

14745-40/MTPO/01
MP00089

I N T E R O F F I C E M E M O R A N D U M

Created: 18-Dec-1996 03:55pm PST
Sent: 18-Dec-1996 04:03pm PST
From: GEORGE HEADLEY of EI
GHEADLEY
Title.
Dept: Employment & Investment
Tel No: 952-0480

TO: Tim Eaton of EI (TEATON)
TO: John Errington of EI (JERRINGTON)

Subject: Mt. Polley Construction

File Number: 14745-40-MTPO/01

Mt. Polley has stopped winter construction. They made lower starter dam design height of 927 and bumped into -20C weather. At -5 to -10 C they could place soil if at optimum water content. At -20 C they had to move fast to compact or they would not meet density and have to remove soil.

As built and updated design report and operating manual due about end of January. Will then apply for permission to store water. Construction could restart in March.

Fred Matich has still not submitted his report. Ken Brower will follow up.

George

I N T E R O F F I C E M E M O R A N D U M

Created: 24-Dec-1996 12:49pm PST
Sent: 24-Dec-1996 12:55pm PST
From: GEORGE HEADLEY of EI
GHEADLEY
Title.
Dept: Employment & Investment
Tel No: 952-0480

TO: Tim Eaton of EI (TEATON)

Subject: Mt. Polley

File Number: 14745-40-MTPO/01

Spoke to Ken Embree at KP.

KP have faxed Fred Matich requesting report. I gave Ken Feb. 15 deadline.

Revised design report and "water dam" operations manual completion date still ~~Jan. 31, 1997~~ *defer to Feb 15*.

Gave them heads up re possible permit amendment tied to final tailings dam redesign reports.

Said organics and topsoil disposal piles to be kept away from upstream toe of perimeter embankment.

Company will want to start construction in March or earlier.

George

Eaton, Tim EM:EX

From: Headley, George EM:EX
Sent: Monday, 29 June, 1998 2:55 PM
To: Eaton, Tim EM:EX
Subject: RE: Mt Polley

Fred was employed directly by MPMC and reported to MPMC and MEM. His initial terms of reference were for a water storage dam. Initial work and reporting was for impoundment foundation and starter dam.

Next portion of review work was to be the upstream part of the dam. It was my intent to piggy back the review on the Kemess review because of the similar designs. And possibly, if needed use Chuck Brawner or Peter Lighthall since they were familiar with Kemess.

Discussed this with company and Ken Brauer. Left it up to company to contact Fred.

George

From: Eaton, Tim EM:EX
Sent: , June 29, 1998 2:20 PM
To: Headley, George EM:EX
Subject: RE: Mt Polley

Thank you. Do you think you should call Fred. Was Fred reporting to the Ministry or to MEM and MPMC? What is Fred's future involvement? What were his ToR? Does he need to be notified in writing?

Tim Eaton, P. Eng.
 Mines Branch

From: Headley, George EM:EX
Sent: Monday, 29 June, 1998 2:10 PM
To: Eaton, Tim EM:EX
Subject: RE: Mt Polley

Mt. Polley dam design concept is similar to the original Kemess design of "Modified Centreline". Conceptual design report has been submitted but not reviewed or permitted. Upstream drainage and filter zones included but pipes removed. Will base my review on any thoughts you and Kemess review committee have on upstream drainage concept.

Differences include use of NAG rock shell downstream, different foundation conditions, 2H:1V downstream slope.

Dam raising is permitted to next stage above starter dam. Internal drainage is a continuous chimney drain a little downstream of starter dam centre line. Dam fill is a silt till. Seepage currently is not much.

Don't think Fred is needed for the remainder of the review.

Dam design, construction, QAQC, monitoring is at a high standard.

From: Eaton, Tim EM:EX
Sent: , June 29, 1998 1:18 PM
To: Headley, George EM:EX
Subject: Mt Polley

Does Fred Matich need to be involved any more? Have the details of dam raising and internal

drainage been completed, to your/ministry satisfaction, submitted for approval, and approved?

Tim Eaton, P. Eng.
Mines Branch



JR

MP00103

Eaton, Tim EM:EX

TSF Dam design & cons'n

From: Headley, George EM:EX
Sent: Monday, 29 June, 1998 3:05 PM
To: Eaton, Tim EM:EX
Subject: RE: Polley tsf

Current approval 1/2 built, next part to be built coming winter and good for operations to winter 1999-2000.
Approval needed by fall next year.

By that time the high grade starter pit will be worked out. If low copper prices do not shut the mine down, expect a significant cut in reserves and tailings quantities.

From: Eaton, Tim EM:EX
Sent: , June 29, 1998 2:23 PM
To: Headley, George EM:EX
Cc: Szikora, Sheri L EM:EX
Subject: Polley tsf

When does the review of next stage need to be completed and approved?
Tim Eaton, P. Eng.
Mines Branch

[REDACTED]

From: Headley, George EM:EX
Sent: Friday, January 07, 2000 11:50 AM
To: Beswick, Ed EM:EX; Errington, John EM:EX; Eaton, Tim EM:EX; McBride, Brian EM:EX; Price, Bill EM:EX; Morgan, David EM:EX
Cc: Szikora, Sheri L EM:EX
Subject: Mt. Polley Cyclone sand dam permit. File: 14745-40/MTPO/01

Ed:

The Knight Piesold design report came here and additional copies will go to your office and MELP.

Dave Morgan: review comments, if any, are needed.

Brian: A sand dam downstream face will probably require changed reclamation conditions for the permit.

Bill: Are you finished and okay?

MELP requirements of their Nov. 23, 1999 letter have been responded to or soon will be with additional information supplied by the company. Unless they say otherwise, I will assume they have signed off.

I will have preliminary review comments for you for Jan. 18 meeting of Cariboo Committee. Final review comments due for Jan. 26.

Jan. 26 morning meeting with Knight Piesold, Mt. Polley at KP office in Vancouver to discuss my concerns.

I promised a permit amendment in one month, say Feb. 4, 2000.

Construction would start April 2000.

[REDACTED]

1745-40/MTPO

Knight Piesold CONSULTING Knight Piesold Ltd. 1400 - 750 West Pender St. Tel: +1 (604) 685-0543 Vancouver, BC V6C 2T8 Fax: +1 (604) 685-0147 CANADA Fax: +1 (604) 687-2203	DATE: February 13, 2000	FILE NO: 11162/13.01
	TIME: 11:00 AM	REF. NO.: 0/0392
	OPERATOR: kde	PAGES: 1 of 4
	SENDER: Ken Embree	APPROVED: <i>KLB</i>

MPO0116

TO: Mount Polley Mining Corporation

FAX: 250-790-2268

ATTN: Don Parsons

Cc: George Headley, MEM Victoria (250 952-0481)

Ed Beswick, MEM Prince George (250 565-6015)

Brian Kynoch / Peter Campbell, Imperial Metals (687-4030)

Eric LeNeve, Mount Polley Site

SUBJECT: Meeting Minutes - January 26 Meeting

Don,

The minutes from the January 26 meeting on Stage 3 Cycloned Sand construction are attached. Two other items were identified as deliverables, including the following:

- The construction schedule. A draft has been completed and is currently being reviewed. It will be forwarded as soon as it is finalized.
- The letter addressing stability during localized cycloned sand deposition is being prepared. It will be forwarded as soon as it is finalized.

Regards,



Ken Embree

Attachments:

- January 26, 200 Meeting Minutes

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TABLE 1

MOUNT POLLEY MINING CORPORATION

MOUNT POLLEY MINE

TAILINGS STORAGE FACILITY

MEETING MINUTES - STAGE 3 CYCLONE SAND CONSTRUCTION

January 31, 2000

ITEM	DESCRIPTION	ACTION BY	DATE
1.0	<p>Introduction</p> <ul style="list-style-type: none"> Meeting at KPL offices, January 26, 2000, 8:30 am to 11:00 am Present at Meeting: <ul style="list-style-type: none"> Brian Kynoch (BK), Don Parsons (DP), Peter Campbell (PC), MPMC George Headley (GH), MEM Ken Brouwer (KJB), Ken Embree (KDE), Jeremy Kinch (JRK), KPL Meeting called to discuss KPL report "Report on Cycloned Sand Construction of Stage 3 and On-going Stages of the Tailings Storage Facility Vol I and II" (Ref. No. 11162/12-2). GH provided items for discussion in a letter dated January 24, 2000 (copy attached). Primary concern is downstream embankment stability and construction/operation methodology. KJB commented that schedule for hydraulic placement presented in the report might be too optimistic. The revised method will see cycloned sand placed hydraulically at the Main Embankment only, and only for the first 2 to 4 lifts. The remaining fill will be placed mechanically from drained cycloned sand stockpiles. The revised plan offers increased flexibility and allows additional hydraulic placement if conditions are favourable. The Mount Polley tailings embankments have a low permeability core zone that precludes the development of a steady state phreatic surface within the cycloned sand fill. Water is introduced to the cycloned sand during hydraulic placement of overlying lifts, which results in localized, transient wetting fronts for short periods of time but does not affect the long term stability of the embankment. This was observed in the trial berm constructed during 1999. 		
2.0	<p>Operations</p> <ul style="list-style-type: none"> Operations Manual Content: <ul style="list-style-type: none"> OM&S Manual was developed for Stage 1a (water) and Stage 1b (tailings) embankments, and is being updated to reflect the shift to cycloned sand construction. The report will be issued pending the completion of cyclone system and pumpback system design (MPMC). Estimated time of completion: 2 months (End of March) Personnel Training/Supervision & Experience/Management: <ul style="list-style-type: none"> Operator error has occurred at Gibraltar, particularly during line flushing, which results in erosion of cycloned sand. Stockpiles will be created before and during construction, which will provide an opportunity to optimize the system, observe drainage characteristics and train the operators. Revised plan makes greater use of mechanically placed sand, which decreases the possibility of operator error. Most of the tailings operators on staff, some of whom have been with the Gibraltar Mine tailings crew, have experience with cyclone systems. Operators will monitor underflow density and line pressure during cyclone operations. The Marcy density gauge and visual observation are used to monitor underflow properties. The QA/QC program will continue as per the trial program. Composite samples are collected frequently (each shift) for PSA with results typically within semi-weekly. Piezometers will be installed and monitored. Trigger levels will be established. The trial berm had a complete underdrainage blanket. Most of Stage 3 will be completely drained by the Zone T haul road. Subsequent longitudinal drains will be placed at 20 m intervals. A detailed construction schedule is being developed to identify goals and key dates. 10" cyclones should result in better product, with more sand produced. However, a test program to be conducted in the mill will determine optimum cyclone sizing. 	<p>MPMC/KPL</p> <p>KPL</p>	<p>26-Jan-00</p> <p>26-Jan-00</p>

M:\11162\13\Letter\minutesjan26.doc

02/11/00

TABLE 1**MOUNT POLLEY MINING CORPORATION****MOUNT POLLEY MINE****TAILINGS STORAGE FACILITY****MEETING MINUTES - STAGE 3 CYCLONE SAND CONSTRUCTION**

3.0	Construction Methodology <ul style="list-style-type: none"> Underflow will be piped from the crest to the bottom to avoid eroding the existing downstream face. Stockpiles will be established at the Main Embankment abutments to start. The current schedule assumes that these will be allowed to drain for 6 weeks, if necessary. Cells will be developed and, if required, will be allowed to drain for at least three weeks before placing the next lift. Perimeter Embankment construction will start at the end of June with either local borrow or mechanically placed sand. (to be confirmed) DP noted that it would be best to start construction at the Perimeter Embankment early. 5,000 m³/day (double shift) has been used in the schedule. Coarse cycloned material would be beneficial near the end of construction as it would drain more quickly and allow the 6 week waiting period for stockpiles to be reduced. GH asked if fine material placed in initial lifts would adversely affect vertical drainage in future raises. KJB commented that cycloned sand would be placed for periods of short duration, possibly resulting in a short saturation "pulse" migrating through the underlying partially saturated cycloned sand. The underlying material is partially saturated, so elevated pore water pressure would not be sustained. Stratification and segregation of cycloned sand will occur to some extent, with coarse material deposited near the discharge point and fine material collecting at the toe of each cell. The maximum lift height is 10 m at the Main Embankment (for the first lift). The maximum lift height in the trial berm was 5 m. Segregation will be controlled through the use of a discharge pipe and more efficient operations. The revised plan does not require the cyclones to be moved as often as the original plan. Expedient construction: Engineering concerns will not be overlooked because of production requirements. KPL will be involved in on-going review of progress and scheduling. 		
4.0	Design <ul style="list-style-type: none"> The underdrain consists of select shot rock, but does not have a perfect filter relationship with the cycloned sand. The redundancy of the drains will allow drainage to continue if a section is blinded off by sand. Outflows from the trial berm were monitored and fines migration was not observed. The only source of water is from hydraulically placed sand. There is no sustained phreatic surface due to the low permeability core zone and higher permeability sands. GH noted that sinkholes formed near one drain at Gibraltar. These were caused by cyclone drainage water only. Zone T was scarified before sand placement in the trial berm. Filter fabric was used in the rockfill toe berm. Slimes blinded of the filter fabric, resulting in ponding on the upstream side of the toe berm. Ponded water will have to be pumped or piped out. GH suggested using transition material in the rock toe berms. KDE noted that Zone T material is probably acceptable but segregation can occur during fill placement. Transition will be included if filter criteria are not satisfied. Longitudinal drain flow capacity is excellent and drains are greatly oversized due to the size of the equipment involved. The total drainage flows are expected to be less than 20 l/s. KPL to confirm data and verify capacity. Additional toe berms will be added for further expansions. No contingency measures are required to provide vertical drainage. Cells are allowed 3 weeks to drain before the next lift is placed. There will not be enough water draining from the active cells to cause a large scale piping failure. Also, the longitudinal drains are placed at 20 m spacing and facilitate efficient drainage of the entire length of the downstream toe. This precludes the development of a phreatic surface in the sand. The finger drains provide an additional drainage capacity and help to route flows into the sediment control ponds. The upstream toe drain is already installed at the Main Embankment. It includes concrete encased pipe and seepage collars at the core zone penetrations. This provides operational contingency. 	KPL	26-Jan-00

TABLE 1MOUNT POLLEY MINING CORPORATIONMOUNT POLLEY MINETAILINGS STORAGE FACILITYMEETING MINUTES - STAGE 3 CYCLONE SAND CONSTRUCTION

