

## Johnson, Bill H (DNR)

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**From:** Johnson, Bill H (DNR)  
**Sent:** Wednesday, October 17, 2012 6:44 PM  
**To:** Kunz, Michael (DNR); Fred Marinelli; Jim Finley; David Blaha  
**Cc:** Engstrom, Jennifer N (DNR); Olson, Michael (DNR); Wenz, Zach (DNR); Colvin, Steve E (DNR)  
**Subject:** RE: FW: GoldSim inputs to Plant Site model  
**Attachments:** NorthMet GoldSim QAQC Tracking 02Oct2012 - CDA\_Pint 101712.xlsx

Mike and all, attached please find an updated version of the “Northmet GoldSim QAQC Tracking 02Oct2012” document provided by Tina Pint at Barr in response to the confirmation sought by ERM (Fred Marinelli) regarding values contained in Table 1-22 of the Plant Site Water Modeling Workplan Ver. 7. This spreadsheet is parked on the Barr website under the model results tab for PolyMet.

Documentation of “changes” across the QA/QC process has been happening in this table, including for the shaded constituents in Table 1-22. The update is contained in Item 40, which reads:

“An error was discovered in determining the mass content of some constituents (Al, Ca, Fe, K, Mg, Na, and S). The unit conversion from % to mg/kg was 10x off and was corrected. For S, the value was updated for data consistency with the constituent release ratios. The Work Plan table has been updated and highlighted. The element LTVSMC Content was updated in the model.”

Please advise if this satisfies the issue in question. Thanks for your assistance. Bill.

Bill Johnson, Mining Section Lead  
Environmental Policy & Review Unit  
MDNR Division of Ecological & Water Resources

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**From:** Kunz, Michael (DNR)  
**Sent:** Tuesday, October 16, 2012 8:39 AM  
**To:** Fred Marinelli; Jim Finley; Johnson, Bill H (DNR); David Blaha  
**Cc:** Engstrom, Jennifer N (DNR); Olson, Michael (DNR); Wenz, Zach (DNR)  
**Subject:** RE: FW: GoldSim inputs to Plant Site model

Fred and Bill –

No one from Land and Minerals has been contacted by Barr/PolyMet on these new (shaded) entries and typically “changes “ like this would be expected to be part of a CDF process. We are also not aware of other agency involvement with these changes (this should be determined), in either case, there needs to be some form of documenting the communication/explanation/justification for the new shaded entries. Likewise, are there other model input changes that have been made without documentation?

Thanks

Mike  
Michael R. Kunz, PG, CHMM  
Principal Planner  
DNR – Land and Minerals

**From:** Fred Marinelli [mailto: ]  
**Sent:** Monday, October 15, 2012 1:28 PM  
**To:** Jim Finley; Johnson, Bill H (DNR)  
**Cc:** Kunz, Michael (DNR); David Blaha; Fred Marinelli  
**Subject:** Re: FW: GoldSim inputs to Plant Site model

Thanks Jim.

Bill and Dave,

See attached Table 1-22 from the most recent version of the Plant Site Workplan. Can someone confirm that the new (shaded) entries have been mutually agreed upon by Barr and the Agencies? The new value for sulfur is particularly important.

Thanks,

Fred

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On Mon, Oct 15, 2012 at 10:24 AM, Jim Finley < > wrote:  
Hi Fred,

The increase in sulfate release rates from fine (Table 1-13) and coarse (Table 1-14) tailings was established as part of CDF057, which has been essentially approved by Land and Minerals.

I cannot speak to the increases in constituent content for highlighted constituents as listed in Table 1-22.

These are the principal issues I understand you needed help with based on the information in emails and our telephone conversation last week. If I misunderstood what you needed, please give me a call to discuss and I'll do what I can to assist.

regards,

Jim

On 10/10/2012 10:52 AM, Kunz, Michael (DNR) wrote:

Hi Jim – Fred is looking for some assistance with the QA/QC process (see note below, email trail, and attachments). I know we talked about this for earlier QA/QC, so let me know if you are able to help out with this and you can follow up with Fred directly as well...based on you discussion with Fred, you can let me know also the level of effort – my initial thought is that it may be more than only a couple hours...

Thanks much

Mike

Michael R. Kunz, PG, CHMM

Principal Planner

DNR – Land and Minerals

[REDACTED]

[REDACTED]

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**From:** Johnson, Bill H (DNR)  
**Sent:** Wednesday, October 10, 2012 11:42 AM  
**To:** Kunz, Michael (DNR)  
**Subject:** FW: GoldSim inputs to Plant Site model

Mike, as discussed please contact Jim Finley to see if his schedule allows for him to assist Fred with his request for assistance. If yes, please direct Jim to contact Fred; his number is listed below. He is anticipating a call, and expects there's probably a couple of hours of work related to this.

If Jim is not available, then we'll need to assess other means of doing this. Thanks for your assistance. Bill.

Bill Johnson, Mining Section Lead

Environmental Policy & Review Unit

MDNR Division of Ecological & Water Resources

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**From:** Fred Marinelli [[mailto:\[REDACTED\]](mailto:[REDACTED])]  
**Sent:** Tuesday, October 09, 2012 3:08 PM  
**To:** Johnson, Bill H (DNR)  
**Cc:** David Blaha; Al Trippel; Melinda Todorov; Carlson, Erik (MPCA); Houston Kempton; Paul Haby; Fred Marinelli  
**Subject:** GoldSim inputs to Plant Site model

Bill,

Attached are two sets of input tables pertaining to the GoldSim Plant Site model. v6 was used as input to the previous GoldSim model (version 2.3) and v7 is for the current model (version 3.0). The highlighted entries in v7 indicate input values that have changed between GoldSim versions 2.3 and 3.0 (current). It is my understanding that most of these changes have been mutually agreed upon and are documented in CDFs or by verbal agreement with Barr.

I request that your technical team review the v7 tables, focusing on the highlighted entries, and verify that the new inputs are consistent with mutually agreed upon values and/or professional judgment. Particular attention should be paid to geochemical parameters that control chemical releases from the FTB. For example, the sulfur content of LTVSMC tailings has increased from 46.1 to 329 mg/kg, which is a substantial change from model versions 2.3 and 3.0. There are also some significant changes to sulfate release parameters for both LTVSMC and Flotation tailings.

Later this week, I will send two sets of input tables for the Mine Site and request a similar Agency review of these inputs. Feel free to call me at [REDACTED] if you have any questions regarding this request.

Respectfully,

Fred

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**Fred Marinelli**

Senior Groundwater Hydrologist

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