for the modeling of the Cat 1 pile.

I included both Word and PDF format, just in case.

If there is any further assistance you would like from us on this topic (message delivery, questions answered, etc), please let us know.

Thanks,
Jennifer

<LAM Concentration caps Nov 21 final.pdf>

<LAM scaling factor memo_111121.pdf>