	<ul style="list-style-type: none"> GH thought SEEP/W model shows chimney drain extending into sand. This is not the case in reality but has no effect on the model, as both the chimney drain and cycloned sand have permeability orders of magnitude higher than the till core. Drainage water will be directed to ponds via ditches. Hydraulically placed sand can "spill" into adjacent cells due to the slope of the ground. The lowest cell can overflow into the pond. Ditching and the road provide ultimate containment at the Main Embankment. 		
5.0	Stability Assessment <ul style="list-style-type: none"> Stability analysis assumed all downstream sand was drained. GH asked if analysis had been done for locally saturated sand during cycloning operations. These results will be updated and provided by KPL. Piping prevented by close spacing of longitudinal drains. Liquefaction can only occur if sand is saturated, therefore it can only occur during operations. Even if it could occur, it would be localized. It is also difficult to re-saturate material with surface recharge. Equipment traffic will be beneficial, as saturated material will be densified. Loss of freeboard stability is not an issue, as sand will be placed mechanically adjacent to the core zone. This material must be unsaturated in order to be placed and is therefore non-liquefiable. 	KPL	26-Jan-00
6.0	Risk Assessment <ul style="list-style-type: none"> GH concerned with phreatic surface and piping failure. To minimize risk, skilled and experienced operators are required to monitor the operation 24 hours a day. Supervision of operators is also required. GH concerned that uncontrolled erosion could expose an undrained area and subsequent sloughing could occur if saturated sands are exposed in the area of active deposition. Partial saturation causes suction, which will cause upper layers to drain faster. The mill will have to notify the tailings operators in the event of a shutdown and flushing of the line. It takes approximately 15 minutes for tailings/water to reach the tailings facility. Trigger levels will be set for piezometers. A monitoring schedule will be determined, with a higher frequency of readings than for embankment piezometers during initial operations. Standpipe piezometers may be used in addition to vibrating wire piezometers. KP to evaluate 	KPL	26-Jan-00
7.0	Monitoring and Operational Controls: <ul style="list-style-type: none"> OM&S Manual discussed. QA/QC Testing discussed. MPMC to construct drainage system and toe berms. KPL would inspect after work is completed and confirm suitability to Ministry of Mines. 		
8.0	Requirements: <ul style="list-style-type: none"> Meeting minutes, comments on stability, schedule (28-Jan-00) OM&S Manual. <i>Preferred before starting stockpile. Focus on water management. (1-Apr-00)</i> Excavate test pits in existing toe berm for particle size analysis and filter relationship calculations. GH requested discussion of cell drainage for future raises/lifts. Review possible methods and provide letter report. <i>Not required immediately.</i> C.C. minutes to Ed Beswick in Prince George 	KPL KPL/MPMC KPL KPL	26-Jan-00 26-Jan-00 26-Jan-00 26-Jan-00

→ File 14745-40/MTP0/01

Carr, Chris EM:EX

MP00123

From: Carr, Chris EM:EX
Sent: May 25, 2001 9:40 AM
To: McBride, Brian EM:EX
Cc: Beswick, Ed EM:EX
Subject: RE: Weekly Report 22 May to 25 May

Brian, you may want to stress on Mt. Polley the importance of moving the tailings line, if they have not already done so, due to the added risk now that the pipeline is leaking.
I have not received any reports for QR.
I will try and remember to copy you on future geotechnical inspection reports issued from this office.
Chris.

-----Original Message-----

From: McBride, Brian EM:EX
Sent: May 25, 2001 9:32 AM
To: Carr, Chris EM:EX
Subject: Weekly Report 22 May to 25 May

I didn't see your report prior to heading out and now I wish I had. I'll have it tracked down in the office and have a look at it. I'm not sure if the tailings line was relocated and Greg Smyth didn't mention it. I'll be in contact with Greg on a regular basis and will make sure that I call him next week. The other concern I have is the lack of storage volume in the containment structure itself. If there was a major rupture, the sands would fill that narrow containment structure quickly and there are no dump ponds along the way.

I'm doing a Gibraltar inspection, hopefully next Friday and will go over your report prior to that.

I was to do a QR inspection today but Brian Miller called and said he couldn't make it, but I'm going down there anyway to check the level in the main zone pit and to see if there is any new equipment on site. Has Brian submitted his underground report? I'm positioning to refuse approval NoW's for exploration until we get compliance with the permit and I know they want to get started on exploration.

BMcB

-----Original Message-----

From: Carr, Chris EM:EX
Sent: Thursday, May 24, 2001 4:48 PM
To: McBride, Brian EM:EX
Subject: RE: Weekly Report 22 May to 25 May

Brian, at Mt. Polley have they moved the tailings line to the upstream crest along the east perimeter embankment ? Did you see my inspection report from a few weeks ago and my comment regarding relocation of the tailings line because of risk if line breaks ?
Have you read my recent inspection report for Gibraltar ?
Chris.

-----Original Message-----

From: McBride, Brian EM:EX
Sent: May 24, 2001 2:21 PM
To: Lane, Bob EM:EX; McGrath, Brian EM:EX; Morgan, David EM:EX; Beswick, Ed EM:EX; Pittman, Ed EM:EX; Errington, John EM:EX; MacDonald, Ken EM:EX; McIntyre, Ken EM:EX; Rosentreter, Rieva EM:EX
Cc: Carr, Chris EM:EX
Subject: Weekly Report 22 May to 25 May

Mount Polley:

- completed field inspection of the mine-site and sent out the report,
- clearing for Springer Pit and access and haul road constructed,
- actively mining the 1720 Bench in the Bell Pit,
- sampling in the Bell pit consists of:
 - composites of six blast holes cuttings,
 - where pyrite is elevated, each blast hole will be sampled,
 - the fines from the blast wall are being sampled.

- the tailings line has sprung several leaks,
- all tails held within containment structures,
- at the upper end of the tailings line, the back eddy caused from the inside bead at the joints has eroded the inside of the pipe causing the rupture,
- the lower end has flat spots in the line the result of the raising of the tailings line with the increasing level of the tailings in the impoundment,
- large air bubbles are trapped in the line reduce the cross-sectional flow area, increases pressure and causes leaks at the joints,
- vacuum breaks will be installed when the line is reconstructed during the June shut-down to eliminate the air bubbles.

QR Mine:

- to be inspected 25 May in a continued effort stay after the mine manager to bring the mine into compliance with the permit,
- areas of concern will be the discharge of the north lobe pit and check for new machinery on the property.

Next Weeks Objectives:

- 1.) Sustut Copper Project Meeting
- 2.) Inspection of Gibraltar,
- 3.) Response to USWA, re Quintette reclamation,
- 4.) Stanley Cup Play-offs.

Carr, Chris EM:EX

MP00137

From: Carr, Chris EM:EX
Sent: April 7, 2005 4:42 PM
To: 'Ron Martel'
Subject: Permit review - TSF

Ron,

I have completed a review of the KP report "Design of the TSF to Ultimate Elevation" and have the following questions that probably should be referred to KP.

1. With respect to till core construction during cold weather conditions there is no mention of the need to scarify the frozen surface prior to placing the next lift.
2. Glaciolacustrine deposit is noted in GW96-1A on cross-sections 9 and 10. The material is described as firm. What are the characteristics and extent of this deposit and could it have an influence on dam stability locally?

Perhaps KP could comment on these points.

Chris Carr, P.Eng.
Senior Geotechnical Engineer
Ministry of Energy and Mines, Mining Operations Branch
7th Floor, 1675 Douglas Street
Victoria, BC, V8W2G5
Mailing address:
P.O. Box 9320 Stn Prov Govt
Victoria, British Columbia, V8W 9N3
ph: (250) 952-0485 fax: (250) 952-0481
Chris.Carr@gems7.gov.bc.ca

From: Carr, Chris EM:EX
Sent: April 7, 2005 3:43 PM
To: Carr, Chris EM:EX
Subject: Mount Polley - notes to file

Reviewed report entitled "Mount Polley Mining Corporation, Mount Polley Mine, Design of the Tailings Storage Facility to Ultimate Elevation" by Knight Piesold dated March 14, 2005. The report was submitted in support of permitting the tailings storage facility to its ultimate height.

Ultimate elevation is 965 m. Current crest elevation is 945 m.

Permit amendment will be issued for the Stage 4 raise to 948 m. Design reports, construction drawings and technical specifications will be required for each raise.

An effluent permit is required from MWLAP.

Check if scarification of frozen compacted till core surface should be specified prior to placing new lift.

Check nature and extent of glaciolacustrine deposit in GW96-1A. Material is described as firm.

Draft permit conditions:

Construction

The tailings dam shall be raised to elevation 948 m in accordance with the design and construction specifications provided by the design consultant.

Rock fill used in the construction of the downstream dam shell shall consist of non acid-generating materials.

Foundation drains, toe drains and associated water collection and recycle systems shall be extended or installed as specified by the design consultant.

Operation

The tailings impoundment shall be operated with a minimum freeboard of 1.39 m.

The tailings storage facility shall be operated in accordance with the Operation, Maintenance and Surveillance (OMS) manual.

Progressive reclamation of the downstream dam slope shall be undertaken.

Monitoring

Three additional slope inclinometers shall be installed at the Main Embankment during the Stage 4 construction.

Monitoring of piezometers, slope inclinometers and survey monuments shall be carried out in accordance with the OMS manual or as specified by the design consultant.

Reporting

An as-built report shall be submitted within six months of completion of Stage 4 construction.

An annual dam safety inspection report shall be prepared and to be submitted by July 31, 2006.

A formal dam safety review shall be completed this year (2006) and at an interval of 7 years based on the high consequence classification.

From: [Lane, Bob EM:EX](#)
To: [Morgan, David EM:EX](#); [Hermann, Fred EM:EX](#)
Cc: [Wonders, Glen EM:EX](#); [Howe, Diane J EM:EX](#); [Howell, Carol EM:EX](#)
Subject: RE: Tailings dam haul road application
Date: Wednesday, July 20, 2005 10:54:08 AM

Dave and others... to my knowledge no one "lives" on the east side of Polley Lake, but there is recreational property (a couple of cabins) opposite the new Wight Pit development and we have received comments/concerns from those folks. They properties are owned by a group of individuals who have been in negotiations with Imperial Metals

s.22

s.22

Bob

-----Original Message-----

From: Morgan, David EM:EX
Sent: July 20, 2005 9:59 AM
To: Lane, Bob EM:EX; Hermann, Fred EM:EX
Cc: Wonders, Glen EM:EX; Howe, Diane J EM:EX; Howell, Carol EM:EX
Subject: RE: Tailings dam haul road application

I have sent a draft permit amendment to Carol for clean-up and Fred's approval.

I talked with Doug Hill, Environment, Williams Lake. He passed it on to his field person Brian Chapman but said go ahead without getting their comments they will look at it in the field.

He did bring up a concern with the lack of consultation with the public and first nations out there. I told him we had another application coming, the Southeast Zone pit, and we figured that should be brought up at public liaison meeting and a Caribou Mine Development meeting if they could be arranged. He indicated that there are some people living on the other side of Polley Lake that have some concerns when they look at all the activity on the west side of the lake.

-----Original Message-----

From: Lane, Bob EM:EX
Sent: July 06, 2005 9:58 AM
To: Morgan, David EM:EX
Subject: FW: Tailings dam haul road application

-----Original Message-----

From: DAVID POW [<mailto:djpconsulting@shaw.ca>]
Sent: Monday, June 20, 2005 11:00 AM
To: Wonders, Glen EM:EX
Cc: Lane, Bob EM:EX; Hermann, Fred EM:EX; Booth, Richard EM:EX; Wunschke, Steven EM:EX; Rothman, Stephen EM:EX
Subject: Tailings dam haul road application

Attached is the digital copy of the application (that was delivered to your office) for approval of constructing the haul road to the tailings dam from the Wight Pit haul road.

I am unsure at the moment who the contact is for this application; so it has been copied to various people. Please provide me a contact name.

If there are any questions or concerns please give me either an email or call (at 250-561-2229 for this week)

thank you for your assistance

David Pow

From: [Ron Martel](#)
To: [Hill, Douglas J ENV:EX](#); [Tim Fisch](#); [Pierre Stecko](#)
Cc: [donparsons@imperialmetals.com](#); [Tera Grady](#); [Wonders, Glen EMPR:EX](#); [lawrenced@pac.dfo-mpo.gc.ca](#); [XT:McCandless, Rob EC EAO:IN](#); [Youds, John A ENV:EX](#); [d.phillips@xatsull.com](#); [chief@williamslakeband.ca](#); [s.22](#); [rbrundridge@cariboord.bc.ca](#); [XT:HLTH Holdal, Alan](#); [Klopp, Bill S ENV:EX](#); [Howe, Diane J EMPR:EX](#); [Craig Arnault](#); [Ron Martel](#); [Art Frye](#)
Subject: FW: Response to MOE Comments - to Mount Polley's Plan to discharge water
Date: Wednesday, November 8, 2006 10:24:19 AM
Attachments: Figure 1 - Proposed Discharge Location.pdf
Attachment 1 - Chronological List of Activities.doc
Minnow Response to MOE Comments.pdf
Attachment 2 - Cantest (Vizon Response).pdf

Hi Doug ...

Attached you will find our response comments to yours made on the Minnow Report entitled "Identification of Priority Parameters at the Mount Polley Mine and Development of Site-Specific Water Quality Objectives", they will be incorporated into the 2007 technical assessment.

In closing, I would like to thank those who made comments and also those who attended the meeting on the 24th of October.

Sincerely

Ron Martel CCEP, CET
Environmental Superintendent
Mount Polley Mining Corporation
phone 250 790 - 2215 X 180
rmartel@mountpolley.com

From: Pierre Stecko [<mailto:pstecko@minnow-environmental.com>]
Sent: Tuesday, November 07, 2006 11:35 AM
To: Ron Martel
Subject: Response to MOE Comments

Hi Ron,

As promised, attached is the response to the Ministry of Environment comments on the Priority Parameter / SSWQO Report. The response includes the text of the response and three supporting files (Figure 1, Attachment 1 and Attachment 2). A hardcopy will follow.

<<...>> <<...>> <<...>> <<...>>

Regards,

Pierre.

Pierre Stecko, M.Sc., CCEP, RPBio
Aquatic Scientist / Principal
Minnow Environmental Inc.
1627 Fort St. - Suite 305

Victoria, BC V8R 1H8
Tel: (250) 595-1627
Fax: (250) 595-1625

From: Carr, Chris A EMPR:EX
Sent: Monday, December 10, 2007 4:25 PM
To: rmartel@mountpolley.com
Cc: Morgan, David EMPR:EX; Bellefontaine, Kim EMPR:EX; Howe, Diane J EMPR:EX; Milligan, Bruce EMPR:EX
Subject: Mount Polley TSF Stage 6 Permit

Ron,

I have reviewed the Knight Piesold report submitted in support of the permit application for the Stage 6 dam raise. This was sent to MEMPR under covering letter dated July 4, 2007. I apologise for the delay in responding to this.

Before proceeding with preparation of permit conditions I would ask that you provide the following information:

1. Cross-sections showing stability analyses for dam raise to elevation 958 m.
2. Slope inclinometer depth vs cumulative displacement plots showing cumulative displacement from date of installation.
3. Results of direct shear testing on lacustrine soils, if these tests have been completed.

Chris Carr
Geotechnical Mines Inspector
MEMPR

From: [Carr, Chris A EMPR:EX](#)
To: [Apel, Derek EMPR:EX](#)
Cc: [Bellefontaine, Kim EMPR:EX](#); [Howe, Diane J EMPR:EX](#); [Milligan, Bruce EMPR:EX](#)
Subject: FW: Mount Polley TSF Stage 6 Permit
Date: Tuesday, January 8, 2008 5:26:43 PM

Derek,

Responses to my questions were prepared by Knight Piesold Ltd. on December 19, 2007 and received by email on December 21, 2007. The information contained in their letter provides an adequate response to my questions and I recommend that the permit approving the Stage 6 dam raise be issued.

Geotechnical conditions:

1. The stage 6 dam raise to elevation 958 m and downstream buttress shall be constructed in accordance with the design and specifications provided by the design consultant.
2. The Operation, Maintenance and Surveillance manual shall be updated as necessary to include revised monitoring criteria, including piezometer and slope inclinometer thresholds.

The permit amendment should state that these conditions are in addition to the existing permit conditions.

Kim/Diane should be able to let you know who has the responsibility for preparing the permit document since Carol Howell will soon be leaving.

Chris.

From: Carr, Chris A EMPR:EX
Sent: Monday, December 10, 2007 4:25 PM
To: rmartel@mountpolley.com
Cc: Morgan, David EMPR:EX; Bellefontaine, Kim EMPR:EX; Howe, Diane J EMPR:EX; Milligan, Bruce EMPR:EX
Subject: Mount Polley TSF Stage 6 Permit

Ron,

I have reviewed the Knight Piesold report submitted in support of the permit application for the Stage 6 dam raise. This was sent to MEMPR under covering letter dated July 4, 2007. I apologise for the delay in responding to this.

Before proceeding with preparation of permit conditions I would ask that you provide the following information:

1. Cross-sections showing stability analyses for dam raise to elevation 958 m.
2. Slope inclinometer depth vs cumulative displacement plots showing cumulative displacement from date of installation.
3. Results of direct shear testing on lacustrine soils, if these tests have been completed.

Chris Carr
Geotechnical Mines Inspector

MEMPR

Bellefontaine, Kim MEM:EX

From: Warnock, George MEM:EX
Sent: Wednesday, June 27, 2012 10:23 AM
To: Howe, Diane J MEM:EX
Cc: Hoffman, Al MEM:EX
Subject: RE: Mount Polley Mine - 2012 Tailings Construction
Attachments: M-200 Amendment Approving Tailings Storage Facility Stage 8 Construction June 2012 _DRAFT.doc

Hi Diane,

I have reviewed the report titled, "Tailings Storage Facility – Stage 8 2012 Construction Monitoring Manual," prepared by AMEC Environment & Infrastructure and dated March 30, 2012. This report was submitted in support of Mount Polley's application to construct a 3.4m dam raise to El. 963.5 m. AMEC assumed the role of engineer of record for the TSF facility in January 2011. My review comments as follows:

- AMEC indicates that they will provide full-time supervision for the first 10 days of construction and during key construction activities thereafter (sufficient to have "the requisite confidence to provide as-built report sign-off (p. 2)"). This will include training of Mount Polley personnel as Field Inspectors. AMEC indicates that a full-time Field Inspector will be required.
- The roles of Mount Polley and AMEC personnel are defined.
- Necessary laboratory and field testing requirements are defined.
- Foundation preparation, inspection, and approval procedures are defined.
- Monitoring criteria, including inclinometer threshold levels are discussed.
- AMEC commits to providing a combined as-built/annual review report as "confirmation that the dam was raised in conformance with design intent..." (p. 21)
- Downstream slope is designed at 2H : 1V.
- Plans and sections are sufficiently detailed to serve as "For Construction" drawings.
- Updated stability analyses have been completed and are included as a letter report in the appendix. Material strengths appear to be reasonable and calculated factors of safety are acceptable.

In light of the above, I have prepared a draft permit amendment for your review and for Al's signature. I used the Stage 6 amendment as a template (I could not find the Stage 7 amendment in MMS or on the G:\ drive), with two additional conditions based on recommendations made by AMEC in their 2011 as-built report. These conditions include the requirement to complete an updated site water balance, and to measure flows in toe drains.

Feel free to change the draft amendment as you see fit. I am hoping that you will be able to get this out before you
 s.22 as they are likely hoping to start construction in July.

Regards,

George

From: Luke Moger [mailto:lmoger@mountpolley.com]
Sent: Tuesday, June 26, 2012 4:44 PM
To: Warnock, George MEM:EX
Cc: Howe, Diane J MEM:EX
Subject: RE: Mount Polley Mine - 2012 Tailings Construction

Hi Diane,

Yes it is; do I need a formal letter requesting this permit amendment, or will this e-mail suffice?

Kindest Regards,

Luke Moger

Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Warnock, George MEM:EX [mailto:George.Warnock@gov.bc.ca]
Sent: Monday, June 25, 2012 4:33 PM
To: Luke Moger
Cc: Howe, Diane J MEM:EX
Subject: FW: Mount Polley Mine - 2012 Tailings Construction

Hi Luke,

See below. Diane must have hit "Reply" instead of "Reply All."

George

From: Howe, Diane J MEM:EX
Sent: Monday, June 25, 2012 4:28 PM
To: Warnock, George MEM:EX
Subject: RE: Mount Polley Mine - 2012 Tailings Construction

Hi Luke,

Yes you will need a permit to start construction. Is this construction manual your design to the new level?

Regards, Diane

Diane Howe

Deputy Chief Inspector, Reclamation and Permitting
Mines and Minerals Resources
Victoria, BC
(250) 952-0183



Ministry of
Energy and Mines

From: Warnock, George MEM:EX
Sent: Monday, June 25, 2012 4:13 PM
To: Luke Moger

Cc: Howe, Diane J MEM:EX; Warnock, George MEM:EX
Subject: Re: Mount Polley Mine - 2012 Tailings Construction

Hello Luke,

I will try to review your permit and the 2012 Construction Manual when I get back to the office later this week. You may need a letter from MEM to permit the raise.

Regards,

George

Sent from my iPhone

On 2012-06-25, at 4:06 PM, "Luke Moger" <lmoger@mountpolley.com> wrote:

Hi George,

I was hoping to touch base with you in regards to approval of our 2012 construction program. As outlined in my first e-mail below, it is my understanding that we will require a permit to build beyond the 960.5m elevation as previously permitted under our 2011 program.

Please let me know if there is anything I need to provide, or if there is a more formal application I need to pursue.

Kindest Regards,

Luke Moger

Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 113

Fax: +1 (250) 790-2613

Email: LMoger@MountPolley.com

From: Warnock, George MEM:EX [<mailto:George.Warnock@gov.bc.ca>]

Sent: Tuesday, April 03, 2012 3:55 PM

To: Luke Moger

Cc: Howe, Diane J MEM:EX; Hoffman, Al MEM:EX; Willms, Teresa MEM:EX

Subject: RE: Mount Polley Mine - 2012 Tailings Construction

Hello Luke,

Thank you for the submitted reports. They will be reviewed in the near future. If you are able to submit hard copies as well that would be appreciated, but this is not strictly necessary. If available, hard copies should be sent to:

Ministry of Energy and Mines
Mines and Mineral Resources Division
c/o Teresa Willms
6th Floor - 1810 Blanshard Street
Victoria, BC
V8W 9N3

Regards,

*George Warnock, P.Eng.
Manager, Geotechnical Engineering
Ministry of Energy and Mines
3rd Floor - 1011 4th Avenue
Prince George, BC*

From: Howe, Diane J MEM:EX
Sent: Tuesday, April 3, 2012 9:47 AM
To: Warnock, George MEM:EX; Willms, Teresa MEM:EX; Hemphill, Naomi MEM:EX
Subject: FW: Mount Polley Mine - 2012 Tailings Construction

fyi

Diane Howe

Deputy Chief Inspector, Reclamation and Permitting
Mines and Minerals Resources
Victoria, BC
(250) 952-0183

<image001.jpg>

From: Luke Moger [<mailto:lmoger@mountpolley.com>]
Sent: Tuesday, April 3, 2012 9:20 AM
To: Hoffman, Al MEM:EX; Howe, Diane J MEM:EX
Subject: RE: Mount Polley Mine - 2012 Tailings Construction

Hi Al and Diane,

Please find attached copies of the 2012 Construction Manual and 2011 As-Built and Annual Review, both prepared by our Engineer of Record, AMEC.

Kindest Regards,

Luke Moger

Project Engineer, Mine Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 113
Cell: +1 (250) 267-8552
Fax: +1 (250) 790-2613
Email: lmoger@mountpolley.com

From: Luke Moger
Sent: Tuesday, April 03, 2012 9:01 AM
To: 'Al.Hoffman@gov.bc.ca'; 'Diane.Howe@gov.bc.ca'
Subject: Mount Polley Mine - 2012 Tailings Construction

Hi Al and Diane,

I was hoping to make sure that I have copies of our 2012 TSF Documents circulated to all the necessary individuals. I am in receipt of electronic copies of a 2012 Construction Manual and 2011 As-Built and Annual Review, both prepared by our Engineer of Record, AMEC. I will have electronic copies of both documents sent out to yourselves today, and was also thinking that Chris Carr may require copies and Doug Hill (MOE) of just the as-built/annual

report. Please advise if I should include these two in the mailing list for electronic and/or hard copies of the documents as referenced above.

The 2012 program includes a raise of 3.4m to maintain the freeboard allowances within the dam through next winter. Mount Polley typically constructs the tailings dam in annual stages; this year's construction referred to as "Stage 8". In my conversations with Ron Martel previously, he had suggested that Chris Carr may be a good resource to review the project due to familiarity with our project. It is also my understanding that we will require an amendment to continue with this construction as planned; we are projecting May construction, and so hopefully permitting will correspond with this timing.

As mentioned, I will forward electronic copies of both documents momentarily; please advise if you do not receive them. If you could also forward the names of any parties that require copies (and confirm Chris and/or Doug) then I will be happy to provide them with electronic and/or hard copies.

Sincerely,

Luke Moger
Project Engineer, Mine Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 113
Cell: +1 (250) 267-8552
Fax: +1 (250) 790-2613
Email: lmoger@mountpolley.com

**AMENDMENT TO PERMIT
APPROVING TAILINGS STORAGE FACILITY
STAGE 8 CONSTRUCTION**

Permit: **M-200**

Issued to: **Mount Polley Mining Corporation
P.O. Box 12
Likely, British Columbia
V0L 1N0**

for work located at the:

Mount Polley Mine

Amended at Victoria, British Columbia this 27th day of June in the year 2012.

Al Hoffman, P.Eng.
Chief Inspector of Mines

PREAMBLE

This permit amendment is issued in response to an application submitted to the Ministry of Energy and Mines by e-mail titled, "Mount Polley Mine – 2012 Tailings Construction," and dated April 3, 2012. The application was submitted to the Chief Inspector of Mines (Chief Inspector) in accordance with Section 10(6) of the *Mines Act*. The following report was submitted in support of the application:

- A report by AMEC Environmental & Infrastructure entitled "Tailings Storage Facility – Stage 8 2012 Construction Monitoring Manual," and dated March 30, 2012.

CONDITIONS

The Chief Inspector hereby approves the application subject to compliance with the following terms and conditions:

General

1. Compliance with *Mines Act* and Code

All work shall be in compliance with all sections and parts of the *Mines Act* and Health, Safety and Reclamation Code for Mines in British Columbia (Code) and the owner, agent or manager (herein called the Permittee) shall obey all orders issued by the Chief Inspector or his delegate.

2. Departure from Approval

The Permittee shall notify the Chief Inspector and the district Inspector of Mines in writing of any intention to depart from either the plan of the work system or the program for the protection and reclamation of the surface of the land and watercourses to any substantial degree, and shall not proceed to implement the proposed changes without the written authorization of the Chief Inspector.

Geotechnical

1. General

- (a) The stage 8 dam raise to elevation 963.5 m shall be constructed in accordance with the design and specifications provided by the design consultant.
- (b) The Operation, Maintenance and Surveillance manual shall be updated in 2012 as recommended in the 2011 As-Built report.
- (c) A comprehensive review and update of the site water balance shall be completed and referenced in the 2012 Construction As-Built and Annual Review, which is to be submitted to the Chief Inspector no later than March 31, 2013.
- (d) Toe drain flows shall be measured and recorded per requirements described in the OMS Manual. This information shall be referenced in the 2012 Annual Report.

All other terms and conditions remain the same.

From: Warnock, George MEM:EX
Sent: Wednesday, September 19, 2012 3:55 PM
To: Howe, Diane J MEM:EX
Subject: FW: Mount Polley Mine - 2012 Tailings Construction [Additional Raise]

FYI.

From: Luke Moger [<mailto:lmoger@mountpolley.com>]
Sent: Wednesday, September 19, 2012 3:33 PM
To: Warnock, George MEM:EX
Subject: RE: Mount Polley Mine - 2012 Tailings Construction [Additional Raise]

Hi George,

Thank you very much for your speedy reply. We have discussed with AMEC the FoS for the Main Embankment and the need for a buttressing program next year; this has been incorporated into our budgeting for 2013.

Thanks again,

Luke Moger
Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Warnock, George MEM:EX [<mailto:George.Warnock@gov.bc.ca>]
Sent: Wednesday, September 19, 2012 1:39 PM
To: Luke Moger
Cc: Howe, Diane J MEM:EX
Subject: RE: Mount Polley Mine - 2012 Tailings Construction [Additional Raise]

Hi Luke,

This e-mail is written to acknowledge receipt of your application to amend Permit M-200. I have reviewed AMEC's letter report and stability analyses which were submitted in support of increasing the dam raise to the 965 m elevation. I have passed my review comments on to Diane Howe and you should be hearing from her shortly. I do not anticipate that it will be a problem to permit the raise to the new design elevation. I am pleased to see that a transition is being made to the "centerline" construction method from the "modified centerline" (upstream) method. The factor of safety for the main embankment is only marginally above the short term design criteria of 1.3 and it seems likely that future raises constructed in an upstream manner would not achieve a factor of safety of 1.3 (for the main embankment). Further, it appears that the change to centerline construction will be necessary to achieve a long term factor of safety of 1.5. I note that AMEC has interpreted Table 6-2 from the 2007 Dam Safety Guidelines somewhat differently than I have seen in the past. This table recommends a minimum factor of safety of 1.3 at the end of construction and "before reservoir filling" and a factor of safety of 1.5 at the "normal reservoir level." AMEC has interpreted the construction period as the entire pre-closure period, and this is open to debate. However, I consider that sufficient mitigation measures are in place (i.e. piezometer trigger thresholds) to support this more liberal

interpretation in this instance. I will be interested in seeing how the factors of safety for future dam raises change with the change in construction methodology.

Regards,

*George Warnock, P.Eng.
Manager, Geotechnical Engineering
Ministry of Energy and Mines
Phone: 250-565-4327*

From: Luke Moger [<mailto:lmoger@mountpolley.com>]
Sent: Tuesday, September 18, 2012 4:07 PM
To: Warnock, George MEM:EX
Cc: Hoffman, Al MEM:EX; Howe, Diane J MEM:EX
Subject: Mount Polley Mine - 2012 Tailings Construction [Additional Raise]

Hi George,

We were hoping to add an additional 1.5m onto our 2012 Tailings Construction Program at Mount Polley, taking it to the 965.0m elevation. The existing 2012 Tailings Construction is permitted to 963.5m (June 2012), which we are continuing to construct towards presently. There are multiple reasons for our wish to permit this additional build in 2012:

- 1) We would like to add additional internal contingency for our freeboard capacity (past the 1.3m permitted and safely projected by our water balance)
- 2) We would like to relieve the pressure to continue construction during more challenging conditions (i.e. be able to target more continuous, cost effective construction rather than "stop-start" construction)
- 3) We are looking at a slight design modification to a centerline method (please see attached package from AMEC) and would like to include some construction using this method in 2012 to help model 2013 budgeting and construction methodology
- 4) We would like to take advantage of what has been a very successful construction season to date

Please find attached the construction drawings from our design engineers, AMEC, along with the associated stability analyses. You are already in receipt of our 2012 Construction Manual, from which the QA/QC and other details will remain constant.

If you would be able to confirm receipt of this package that would be much appreciated; please do not hesitate to contact me if you have any questions or comments.

Kindest Regards,

Luke



Luke Moger
Project Engineer, Mine Operations
Mount Polley Mining Corporation
PO Box 12
Likely BC V0L 1N0
Canada

Direct: +1 (250) 790-2215 ext.113
Fax: +1 (250) 790-2613
E-mail: LMoger@MountPolley.com

From: Warnock, George MEM:EX
Sent: Wednesday, September 19, 2012 1:13 PM
To: Howe, Diane J MEM:EX
Cc: Hoffman, Al MEM:EX
Subject: Mount Polley Mine - 2012 Tailings Construction [Additional Raise]
Attachments: Amd M-200 Approving Tailings Storage Facility Stage 8A Construction September 2012_DRAFT.docx

Hello Diane,

I have reviewed the letter report titled, "2012 Stage 8A Tailings Storage Facility Construction Drawings and Stability Analysis for Embankment Raise to El. 965 m," prepared by AMEC Environment & Infrastructure and dated September 10, 2012. The letter report includes an attachment (also by AMEC) titled, "Mount Polley Mine Tailings Storage Facility 2012 Stage 8A (965 m) Expansion Stability Analyses," with the same date. As you may recall, an amendment to M-200 was issued on June 29, 2012 to permit the Stage 8 dam raise to the 963.5m elevation. The new application (received from Luke Moger by e-mail on September 18, 2012 – see below) seeks an amendment to permit the 2012 construction to the 965 m elevation, an increase of 1.5m over the June 2012 amendment. Construction associated with this latter amendment application has been dubbed the "8A raise". Relevant review comments as follows:

- Part of the rationale for the new raise elevation is to provide additional storage capacity and freeboard to allow 2013 construction to occur in late Spring or early Summer instead of early next Spring.
- Quality Assurance / Quality Control and other construction details will remain consistent with the 2012 Construction Manual (submitted and reviewed for the Stage 8 Raise).
- AMEC is targeting a short term design factor of safety of 1.3. Stability analyses indicate that this has been achieved for all embankments, and soil strengths used in the analyses appear to be reasonable. The Main Embankment had the lowest factor of safety of about 1.3 for both the drained and post-liquefaction case (results were only slightly lower (~1.5%) than the 963.5m embankment case). Based on the similarity of the results, seismic calculations were not deemed to be necessary.
- A transition is being made from "modified centerline" (upstream) construction to fully centerline construction in order to ensure that the closure criteria factor of safety of 1.5 can be achieved. [Note – it does not appear that future upstream dam raises would meet the short term or long term design criteria.]
- Trigger levels for piezometer monitoring have been established based on the calculated factor of safety for various hypothetical pore pressure elevation heads.
- The design modification was reviewed by Todd Martin, a Principal with AMEC and known to be knowledgeable with respect to tailings dams. Construction will be under his supervision. Drawings were "Issued for Construction" and are sufficiently detailed.

AMEC's letter report supports Mt. Polley's application, and I have no geotechnical objections to this application. I have used the Stage 8 amendment to prepare a draft Stage 8A amendment for Al's signature (see attached). Feel free to modify as you see fit.

Regards,

*George Warnock, P.Eng.
Manager, Geotechnical Engineering
Ministry of Energy and Mines
Phone: 250-565-4327*

From: Luke Moger [<mailto:lmoger@mountpolley.com>]
Sent: Tuesday, September 18, 2012 4:07 PM
To: Warnock, George MEM:EX
Cc: Hoffman, Al MEM:EX; Howe, Diane J MEM:EX
Subject: Mount Polley Mine - 2012 Tailings Construction [Additional Raise]

Hi George,

We were hoping to add an additional 1.5m onto our 2012 Tailings Construction Program at Mount Polley, taking it to the 965.0m elevation. The existing 2012 Tailings Construction is permitted to 963.5m (June 2012), which we are continuing to construct towards presently. There are multiple reasons for our wish to permit this additional build in 2012:

- 1) We would like to add additional internal contingency for our freeboard capacity (past the 1.3m permitted and safely projected by our water balance)
- 2) We would like to relieve the pressure to continue construction during more challenging conditions (i.e. be able to target more continuous, cost effective construction rather than "stop-start" construction)
- 3) We are looking at a slight design modification to a centerline method (please see attached package from AMEC) and would like to include some construction using this method in 2012 to help model 2013 budgeting and construction methodology
- 4) We would like to take advantage of what has been a very successful construction season to date

Please find attached the construction drawings from our design engineers, AMEC, along with the associated stability analyses. You are already in receipt of our 2012 Construction Manual, from which the QA/QC and other details will remain constant.

If you would be able to confirm receipt of this package that would be much appreciated; please do not hesitate to contact me if you have any questions or comments.

Kindest Regards,

Luke



Luke Moger
Project Engineer, Mine Operations
Mount Polley Mining Corporation
PO Box 12
Likely BC V0L 1N0
Canada

Direct: +1 (250) 790-2215 ext.113
Fax: +1 (250) 790-2613
E-mail: LMoger@MountPolley.com

**PERMIT AMENDMENT
APPROVING TAILINGS STORAGE FACILITY
STAGE 8A CONSTRUCTION**

Permit: **M-200**

Mine No. 1101163

Issued to: **Mount Polley Mining Corporation
P.O. Box 12
Likely, British Columbia
V0L 1N0**

for work located at the:

Mount Polley Mine

Amended at Victoria, British Columbia this xxth day of September in the year 2012.

Al Hoffman, P.Eng.
Chief Inspector of Mines

PREAMBLE

An application for an amendment to permit M-200 entitled, "Mount Polley Mine – 2012 Tailings Construction," dated April 3, 2012, was submitted to the Chief Inspector of Mines (Chief Inspector) in accordance with Section 10(6) of the *Mines Act*. A permit amendment was issued in response to this application on June 29, 2012 to permit a dam raise to the 963.5m elevation, in what was called the Stage 8 Raise. On September 18, 2012, an application was submitted to amend the permit to allow 2012 construction to the 965m elevation, which is referred to as the Stage 8A Raise.

The following report was submitted in support of the original (Stage 8) application:

- A report by AMEC Environmental & Infrastructure entitled "Tailings Storage Facility – Stage 8 2012 Construction Monitoring Manual," and dated March 30, 2012.

The following report was submitted in support of the amended (Stage 8A) application:

- A letter report by AMEC Environmental & Infrastructure entitled "2012 Stage 8A Tailings Storage Facility Construction Drawings and Stability Analyses for Embankment Raise to El. 965 m," and dated September 10, 2012.

Both reports are considered necessary to support the Stage 8A application.

CONDITIONS

The Chief Inspector hereby approves the work program subject to compliance with the following terms and conditions:

General

1. Compliance with *Mines Act* and Code

All work shall be in compliance with all sections and parts of the *Mines Act* and Health, Safety and Reclamation Code for Mines in British Columbia (Code) and the owner, agent or manager (herein called the Permittee) shall obey all orders issued by the Chief Inspector or his delegate.

2. Departure from Approval

The Permittee shall notify the Chief Inspector in writing of any intention to depart from either the plan of the work system or the program for the protection and reclamation of the surface of the land and watercourses to any substantial degree, and shall not proceed to implement the proposed changes without the written authorization of the Chief Inspector.

Geotechnical

1. General

- (a) The stage 8A dam raise to elevation 965 m shall be constructed in accordance with the design and specifications provided by the design consultant.

All other terms and conditions remain the same.

From: [Moores, Karen J ENV:EX](#)
To: [Howe, Diane J MEM:EX](#)
Subject: RE: Mount Polley
Date: Tuesday, October 2, 2012 2:53:57 PM

The draft only allows for dam filtered water at this time, which should meet the permit limits and other source water may be approved by the Director. The mine has an excess of 1.4 mill cu m. and the dam filtered water is only a small fraction of this. The discharge is to Hazeltine Creek (fish bearing) which joins up with Edney Creek and then to Quesnel Lake. The concentrations of key parameters have been increasing in the tailings impoundment and would likely require some sort of treatment to meet the permit limits. The long ditch and other waste rock dump water have concentrations that would not meet the draft permit limits. They have been experimenting with a passive treatment system on a small scale on site which has not been successful in reducing all parameters to date and further research is continuing.

If bonding is not in place what would be MEM's plan for waste rock and TSF water?

When do you make decisions about bonding? What is the process?

I can provide you with a copy of my assessment once it is completed (1-2weeks) if you would find this helpful.

Thanks.

Karen Moores, B.Sc, P.Ag

phone: 250-398-4544

Sr. Environmental Protection Officer

Cariboo Region

Environmental Protection

Ministry of Environment

BC Pollution Free

From: Howe, Diane J MEM:EX
Sent: Tuesday, October 2, 2012 12:40 PM
To: Moores, Karen J ENV:EX
Subject: RE: Mount Polley

Hi Karen,

We have not bonded for treatment (yet?) as I don't believe the company is having to look at treatment.... Or Is it??

Diane

Diane Howe

Deputy Chief Inspector, Reclamation and Permitting

Ministry of Energy, Mines and Natural Gas
Victoria, BC

(250) 952-0183

<< OLE Object: Picture (Device Independent Bitmap) >>

From: Moores, Karen J ENV:EX
Sent: Tuesday, October 2, 2012 11:31 AM
To: Howe, Diane J MEM:EX
Subject: Mount Polley

Hi Diane

I am finalizing the Mount Polley Mine discharge permit and the Xatsu'll First Nations has asked the current bonding will cover the possibility of water treatment in the future. Could you please let me know how much has been allocated for water treatment and if you believe it is sufficient.

Thanks.

Karen Moores, B.Sc, P.Ag
phone: 250-398-4544
Sr. Environmental Protection Officer
Cariboo Region
Environmental Protection
Ministry of Environment

BC Pollution Free

From: [Moores, Karen J ENV:EX](#)
To: [Howe, Diane J EMNG:EX](#); [O'Sullivan, Susan FLNR:EX](#)
Subject: Mount Polley Mine Amendment PE-11678
Date: Monday, November 19, 2012 8:52:31 AM
Attachments: 11678 PE.pdf
decision record.pdf
Ministry Assessment.pdf
2012_MtPolley_Hazeltine_ConsultationSummary.pdf

Hello Diane and Susan

The amendment for Mount Polley Mine to discharge effluent to Hazeltine Creek has been completed. A copy of the amended permit, reasons for decision, Ministry assessment and First Nations consultation record are attached. Thanks for your help during this review period.

Karen Moores, B.Sc, P.Ag

phone: 250-398-4544

Sr. Environmental Protection Officer

Cariboo Region

Environmental Protection

Ministry of Environment

BC Pollution Free

From: [McConnachie, Jennifer MEM:EX](#)
To: [Howe, Diane J MEM:EX](#); [Demchuk, Tania MEM:EX](#)
Subject: RE: Mine permit amendment-Water Treatment Application
Date: Friday, March 7, 2014 11:22:01 AM
Attachments: MPMC water treatment Project Description supporting reports .msg
RE UpcomingIn Progress permit amendment applications.msg

Hi Diane,

We have approved a pilot treatment plant and are awaiting an application for full scale treatment. I've attached some emails that will hopefully give a bigger picture for you. Here's an excerpt of one of the email strings.

Hi Luke,

In anticipation of forthcoming permit amendment applications, we are hoping you can provide us a synopsis of expected timelines to assist in our review and consultation planning process. Please provide the approximate timelines for information requirements summarized below (as well as any additional information you feel may be useful). We likely have some of this information, but believe it is useful to have it all in one place. Note that in the interest of expediting permitting processes for both the *Environmental Management Act* and *Mines Act* amendments, MEM and MOE have been in touch and we encourage you to communicate with both ministries jointly going forward. For the requested information here, I will ensure it gets to all those involved once I receive it from you.

1. Water Treatment Plant

- a. EMA discharge TAR and EA documents **[End of January/Beginning of February]**

Work is currently underway with Minnow Environmental
(Pierre Stecko) and Knight Piésold (Greg Smyth)

- b. Mines Act information requirements **[End of February/Beginning of March]**

Contingent on the results of the second pilot plant for plant
configurations

- c. Potential Water Act (Section 9) authorization for changes to the Polley Lake extraction infrastructure to facilitate discharge **[Mid-February]**

2. Mine Plan Update

- a. 5 Year Mine Plan and Reclamation Program **[End of February – Pending Status of Mine Plan (To Be Submitted At Latest With the Mine Plan)]**

Work is currently underway with Montane Environmental [Moss

Giasson]

- i. Status of required WQ modeling and Waste Rock management items?

WQ modeling has been completed by SRK [Tom Sharp]

Waste rock management is underway with SRK [Steve Day]

- b. Details of Mine Plan changes - what activities are required for mine life extension that are not already permitted? **[End of March]**

New Pit Designs

Expanded SERDS

Updated PAG Schedule

- 3. Co-mingling tailings and waste rock trial project **[Mid-February]**

- a. Information requested by MEM during preliminary review

Work is currently underway with SRK (Steve Day)

- i. Geotechnical
- ii. Geochemical/monitoring

- 4. Intermediate Dam Design (during Water Treatment Phase) **[End of April]**

A dam design package based on the short-term water management strategy will be produced once adequate modelling assumptions can be projected

It may also be useful for you to provide a summary of First Nations consultation that may have already taken place for any or all of these items.

First Nations Consultation has been completed on the pilot plant and discharge through the Implementation Committee (IC), and the outlined discharge parameters (3,000,000m³/year, BCWQG, 12-month discharge) have been proposed, with positive response. The mine reclamation planning is constantly in discussion as part of the environmental component of the IC, as are the details of the upcoming mine permit (they are aware of the ~2023 revised mine life as well as the general pit outlay and the waste requirements). Full informational packages were circulated regarding co-mingling of tailings and waste, and a presentation was also completed by MPMC at the IC. First Nations are also aware of the geotechnical and storage conditions of the existing tailings

storage facility (i.e. they know that a new design corresponding with the extended mine life is in the works), but formal details are yet to be refined or presented.

Thanks in advance,

Jennifer McConnachie, MSc, PAg

Inspector of Mines (Reclamation)

Ministry of Energy and Mines

Phone: 250.565.4422

Cell: 250.640.0717

From: Howe, Diane J MEM:EX
Sent: Friday, March 7, 2014 11:15 AM
To: Demchuk, Tania MEM:EX; McConnachie, Jennifer MEM:EX
Subject: FW: Mine permit amendment-Water Treatment Application

FYI:

Boy I am totally out to lunch on this one. I know we are still working on the Co mingling amendment one, did we receive an application for a water treatment plant on site? .

Regards, Diane

Diane Howe

Deputy Chief Inspector, Reclamation and Permitting

Ministry of Energy and Mines
Victoria, BC

(250) 952-0183

<< OLE Object: Picture (Device Independent Bitmap) >>

From: Kerley, Jason F FLNR:EX
Sent: Friday, March 7, 2014 10:46 AM
To: Hoffman, Al MEM:EX; Nicol, Jane FLNR:EX; Metcalfe, Shelley ENV:EX; Howe, Diane J MEM:EX
Cc: Hill, Douglas J FLNR:EX; Osmachenko, Linda FLNR:EX
Subject: Mine permit ammendment-Water Treatment Application

Consultation for this application is complete. Attached is the consultation summary for your records.

<< File: mpmc_water_treatment_consult_summary_7Mar14.pdf >>

Jason Kerley, R.P.F.

Senior Advisor, First Nations Relations

Cariboo Region

(250) 398-4249

jason.kerley@gov.bc.ca

From: [Bings, Dan P ENV:EX](#)
To: [Hill, Douglas J FLNR:EX](#); [Kerley, Jason F FLNR:EX](#)
Cc: [McConnachie, Jennifer MEM:EX](#); [Demchuk, Tania MEM:EX](#)
Subject: MPMC water treatment Project Description & supporting reports
Date: Thursday, January 16, 2014 10:40:15 AM
Attachments: TSF Interim Dam Design Path Forward - BGC - 2013 11 27.pdf
Mount Polley Water and Load Balance (SRK) - 2013 12 05.pdf
MPMC Information for Consultation.pdf

Supporting reports referenced in the project description, also attached and titled "MPMC Information for Consultation".

Dan Bings

Environmental Protection Officer
Ministry of Environment
Cariboo Region
PH: (250) 398-4897 FX: (250) 398-4214

BC Pollution Free

From: Luke Moger [<mailto:lmoger@mountpolley.com>]
Sent: Wednesday, January 15, 2014 5:55 PM
To: Bings, Dan P ENV:EX
Cc: Colleen Hughes
Subject: RE: Information for Consultation

Hi Dan;

Please find attached a copy of the BGC (most recent) and SRK reports – if you should have any questions, please let me know.

Kindest Regards,

Luke Moger

Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Colleen Hughes
Sent: Wednesday, January 15, 2014 11:46 AM
To: Luke Moger
Subject: FW: Information for Consultation

Hi Luke

Would you be able to provide this information to MOE?

Thank you
Colleen

From: Bings, Dan P ENV:EX [<mailto:Dan.Bings@gov.bc.ca>]
Sent: Wednesday, January 15, 2014 11:10 AM
To: Colleen Hughes
Subject: RE: Information for Consultation

Can you fire off a digital copy of the BGC water balance report and the SRK treatment technology recommendation report? We may need it in our back pocket if asked to justify the discharge and/or the method of treatment. D

From: Colleen Hughes [<mailto:chughes@mountpolley.com>]
Sent: Wednesday, January 15, 2014 10:42 AM
To: Bings, Dan P ENV:EX
Subject: Information for Consultation

Hi Dan

Here is the final document. I should have the application for the pipeline complete today but will have to wait a week for a cheque to be processed.

Thanks
Colleen

From: Bings, Dan P ENV:EX [<mailto:Dan.Bings@gov.bc.ca>]
Sent: Tuesday, January 14, 2014 4:35 PM
To: Colleen Hughes
Subject: RE: MOE_MEM First Nations Consultations Activities_CH_KM2

lol...oddly enough, it didn't even register on me!

From: Colleen Hughes [<mailto:chughes@mountpolley.com>]
Sent: Tuesday, January 14, 2014 4:34 PM
To: Bings, Dan P ENV:EX
Subject: RE: MOE_MEM First Nations Consultations Activities_CH_KM2

s.22

From: Bings, Dan P ENV:EX [<mailto:Dan.Bings@gov.bc.ca>]
Sent: Tuesday, January 14, 2014 4:33 PM
To: Colleen Hughes
Subject: RE: MOE_MEM First Nations Consultations Activities_CH_KM2

The only thing I'd change would be to qualify that the treatment objective is both acute and chronic (30 day) guidelines. It might not also hurt to mention that the permeate also meets drinking water objectives.

Otherwise, given the limited re-use of the acronyms in the document and given the target audience, it might be an idea to do away with the handful of acronyms and use the full terms.

Dan

From: Colleen Hughes [<mailto:chughes@mountpolley.com>]
Sent: Tuesday, January 14, 2014 4:10 PM
To: Bings, Dan P ENV:EX
Subject: MOE_MEM First Nations Consultations Activities_CH_KM2

Hi Dan

Here is the document we have put together for MOE to use for consultation. Please have a look and let me know if you would like to see any changes.

Colleen

From: [Demchuk, Tania MEM:EX](#)
To: ["Luke Moger"; McConnellachie, Jennifer MEM:EX; Bings, Dan P ENV:EX](#)
Cc: ["Art Frye"; "Ryan Brown"; "Colleen Hughes"](#)
Subject: RE: Upcoming/In Progress permit amendment applications
Date: Monday, January 13, 2014 4:12:10 PM
Attachments: image001.jpg

Hi Luke,

Okay, thanks for that clarification. As we approach the submission date, we would likely find it useful for you to check in (email/phone) to let us know what the planned approach will be. Our preferred approach is to keep everything together to the extent possible.

Cheers,
Tania

From: Luke Moger [<mailto:lmoger@mountpolley.com>]
Sent: Monday, January 13, 2014 4:07 PM
To: Demchuk, Tania MEM:EX; McConnellachie, Jennifer MEM:EX; Bings, Dan P ENV:EX
Cc: Art Frye; Ryan Brown; Colleen Hughes
Subject: RE: Upcoming/In Progress permit amendment applications

Hi Tania;

Happy New Year as well!

Yes, our intention is to submit them together, but if there is a non-reclamation and closure item delaying the Mine Plan Permit Application Package, then I was thinking that we may be able to submit the 5-Year Reclamation and Closure Plan a bit earlier to help with the review process timing; understanding that obviously the two are required to be read in conjunction to evaluate, but thinking it may just help to get them "in the queue" to check for overall completeness and appropriateness.

Kindest Regards,

Luke Moger

Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Demchuk, Tania MEM:EX [<mailto:Tania.Demchuk@gov.bc.ca>]
Sent: Monday, January 13, 2014 3:48 PM
To: Luke Moger; McConnellachie, Jennifer MEM:EX; Bings, Dan P ENV:EX
Cc: Art Frye; Ryan Brown; Colleen Hughes
Subject: RE: Upcoming/In Progress permit amendment applications

Hi Luke,

Thanks for that update on timelines.

One clarification, under the Mine Plan update is it correct that you will wait to submit both of those items in one report at the end of March?

Thanks, and happy new year!

Tania

From: Luke Moger [<mailto:lmoger@mountpolley.com>]

Sent: Monday, January 13, 2014 2:09 PM

To: McConnachie, Jennifer MEM:EX; Demchuk, Tania MEM:EX; Bings, Dan P ENV:EX

Cc: Art Frye; Ryan Brown; Colleen Hughes

Subject: RE: Upcoming/In Progress permit amendment applications

Hi Jennifer;

Apologies for the delay - as per our correspondence last week, I think we have all the information to put together some realistic timelines to address your e-mail (please see in red below).

As a general update, we are looking at a second round of piloting, which has set back our schedule a bit. Consultation has been ongoing, and we have held our regular Implementation Committee Meetings, a Public Liaison Meeting in Big Lake and a Public Meeting in Likely. The general tone of these meetings has been positive, and we are currently awaiting comment in order to identify any next steps required in this regard.

The short-term water management strategy (current discharge application) development is a leading or parallel event to many of the items as listed below, and so completion of them hinges on parts of the final solution being formalized.

If there is anything that you require further information or clarification on, please don't hesitate to contact me.

Kindest Regards,

Luke Moger

Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113

Fax: +1 (250) 790-2613

Email: LMoger@MountPolley.com

From: McConnachie, Jennifer MEM:EX [<mailto:Jennifer.McConnachie@gov.bc.ca>]

Sent: Monday, December 16, 2013 1:09 PM

To: Luke Moger; Demchuk, Tania MEM:EX

Cc: Art Frye; Ryan Brown; Colleen Hughes
Subject: Upcoming/In Progress permit amendment applications

Hi Luke,

In anticipation of forthcoming permit amendment applications, we are hoping you can provide us a synopsis of expected timelines to assist in our review and consultation planning process. Please provide the approximate timelines for information requirements summarized below (as well as any additional information you feel may be useful). We likely have some of this information, but believe it is useful to have it all in one place. Note that in the interest of expediting permitting processes for both the *Environmental Management Act* and *Mines Act* amendments, MEM and MOE have been in touch and we encourage you to communicate with both ministries jointly going forward. For the requested information here, I will ensure it gets to all those involved once I receive it from you.

1. Water Treatment Plant
 - a. EMA discharge TAR and EA documents **[End of January/Beginning of February]**
Work is currently underway with Minnow Environmental (Pierre Stecko) and Knight Piésold (Greg Smyth)
 - b. Mines Act information requirements **[End of February/Beginning of March]**
Contingent on the results of the second pilot plant for plant configurations
 - c. Potential Water Act (Section 9) authorization for changes to the Polley Lake extraction infrastructure to facilitate discharge **[Mid-February]**
2. Mine Plan Update
 - a. 5 Year Mine Plan and Reclamation Program **[End of February – Pending Status of Mine Plan (To Be Submitted At Latest With the Mine Plan)]**
Work is currently underway with Montane Environmental [Moss Giasson]
 - i. Status of required WQ modeling and Waste Rock management items?
WQ modeling has been completed by SRK [Tom Sharp]
Waste rock management is underway with SRK [Steve Day]
 - b. Details of Mine Plan changes - what activities are required for mine life extension that are not already permitted? **[End of March]**
New Pit Designs
Expanded SERDS
Updated PAG Schedule
3. Co-mingling tailings and waste rock trial project **[Mid-February]**
 - a. Information requested by MEM during preliminary review
Work is currently underway with SRK (Steve Day)
 - i. Geotechnical
 - ii. Geochemical/monitoring
4. Intermediate Dam Design (during Water Treatment Phase) **[End of April]**
A dam design package based on the short-term water management strategy will be

produced once adequate modelling assumptions can be projected

It may also be useful for you to provide a summary of First Nations consultation that may have already taken place for any or all of these items.

First Nations Consultation has been completed on the pilot plant and discharge through the Implementation Committee (IC), and the outlined discharge parameters (3,000,000m³/year, BCWQG, 12-month discharge) have been proposed, with positive response. The mine reclamation planning is constantly in discussion as part of the environmental component of the IC, as are the details of the upcoming mine permit (they are aware of the ~2023 revised mine life as well as the general pit outlay and the waste requirements). Full informational packages were circulated regarding co-mingling of tailings and waste, and a presentation was also completed by MPMC at the IC. First Nations are also aware of the geotechnical and storage conditions of the existing tailings storage facility (i.e. they know that a new design corresponding with the extended mine life is in the works), but formal details are yet to be refined or presented.

Thanks in advance,

Jennifer McConnachie, MSc, PAg

Inspector of Mines (Reclamation)

Ministry of Energy and Mines

Phone: 250.565.4422

Cell: 250.640.0717

From: Luke Moger [<mailto:lmoger@mountpolley.com>]

Sent: Wednesday, October 16, 2013 4:14 PM

To: McConnachie, Jennifer MEM:EX; Demchuk, Tania MEM:EX

Cc: Art Frye; Ryan Brown; Colleen Hughes

Subject: 5-Year Reclamation and Closure Component (MPMC Anticipated 2013 Mine Permit Amendment Application)

Hi Jennifer and Tania;

Thank you both for making the time to connect today. As per our conversation, we are just sorting through our permitting, "to-do" list on site, and wanted to make sure that we are on the same page internally (and also with the various governing bodies). Please find below a summary of our conversation, and let me know if there is anything that I have misinterpreted.

- 1) Mount Polley is still planning on submitting an M-200 Mine Permit Amendment Application to extend the mine life
 - a. This is anticipated to be submitted in late November/early December of 2013
- 2) Mount Polley has identified water management (net surplus) on site as a major component of mine life extension
 - a. There exists a two-three year time frame in which tailings storage facility constraints dictate the existing on-site surplus needs to be reduced

- b. There is a life-of-mine requirement to deal with this surplus on an annual basis moving forwards
 - c. Work on modelling of site chemistry (flow and loading) is currently underway (SRK)
 - d. Water management strategy evaluation (short and long term) is currently under way
- 3) It is required that along with the M-200 Mine Permit Amendment Application, a full update to the 5-year Reclamation and Closure Plan is submitted
 - a. The short-term water management strategy/implementation plan must be well developed if planned for execution within the next one-three years
 - b. The long-term water management strategy has to be presented, but will not require the same amount of detail

It was recommended that once work on the 5-year Reclamation and Closure Plan has been completed to an appropriate extent, discussion be conducted to receive guidance/feedback prior to formal submission as part of the M-200 Mine Permit Amendment Application; this has been tentatively scheduled for mid-November.

Thanks again for making the time to field my questions, and we look forward to discussing again soon.

Kindest Regards,

Luke

cid:image003.jpg@01CD2EA3.DDA5A5E0



Direct: +1 (250) 790-2215 ext. 2113

Fax: +1 (250) 790-2613

E-mail: LMoger@MountPolley.com

Narynski, Heather M MEM:EX

From: Warnock, George EMNG:EX
Sent: Monday, April 29, 2013 11:41 AM
To: Narynski, Heather M EMNG:EX
Subject: FW: 2013 Construction Monitoring Manual + 2012 As-Built + 2012 Annual Review

From: Warnock, George EMNG:EX
Sent: Thursday, April 18, 2013 4:41 PM
To: Luke Moger
Cc: Howe, Diane J EMNG:EX; Tim Fisch; Art Frye; Narynski, Heather M EMNG:EX
Subject: RE: 2013 Construction Monitoring Manual + 2012 As-Built + 2012 Annual Review

Hi Luke,

This e-mail is written to acknowledge receipt of the 2013 Construction Monitoring Manual. It is understood that this document includes a design for a raise to 970.0m. I do not see any need to separate the design package out from the Construction Monitoring Manual. I will review this document as soon as possible, but may not be able to get to it until late next week or early the next. We should only need one hard copy to the Victoria office.

I did not receive the 2012 As-built or the 2012 Annual Review that you were going to send by "YouSendIt", but if Diane has downloaded these I will locate them on our network. I do not require hard copies of these documents - you need only submit them to the Victoria office care of Diane Howe or Heather Narynski. We will review these two reports at a future date as time allows. Please ensure that any recommendations from the 2012 review are addressed as needed.

Regards,

George

From: Luke Moger [<mailto:lmoger@mountpolley.com>]
Sent: Thursday, April 18, 2013 12:12 PM
To: Howe, Diane J EMNG:EX; Warnock, George EMNG:EX
Cc: Tim Fisch; Art Frye
Subject: 2013 Construction Monitoring Manual

Hi Diane and George,

Please find attached the 2013 Construction Monitoring Manual completed by AMEC for the MPMC TSF. Included in this document are the analyses for raise to 970m elevation (our latest existing M-200 Permit Amendment was to 965.0m and was approved in 2012 – we are still working under this approved design elevation at the current time, but will be working between 965.0m and 970.0m during this construction season). The design of the TSF, as outlined in the report, follows the same intent and methodology of previous raises, and is a continuation of the existing design and construction methodology (shifting towards centerline construction from the previously employed modified upstream construction).

AMEC will return to providing the Engineer-of-Record (Laura Wiebe) as they have been once again retained to complete the construction monitoring in 2013. Please let me know if you would like to have the design package included in this report (to 970m elevation) broken out from the 2013 Construction Monitoring Manual as a separate document for review, or if having them combined will serve adequately for approval of both.

I am also in receipt of hard copies of the Manual; please advise as to how many copies you would like to be distributed and to which individuals.

If you should have any questions, please let me know.

Kindest Regards,

Luke



Luke Moger

Project Engineer, Mine Operations
Mount Polley Mining Corporation
PO Box 12
Likely BC V0L 1N0
Canada

Direct: +1 (250) 790-2215 ext.113

Fax: +1 (250) 790-2613

E-mail: LMoger@MountPolley.com

Narynski, Heather M MEM:EX

MP00233

From: Narynski, Heather M EMNG:EX
Sent: Wednesday, May 8, 2013 10:56 AM
To: Luke Moger
Subject: RE: Request: OMS and Water Balance Status

Thanks Luke,

I appreciate you getting back to me and forwarding the documents when you return. Enjoy the rest of your time back east ☺

-H

From: Luke Moger [<mailto:lmoger@mountpolley.com>]
Sent: Wednesday, May 8, 2013 10:54 AM
To: Narynski, Heather M EMNG:EX
Subject: RE: Request: OMS and Water Balance Status

Hi Heather;

Sorry for the delayed response, s.22 (and conveniently enough, we lost on-site connection Monday and Tuesday, so I am just now getting back online!). I can get both of these documents to you upon my return.

Apologies again – look forward to connecting with you soon.

Kindest Regards,

Luke Moger

Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Narynski, Heather M EMNG:EX [<mailto:Heather.Narynski@gov.bc.ca>]
Sent: Tuesday, May 07, 2013 4:02 PM
To: Luke Moger
Subject: Request: OMS and Water Balance Status

Hi Luke,

As a follow-up to my phone message, could you please indicate the status of the following Stage 8 Construction permit conditions:

- The Operation, Maintenance and Surveillance manual shall be updated in 2012 as recommended in the 2011 As-Built report

- A comprehensive review and update of the site water balance shall be completed and referenced in the 2012 Construction As-Built and Annual Review.

Thanks,
Heather

Heather Narynski, P.Eng
Sr. Geotechnical Inspector
Ministry of Energy, Mines and Natural Gas
1810 Blanshard St., Victoria, BC V8W 9N3
Wk: 250-387-0883
Cell: 250-893-3396

Narynski, Heather M MEM:EX

MP00234

From: Narynski, Heather M EMNG:EX
Sent: Friday, May 17, 2013 12:08 PM
To: Luke Moger
Subject: RE: Request: OMS and Water Balance Status

Hi Luke,

Just following up on your previous email. Have you sent these documents by mail or will you be sending digitally?

I am waiting on these documents as part of my review for the Stage 9 dam raise.

Thanks,
Heather

From: Luke Moger [<mailto:lmoger@mountpolley.com>]
Sent: Wednesday, May 8, 2013 10:54 AM
To: Narynski, Heather M EMNG:EX
Subject: RE: Request: OMS and Water Balance Status

Hi Heather;

Sorry for the delayed response, s.22 (and conveniently enough, we lost on-site connection Monday and Tuesday, so I am just now getting back online!). I can get both of these documents to you upon my return.

Apologies again – look forward to connecting with you soon.

Kindest Regards,

Luke Moger
Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Narynski, Heather M EMNG:EX [<mailto:Heather.Narynski@gov.bc.ca>]
Sent: Tuesday, May 07, 2013 4:02 PM
To: Luke Moger
Subject: Request: OMS and Water Balance Status

Hi Luke,

As a follow-up to my phone message, could you please indicate the status of the following Stage 8 Construction permit conditions:

- The Operation, Maintenance and Surveillance manual shall be updated in 2012 as recommended in the 2011 As-Built report
- A comprehensive review and update of the site water balance shall be completed and referenced in the 2012 Construction As-Built and Annual Review.

Thanks,
Heather

Heather Narynski, P.Eng
Sr. Geotechnical Inspector
Ministry of Energy, Mines and Natural Gas
1810 Blanshard St., Victoria, BC V8W 9N3
Wk: 250-387-0883
Cell: 250-893-3396

From: Warnock, George EMNG:EX
Sent: Thursday, May 30, 2013 10:45 AM
To: Narynski, Heather M EMNG:EX
Subject: RE: Mt Polley| Haul Road and PAG Dump amendment

You're probably right – "piece-meal" could be Code for non-existent.

From: Narynski, Heather M EMNG:EX
Sent: Thursday, May 30, 2013 10:44 AM
To: Warnock, George EMNG:EX
Cc: Howe, Diane J EMNG:EX
Subject: RE: Mt Polley| Haul Road and PAG Dump amendment

Thanks George,

To clarify, my understanding is that the OMS isn't available even as a digital file (Luke indicated it was piece-meal in different places and needed to be compiled in one spot). I agree that we wouldn't require a bound report.

I can follow-up again with Luke and discuss whether there is an easier way for them to submit what they currently have. I'm thinking they are still in the process of "updating".

-H

From: Warnock, George EMNG:EX
Sent: Thursday, May 30, 2013 10:37 AM
To: Narynski, Heather M EMNG:EX
Cc: Howe, Diane J EMNG:EX
Subject: RE: Mt Polley| Haul Road and PAG Dump amendment

Thanks Heather,

As you know, the OMS is intended primarily for use by the mining company. It's secondary purpose is for compliance with Section 10.5.2 of the Code. If you like, you could let Luke know that EMNG would be satisfied with an electronic version of their on-line document, or a simple print-out. We don't necessarily need a bound report unless that is what they are planning to do anyway.

George

From: Narynski, Heather M EMNG:EX
Sent: Thursday, May 30, 2013 10:30 AM
To: Warnock, George EMNG:EX; Howe, Diane J EMNG:EX
Subject: RE: Mt Polley| Haul Road and PAG Dump amendment

Hi George, Diane,

I will proceed with waiting for the OMS and submit permit conditions in a separate TSF amendment.

FYI, Luke indicated that Mt. Polley's OMS is online and needs to be compiled into a "report format" document.

-H

From: Warnock, George EMNG:EX
Sent: Thursday, May 30, 2013 8:57 AM
To: Narynski, Heather M EMNG:EX
Cc: Howe, Diane J EMNG:EX
Subject: RE: Mt Polley| Haul Road and PAG Dump amendment

Hi Heather,

I am OK either way as well, but it probably makes sense to wait for the OMS. I see that the 2011 as-built report recommended that the OMS be updated, and the Stage 8 permit amendment included a condition that required the update in 2012. Luke Moger is usually pretty good at getting back to us so I'm not sure what the reason is for the non-response.

George

From: Narynski, Heather M EMNG:EX
Sent: Thursday, May 30, 2013 8:48 AM
To: Howe, Diane J EMNG:EX; Warnock, George EMNG:EX
Subject: RE: Mt Polley| Haul Road and PAG Dump amendment

Hi Diane, George,

I have reviewed the documentation associated with the dam raise at Mt. Polley. I have had an email drafted up for a few weeks now, but am waiting on Mt. Polley to send their updated OMS. I have sent several emails requesting this information and anticipate it arriving shortly. They are aware that EMNG is waiting on this information to permit the dam raise. If it is preferred to include this information in one amendment, I could compile the permit conditions with an additional condition for OMS submission by a specified date. However, the current route does provide us with more leverage for receiving this report (without having to continuously pursue).

Please let me know your preference.

H

From: Howe, Diane J EMNG:EX
Sent: Thursday, May 30, 2013 7:08 AM
To: Warnock, George EMNG:EX; McConnachie, Jennifer EMNG:EX
Cc: Narynski, Heather M EMNG:EX; Demchuk, Tania EMNG:EX
Subject: Mt Polley| Haul Road and PAG Dump amendment

Hi both,

Looks like we are on our final stretch here for the MT Polley Haul Road amendment. I quickly read over the requests/responses you have been having with the company regarding the application and it looks like you are both are satisfied +/- with the proposal, however I am now wondering about permit conditions. I am hoping to have a draft together for your trip Jen with Tania so if you could please provide me with any conditions that would be great.

George I assume you want to have the TSF amendment done up separately once Heather is finished?

Thanks,

Regards, Diane

Diane Howe

Deputy Chief Inspector, Reclamation and Permitting
Ministry of Energy, Mines and Natural Gas
Victoria, BC
(250) 952-0183

<< OLE Object: Picture (Device Independent Bitmap) >>

From: Luke Moger <lmoger@mountpolley.com>
Sent: Monday, July 29, 2013 4:16 PM
To: Narynski, Heather M MEM:EX
Cc: Howe, Diane J MEM:EX; Warnock, George MEM:EX
Subject: RE: Request: OMS

Follow Up Flag: Follow up
Flag Status: Completed

Hi Heather;

Sorry for the delay in this – we just upgraded some infrastructure on site, and so I figured it would be worth updating the manual again prior to submission.

I will send it by yousendit.com due to file size. Once your comments are received I will have hard copies made up and distributed.

Kindest Regards,

Luke Moger
Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Narynski, Heather M EMNG:EX [<mailto:Heather.Narynski@gov.bc.ca>]
Sent: Friday, July 05, 2013 4:10 PM
To: Luke Moger
Cc: Howe, Diane J EMNG:EX; Warnock, George EMNG:EX
Subject: RE: Request: OMS

Hi Luke,

I left a phone message with you today.

I am following up on MEM's request for an updated OMS manual (Permit condition of Stage 8 dam raise). I have not seen something come through yet, and I wondering whether this document has been sent?

MEM is waiting on this information to issue permit for the Stage 9 dam raise (as per my email dated May 17, 2013). Please note, construction is not to commence on the dam until a permit is issued.

Please feel free to call and discuss.

Kind Regards,
Heather

Heather Narynski, P.Eng

Sr. Geotechnical Inspector
Ministry of Energy and Mines
1810 Blanshard St., Victoria, BC V8W 9N3
Wk: 250-387-0883
Cell: 250-893-3396

From: Luke Moger [<mailto:lmoger@mountpolley.com>]
Sent: Tuesday, May 21, 2013 9:49 AM
To: Narynski, Heather M EMNG:EX
Subject: RE: Request: OMS and Water Balance Status

Hi Heather;

Sorry for not getting back to you last week. We do include a copy of our on-site water balance in our Annual Environmental and Reclamation Report that is submitted to MEM (March 2013 was the last update), but I have also attached an updated copy for your reference.

For the OMS, since it is an internal, hyper-linked, document I am still compiling all of the separate files that will make up the full submission to you in an electronic form; apologies for this delay.

Kindest Regards,

Luke Moger
Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Narynski, Heather M EMNG:EX [<mailto:Heather.Narynski@gov.bc.ca>]
Sent: Tuesday, May 07, 2013 4:02 PM
To: Luke Moger
Subject: Request: OMS and Water Balance Status

Hi Luke,

As a follow-up to my phone message, could you please indicate the status of the following Stage 8 Construction permit conditions:

- The Operation, Maintenance and Surveillance manual shall be updated in 2012 as recommended in the 2011 As-Built report
- A comprehensive review and update of the site water balance shall be completed and referenced in the 2012 Construction As-Built and Annual Review.

Thanks,
Heather

Heather Narynski, P.Eng
Sr. Geotechnical Inspector
Ministry of Energy, Mines and Natural Gas
1810 Blanshard St., Victoria, BC V8W 9N3

Narynski, Heather M MEM:EX

MP00187

From: Luke Moger <lmoger@mountpolley.com>
Sent: Wednesday, July 31, 2013 11:42 AM
To: Narynski, Heather M MEM:EX
Cc: Warnock, George MEM:EX
Subject: RE: Mt. Polley - Stage 9 Dam Raise Application

Hi Heather,

Thank you very much for the quick response.

I agree with all of your points, and the FoS is something we are working into our designs; we should be discussing this (MEM/MPMC/Design Consultants) prior to our next raise submission (anticipated late 2013).

Kindest Regards,

Luke Moger
Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Narynski, Heather M MEM:EX [<mailto:Heather.Narynski@gov.bc.ca>]
Sent: Monday, July 29, 2013 5:50 PM
To: Luke Moger
Cc: Warnock, George MEM:EX
Subject: Mt. Polley - Stage 9 Dam Raise Application

Hi Luke,

Thanks for submitting Mount Polley's updated 2013 OMS Manual. I have added this document to MEM records.

I have reviewed the following documents in support of your application to amend Permit M-200 for Stage 9 dam raise to El. 970m:

- "Mount Polley Mine Tailings Storage Facility – Stage 9 2013 Construction Monitoring Manual", AMEC Environment & Infrastructure, dated April 11, 2013
- "Mount Polley Mine Tailings Storage Facility Stage 8/8A 2012 As-Built Report", AMEC Environment & Infrastructure, dated March 27, 2013
- "Amendment to Permit Approving Tailings storage Facility Stage 8 Construction", dated June 27, 2012
- "Permit Amendment Approving Tailings Storage Facility Stage 8A Construction", dated September, 2012
- 2013 OMS Manual
- 2013 Site Water Balance

I have submitted draft permit conditions to Diane Howe for review, and you should be hearing from her shortly regarding the status of your request. The Deputy/Chief Inspector may require additional information prior to finalizing the permit.

The stability analyses indicate that the FOS for the "Main Embankment" only marginally achieves the short term CDA design criteria of 1.3. This FOS includes modifications incorporating a centerline design above El. 963.5 m and the construction of a waste rock toe buttress to El. 925.0 m. Previous correspondence from MEM has highlighted the difference in interpretation of the CDA Guidelines. AMEC has considered the construction period to be the entire "pre-closure" period while CDA Guidelines, Table 6-2 recommends a minimum FOS of 1.3 "before reservoir filling", and a FOS of 1.5 at the "normal reservoir level".

MEM requires a commitment from Mount Polley that they are moving toward increasing these FOS for the main embankment as part of subsequent dam raises in an effort to move toward achieving a long term FOS equal to 1.5. It is expected that Mount Polley will continue their transition to centerline construction and provide additional buttressing with time. It is understood that sufficient mitigation measures are in place relating stability analyses to monitored piezometer data with pre-determined threshold response levels (Table 2.3 and Table 2.4). It is also understood that all dams are classified as "significant" based on CDA Guidelines, but have utilized the design criteria for a "high" consequence dam.

Based on my review, I do not anticipate issues with permitting the raise to the new design elevation, however no construction shall take place until a formal permit is issued from the Chief Inspector.

Kind Regards,
Heather

Heather Narynski, P.Eng
Sr. Geotechnical Inspector
Ministry of Energy, Mines and Natural Gas
1810 Blanshard St., Victoria, BC V8W 9N3
Wk: 250-387-0883
Cell: 250-893-3396

From: [McConnachie, Jennifer MEM:EX](#)
To: [Bellefontaine, Kim MEM:EX](#)
Cc: [Demchuk, Tania MEM:EX](#); [Howe, Diane J MEM:EX](#); [Rollo, Andrew MEM:EX](#)
Subject: RE: FYI: Water treatment - Mount Polley
Date: Tuesday, November 12, 2013 10:12:32 AM

Thanks Kim.

The short-term plan for the 'treated' discharge is tentatively Polley Lake. I believe they are developing a SeMP, as per MOE requirements. Not sure the status or whether or not Se removal in the Mill is included. Hopefully we will see the site-wide WQ model soon.

We will keep everyone posted for sure.

Cheers,
Jen

From: Bellefontaine, Kim MEM:EX
Sent: Tuesday, November 12, 2013 10:07 AM
To: McConnachie, Jennifer MEM:EX
Cc: Demchuk, Tania MEM:EX; Howe, Diane J MEM:EX; Rollo, Andrew MEM:EX
Subject: RE: FYI: Water treatment - Mount Polley

Thanks Jennifer,

RO is not really treatment. It concentrates contaminants into a brine that have to be dealt with. Storing that in the tailings impoundment would not be a solution, as it will just perpetuate the problem in the long term.

I wonder if they can discharge to another location with more dilution?

I have also suspected that Se is possibly building up in the milling circuit over time. I suggested they investigate options within the mill to remove. Not sure if they ever did.

Keep me posted. I've copied Andrew and Diane, so that they know what's going on too.

Kim

From: McConnachie, Jennifer MEM:EX
Sent: Thursday, November 7, 2013 8:48 AM
To: Bellefontaine, Kim MEM:EX
Cc: Demchuk, Tania MEM:EX
Subject: Re: FYI: Water treatment - Mount Polley

Kim,
I just have a high level overview, but here are some highlights:

- significant surplus of water
- tailings dams at max height geotechnically (970 m)

- started discharging to Hazeltine Creek in September, but permitted only from apr 1 to Oct 31, at 35% of creek flow rate (about 0.7 Mm³/yr, max 1.4 allowed)
- 2.5 to 3 Mm³ more to get rid of in the next 2 to 3 years to keep time with mine plan
- I get the sense that they think this is a temporary solution
- They are working on two water mgt strategies (short- and long- term)

Btw, their Hazeltine discharge infrastructure looks really slick, state of the art. Luke said it was designed in-house, by an engineer who is now at Red Chris.

As for consultants, the only thing I got out of them was that they seem to be getting a lot of info from Teck.

It does sound like their WQ model will come to us soon.

Hope this helps and thanks for the list!
Jen

Jennifer McConnachie, MSc, PAg
Inspector of Mines - Reclamation
Ministry of Energy and Mines

Sent from my iPhone

On 2013-11-07, at 6:44 AM, "Bellefontaine, Kim MEM:EX"
<Kim.Bellefontaine@gov.bc.ca> wrote:

Holy cow! RO?!

What has precipitated this decision and why are they in such a rush?

This is super expensive technology with lots of issues with brines. I don't think the tailings impoundment would be an appropriate disposal area for waste where it can get redissolve/dispersed to the environment. There are lots of risks with salty brines.

Who are their consultants advising them on this?

I just sent the treatment info list out to the Brule folks. I'll forward since I can't remember the directory path off the top of my head.

Kim Bellefontaine, M.Sc., P.Geo.
Manager Environmental Geoscience and Permitting
BC Ministry of Energy & Mines
250-952-0489
Kim.Bellefontaine@gov.bc.ca

On 2013-11-06, at 9:45 PM, "Demchuk, Tania MEM:EX"
<Tania.Demchuk@gov.bc.ca> wrote:

FYI - sounds like Mount Polley is planning RO(?) for water treatment and they hope to install in the spring. Update from Jen

below (she was just at a meeting in Likely this evening).

I will follow-up with her and the site when I'm back next week, just wanted to let you know.

Tania

Tania Demchuk, MSc, GIT
Sr Environmental Geoscientist
Ministry of Energy and Mines
(250) 952-0417

From my mobile device

Begin forwarded message:

From: "Demchuk, Tania MEM:EX"
<Tania.Demchuk@gov.bc.ca>
Date: 6 November, 2013 9:42:34 PM PST
To: "McConnachie, Jennifer MEM:EX"
<Jennifer.McConnachie@gov.bc.ca>
Subject: Re: Water treatment - Mount Polley

Wow!

Thanks for that update, definitely need to chat with Luke, this will very likely need an amendment or an approval... Thurs or Friday next week I have time. In the mean time, we have a list of water treatment info requirements thy we should send to Luke. I don't have this at my finger tips, but you could get it from Andrew tomorrow/Friday. Otherwise I'll send it next week (Wednesday).

Tania Demchuk, MSc, GIT
Sr Environmental Geoscientist
Ministry of Energy and Mines
(250) 952-0417

From my mobile device

On 2013-11-06, at 8:50 PM, "McConnachie, Jennifer MEM:EX" <Jennifer.McConnachie@gov.bc.ca> wrote:

Tania,

Not sure if you will check email tomorrow,
but here's the skivy.

The short term water mgt plan involves treatment. Probably not a surprise, but the timeline might be. They want to start in the spring. They don't have a lot of details yet. Looking at RO with waste to tailings. I told them that is a short timeline, but that I would have to confer with you about your requirements. No real details were provided such as how long would treatment be needed, but it seems like they hope it will give them time to play with options. I mentioned that it was my understanding that we would need details to permit (but maybe that depends? I'm a newbie). Essentially they want to start the process asap, including consultation. They have spoken to Dan Bings? from MOE about discharge permits.

So this email is more to determine when you are available (next week) to talk to Luke about what we need. If you are able to send me some timing options, I can set up a call.

Jen

Jennifer McConnachie, MSc, PAg
Inspector of Mines - Reclamation
Ministry of Energy and Mines

Sent from my iPhone

Mount Polley Mine - Water Treatment Discussion with MEM

Date: November 14, 2013
Time: 9:00am – 9:45am
Meeting Type: Conference Call
Attendees: Diane Howe (MEM), Jennifer McConnachie (MEM),
Tania Demchuk (MEM), Paul Sterling (Imperial Metals),
Art Frye (MPMC), Luke Moger (MPMC), Colleen Hughes (MPMC)

Project Background (provided by Luke Moger):

- Site currently operating at annual water surplus
- Surplus of ~6.5Mm³ of water currently in Tailings Storage Facility
- After review with geotechnical consultants (BGC), storage of this volume of water, with continued accumulation, will cause problems with TSF design in 2-3 years
- Need to pursue short-term water management strategy (treatment) to deal with volume of water collected on site
- Targeting Spring 2014 for treatment start-up, as the longer the delay in implementing treatment, the greater the volume/year requirement to treat
- Looking at treating Ditch water (Long Ditch/SERDS Ditch) collected near the TSF and releasing to Bootjack Polley Lake
 - o Brine created is to be contained in the TSF
- Have contacted three (3) vendors to review proposed treatment
 - o R/O identified as leading application
 - o Pilot Plant warranted to confirm testing projections

General Discussion

- Tania Demchuk asked about alternative treatments
 - o Luke Moger confirmed that SRK had been contracted to do analysis on annual surplus accumulation and potential water treatment strategies (confirmed accumulation projections and recommended R/O)
 - o Paul Sterling added that nanofiltration was not applicable due to the water quality parameters, and that R/O is the best fit with water quality on site and discharge quality required
 - o Art Frye furthered that the water being treated was already of good quality, and so this limits the range of treatment that are able to further improve
- Tania Demchuk stated that implementation of a pilot plant would still require notification from MEM, and inquired as to proposed timing
 - o Paul Sterling confirmed that the planned implementation was within 2-3 weeks
 - o Luke Moger confirmed that the information outlined on the “General Mines Act Permitting Recruitment Requirements for Water Treatment” provided by Jennifer McConnachie could be completed by Monday, November 18th
- Tania Demchuk asked if the brine would be detrimental for water quality or mill process
 - o Paul Sterling responded that TSF Supernatant quality would be adversely affected by the brine, but would not affect milling or treatment (given that the

- intake source would remain as ditch collection and the TSF Supernatant is on a closed loop with the mill)
- Paul Sterling added that the short-term focus was on volume reduction of the TSF Supernatant, and that the medium- to long-term solution would focus on quality
 - Tania Demchuk asked if any research had been completed as to selenium treatment in the milling process
 - Paul Sterling responded that none had been completed to date
 - Art Frye added that research into treatment of TSF Supernatant had been completed
 - Tania Demchuk asked if there were parameters other than Selenium being treated for
 - Paul Sterling confirmed that there were other elements that required treatment, but that R/O appears to be able to remove them all to required levels
 - Tania Demchuk asked if any research had been conducted on the treatment of the brine produced by R/O
 - Paul Sterling confirmed that third-party treatment had been explored, but was very costly, and alternative treatments (passive and active) have and continue to be researched
 - Luke Moger added that there was a plan to try treating the brine through the existing ABR (Anaerobic Biological Reactor) on site
 - Tania Demchuk stated that she would encourage treatment of the brine and research alternatives to placement of the brine into the TSF where it will have a detrimental impact to water quality.
 - Tania Demchuk inquired as to longer-term water management strategies
 - Luke Moger responded that work on long-term modelling is ongoing with SRK for quantity and loading, adding that active reclamation are envisioned in mitigating quality/quantity with the aim of better utilizing existing discharge available
 - Colleen Hughes furthered that currently the Hazeltine Creek Discharge is limited to 700,000m³/year due to site constraints, but that permit includes an upper limit of 1.4Mm³ per year

Permitting

- Tania Demchuk asked for pilot plant and treatment plant implementation timelines
 - Luke Moger responded that pilot plant testing was envisioned in 2-3 weeks
 - Luke Moger responded that full-scale treatment was envisioned for Spring 2014
- Tania Demchuk suggested that the pilot plant review could be through a notification, but that the full-scale treatment would require an application (could complete Joint MOE/MEM Permit to avoid duplication)
 - Luke Moger confirmed that the pilot plant details could be provided by Monday, November 18th
 - Luke Moger confirmed that the full-scale application would be drafted in late 2013/early 2014, to include the pilot plant testing results
- Tania Demchuk suggested that a pre-application meeting with MOE/MEM for full-scale treatment would be a good idea, incorporating results from the pilot plant testing
- Luke Moger asked as to what elements of the treatment application would require consultation

- Tania Demchuk confirmed that the details of the discharge (location, quality, amount, timing) would form the bulk of consultation, and that details of the facility itself would be the focus of MOE/MEM/MPMC internal dialogue
 - Tania Demchuk confirmed that a notification should be sufficient for pilot plant testing, and wouldn't require formal consultation
- Diane Howe suggested that pilot plant information submitted by other BC operations may be provided for reference
- Diane Howe asked if it was it was still planned to submit an updated mine permit amendment for mine life extension
 - Luke Moger confirmed that a permit amendment application and corresponding 5-year reclamation and closure plan was slated for late 2013/early 2014, as the incorporation of results of this short-term treatment were to be incorporated

Next Steps

- Luke Moger to submit pilot plant details as per information outlined on the "General Mines Act Permitting Recruitment for Water Treatment" provided by Jennifer McConnachie could be completed by Monday, November 18th
- MEM to review (MOE informed) this information and (pending review) approve notification for pilot plant (estimated 2-3 weeks)
- MPMC to conduct pilot plant research (estimated 2 weeks)
- MPMC to submit full-scale treatment application, pending pilot plant results and vendor selection (estimated mid-December 2013/early January 2014)

From: [McConnachie, Jennifer MEM:EX](#)
To: [Demchuk, Tania MEM:EX](#); [Howe, Diane J MEM:EX](#)
Subject: FW: Mount Polley Water Treatment Conference Call
Date: Tuesday, November 19, 2013 9:04:52 AM
Attachments: image001.jpg
Meeting Minutes (MEM Call) - Water Treatment - 2013 11 14.pdf
Pilot Plant Information (MEM) - 2013 11 18.pdf

Tania,

There is no information wrt current WQ or quantity of the cumulative ditch water. Is this something that we should ask for now (as it is the reason for the proposed plant in the first place)? Presumably they have this information, else how would they know they need to treat the water (or do we care about that)? Personally, I would like some sort of summary of data for each ditch and the ditch mix compared to the concentrations they need to meet end of pipe before they start piloting, even if it is just to give more context to the project. As Kim noted about the option to discharge to a bigger system, it would just be good to know that their aren't easier/cheaper opportunities. Again, presumably they have done this research, but I don't know that we have seen this info. Your thoughts?

Jen

From: Luke Moger [<mailto:lmoger@mountpolley.com>]
Sent: Monday, November 18, 2013 4:57 PM
To: Demchuk, Tania MEM:EX; McConnachie, Jennifer MEM:EX; Howe, Diane J MEM:EX
Cc: Art Frye; Colleen Hughes; 'Psterling@imperialmetals.com'; Bings, Dan P ENV:EX
Subject: RE: Mount Polley Water Treatment Conference Call

Hi All;

Thank you for the comments, please find attached two documents:

- 1) Updated meeting minutes (with revisions as submitted by all)
- 2) Pilot Plant information (as requested for MEM review).

Please let me know if there is any further information that may be needed for your review.

Kindest Regards,

Luke Moger

Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Demchuk, Tania MEM:EX [<mailto:Tania.Demchuk@gov.bc.ca>]
Sent: Monday, November 18, 2013 10:54 AM
To: Luke Moger; McConnachie, Jennifer MEM:EX; Howe, Diane J MEM:EX
Cc: Art Frye; Colleen Hughes; 'Psterling@imperialmetals.com'; Bings, Dan P ENV:EX
Subject: RE: Mount Polley Water Treatment Conference Call

Hi Luke,
Thank-you for providing these notes.

Please ensure that monitoring of the pilot treatment enables you to collect all the information required by MOE and in MEM's list of "General Mines Act Permitting Requirements for Water Treatment".

A couple thoughts on information you may need:

- Influent/effluent quality
- Toxicity testing
- Is the effluent "too clean" for discharge (a comment issue to RO), will it require any amendments (pH, nutrients, etc.)?
- Composition of the brine?

Just one typo noted below – the list of information requirements that Jen sent you should read "General Mines Act Permitting ~~Recruitment~~ Requirements for Water Treatment".

Finally, my comments about the storage of brine were meant to indicate that MEM would strongly encourage MPMC to look at alternatives for securely storing the brine in a manner that does not adversely impact water quality in the TSF or other areas on site. I've added the highlighted text below.

Cheers,
Tania

From: Luke Moger [<mailto:lmoger@mountpolley.com>]
Sent: Thursday, November 14, 2013 4:09 PM
To: McConnachie, Jennifer MEM:EX; Demchuk, Tania MEM:EX; Howe, Diane J MEM:EX
Cc: Art Frye; Colleen Hughes; Psterling@imperialmetals.com; Bings, Dan P ENV:EX
Subject: Mount Polley Water Treatment Conference Call

Jennifer, Tania and Diane;

Thank you very much for facilitating the call this morning regarding the proposed Water Treatment at Mount Polley Mine. Contained herein is a review of our conversation in addition to the "next steps" as identified in our call. Dan, I have copied you to keep you in the loop as to our discussion.

November 14, 2013

9:00am – 9:45am Conference Call

Attendees: Diane Howe (MEM), Jennifer McConnachie (MEM), Tania Demchuk (MEM), Paul Sterling (Imperial Metals), Art Frye (MPMC), Luke Moger (MPMC), Colleen Hughes (MPMC)

Luke Moger provided a background to the planned water treatment project:

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- Surplus of ~6.5Mm³ of water currently in Tailings Storage Facility
- After review with geotechnical consultants (BGC), storage of this volume of water, with continued accumulation, will cause problems with TSF design in 2-3 years
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 - o Brine created is to be contained in the TSF
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General Discussion

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testing, and wouldn't require formal consultation

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- MEM to review (MOE informed) this information and (pending review) approve notification for pilot plant (estimated 2-3 weeks)
- MPMC to conduct pilot plant research (estimated 2 weeks)
- MPMC to submit full-scale treatment application, pending pilot plant results and vendor selection (estimated mid-December 2013/early January 2014)

If anyone should have anything to add that I have missed or misinterpreted, please let me know.

Thanks again for connecting today.

Kindest Regards,

Luke

cid:image003.jpg@01CD2EA3.DDA5A5E0



Direct: +1 (250) 790-2215 ext. 2113

Fax: +1 (250) 790-2613

E-mail: LMoger@MountPolley.com

From: [Demchuk, Tania MEM:EX](#)
To: ["dreimer@mountpolley.com"](mailto:dreimer@mountpolley.com); ["Luke Moger"](#)
Cc: ["Art Frye"](#); ["Colleen Hughes"](#); [McConnachie, Jennifer MEM:EX](#); [Rothman, Stephen MEM:EX](#)
Subject: Mount Polley Pilot Water Treatment
Date: Monday, December 2, 2013 10:09:00 AM
Attachments: image001.jpg
M-200 Ltr Authorization Pilot water treatment Nov 2013.pdf

Good morning Mr. Reimer,

Please find attached an authorization letter in response to the letter detailing plans for piloting reverse osmosis water treatment. A hard copy will be mailed to you. Please ensure this letter is attached to your M-200 permit.

Regards,
Tania

Tania Demchuk, MSc, GIT
Senior Environmental Geoscientist,
BC Ministry of Energy and Mines
P.O. Box 9320, Stn Prov Gov't, Victoria BC V8W 9N3
Phone: (250) 952-0417 Fax: (250) 952-0481

From: Demchuk, Tania MEM:EX
Sent: Tuesday, November 19, 2013 10:43 AM
To: 'Luke Moger'; McConnachie, Jennifer MEM:EX; Howe, Diane J MEM:EX
Cc: 'Art Frye'; 'Colleen Hughes'; 'Psterling@imperialmetals.com'; Bings, Dan P ENV:EX; Bellefontaine, Kim MEM:EX
Subject: RE: Mount Polley Water Treatment Conference Call

Hi Luke,
Thank-you for the information.

We will require the following additional information:

- It looks like a couple of the figures have been taken directly from some sort of operations manual, can you provide the whole manual? This will help provide additional information related to items 3, 4, and 6.
- Estimate of influent water quality (and predicted effluent water quality; you guys must have a goal in mind for treatment and we would like to know what that is)
 - It would be helpful for us to understand the quality of the ditch, and the ditch mix compared to the water quality that you need to achieve. We are feeling lacking on context for the project.
- Is there an O&M manual for the pilot plant?
- Please provide the H&S guidance that MPMC is requiring from the pilot plant provider/operator.
- Monitoring plan (the details of the plan, not just that there is one)
- Additional background on why you have selected this method would be helpful, although we can wait to have this in the larger application for full-scale treatment. We need to

ensure we understand why RO was selected and that there are not easier/cheaper and equally effective options that could be in place.

- Will you be able to, or are you planning to, vary the flows for the pilot plant to get a sense of how variation in flow may affect full-scale treatment? 20 gpm is just a trickle, what is the planned scale up and will this pilot give you a decent sense of how full-scale will operate?
- For the full application package we will definitely need an understanding of water quantity and the range of possible flows that will need to be managed. Perhaps a schematic or flowchart of volumes and representative concentrations would provide a good conceptual picture.
- Also, to reiterate previous comments, MEM is not comfortable that short term plans will deteriorate water quality in the TSF so some strong rationale will be required to help us understand why this is viewed as the best plan going forward (that is expected in the application for the full-scale system). What will this mean for discharge to Hazeltine Creek and how will this affect the ability to manage this water?

Please call if you have any questions.

Cheers,

Tania

From: Luke Moger [<mailto:lmoger@mountpolley.com>]

Sent: Monday, November 18, 2013 4:57 PM

To: Demchuk, Tania MEM:EX; McConnachie, Jennifer MEM:EX; Howe, Diane J MEM:EX

Cc: Art Frye; Colleen Hughes; 'Psterling@imperialmetals.com'; Bings, Dan P ENV:EX

Subject: RE: Mount Polley Water Treatment Conference Call

Hi All;

Thank you for the comments, please find attached two documents:

- 1) Updated meeting minutes (with revisions as submitted by all)
- 2) Pilot Plant information (as requested for MEM review).

Please let me know if there is any further information that may be needed for your review.

Kindest Regards,

Luke Moger

Project Engineer, Mining Operations

Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113

Fax: +1 (250) 790-2613

Email: LMoger@MountPolley.com

From: Demchuk, Tania MEM:EX [<mailto:Tania.Demchuk@gov.bc.ca>]

Sent: Monday, November 18, 2013 10:54 AM

To: Luke Moger; McConnachie, Jennifer MEM:EX; Howe, Diane J MEM:EX

Cc: Art Frye; Colleen Hughes; 'Psterling@imperialmetals.com'; Bings, Dan P ENV:EX
Subject: RE: Mount Polley Water Treatment Conference Call

Hi Luke,
Thank-you for providing these notes.

Please ensure that monitoring of the pilot treatment enables you to collect all the information required by MOE and in MEM's list of "General Mines Act Permitting Requirements for Water Treatment".

A couple thoughts on information you may need:

- Influent/effluent quality
- Toxicity testing
- Is the effluent "too clean" for discharge (a comment issue to RO), will it require any amendments (pH, nutrients, etc.)?
- Composition of the brine?

Just one typo noted below – the list of information requirements that Jen sent you should read "General Mines Act Permitting ~~Recruitment~~ Requirements for Water Treatment".

Finally, my comments about the storage of brine were meant to indicate that MEM would strongly encourage MPMC to look at alternatives for securely storing the brine in a manner that does not adversely impact water quality in the TSF or other areas on site. I've added the highlighted text below.

Cheers,
Tania

From: Luke Moger [<mailto:lmoger@mountpolley.com>]
Sent: Thursday, November 14, 2013 4:09 PM
To: McConnachie, Jennifer MEM:EX; Demchuk, Tania MEM:EX; Howe, Diane J MEM:EX
Cc: Art Frye; Colleen Hughes; Psterling@imperialmetals.com; Bings, Dan P ENV:EX
Subject: Mount Polley Water Treatment Conference Call

Jennifer, Tania and Diane;

Thank you very much for facilitating the call this morning regarding the proposed Water Treatment at Mount Polley Mine. Contained herein is a review of our conversation in addition to the "next steps" as identified in our call. Dan, I have copied you to keep you in the loop as to our discussion.

November 14, 2013

9:00am – 9:45am Conference Call

Attendees: Diane Howe (MEM), Jennifer McConnachie (MEM), Tania Demchuk (MEM), Paul Sterling (Imperial Metals), Art Frye (MPMC), Luke Moger (MPMC), Colleen Hughes (MPMC)

Luke Moger provided a background to the planned water treatment project:

- Site currently operating at annual water surplus
- Surplus of ~6.5Mm³ of water currently in Tailings Storage Facility
- After review with geotechnical consultants (BGC), storage of this volume of water, with continued accumulation, will cause problems with TSF design in 2-3 years
- Need to pursue short-term water management strategy (treatment) to deal with volume of water collected on site
- Targeting Spring 2014 for treatment start-up, as the longer the delay in implementing treatment, the greater the volume/year requirement to treat
- Looking at treating Ditch water (Long Ditch/SERDS Ditch) collected near the TSF and releasing to Bootjack Lake
 - o Brine created is to be contained in the TSF
- Have contacted three (3) vendors to review proposed treatment
 - o R/O identified as leading application
 - o Pilot Plant warranted to confirm testing projections

General Discussion

- Tania Demchuk asked about alternative treatments
 - o Luke Moger confirmed that SRK had been contracted to do analysis on annual surplus accumulation and potential water treatment strategies (confirmed accumulation projections and recommended R/O)
 - o Paul Sterling added that nanofiltration was not applicable due to the water quality parameters, and that R/O is the best fit with water quality on site and discharge quality required
 - o Art Frye furthered that the water being treated was already of good quality, and so this limits the range of treatment that are able to further improve
- Tania Demchuk stated that implementation of a pilot plant would still require notification from MEM, and inquired as to proposed timing
 - o Paul Sterling confirmed that the planned implementation was within 2-3 weeks
 - o Luke Moger confirmed that the information outlined on the "General Mines Act Permitting Recruitment for Water Treatment" provided by Jennifer McConnachie could be completed by Monday, November 18th
- Tania Demchuk asked if the brine would be detrimental for water quality or mill process
 - o Paul Sterling responded that TSF Supernatant quality would be adversely affected by the brine, but would not affect milling or treatment (given that the intake source would remain as ditch collection and the TSF Supernatant is on a closed loop with the mill)
 - o Paul Sterling added that the short-term focus was on volume reduction of the TSF Supernatant, and that the medium- to long-term solution would focus on quality
- Tania Demchuk asked if any research had been completed as to selenium treatment in the milling process
 - o Paul Sterling responded that none had been completed to date
 - o Art Frye added that research into treatment of TSF Supernatant had been

completed

- Tania Demchuk asked if there were parameters other than Selenium being treated for
 - o Paul Sterling confirmed that there were other elements that required treatment, but that R/O appears to be able to remove them all to required levels
- Tania Demchuk asked if any research had been conducted on the treatment of the brine produced by R/O
 - o Paul Sterling confirmed that third-party treatment had been explored, but was very costly, and alternative treatments (passive and active) have and continue to be researched
 - o Luke Moger added that there was a plan to try treating the brine through the existing ABR (Anaerobic Biological Reactor) on site
 - o Tania Demchuk stated that she would encourage treatment of the brine and research alternatives to placement of the brine into the TSF where it will have a detrimental impact to water quality.
- Tania Demchuk inquired as to longer-term water management strategies
 - o Luke Moger responded that work on long-term modelling is ongoing with SRK for quantity and loading, adding that active reclamation are envisioned in mitigating quality/quantity with the aim of better utilizing existing discharge available
 - o Colleen Hughes furthered that currently the Hazeltine Creek Discharge is limited to 700,000m³/year due to site constraints, but that permit includes an upper limit of 1.4Mm³ per year

Permitting

- Tania Demchuk asked for pilot plant and treatment plant implementation timelines
 - o Luke Moger responded that pilot plant testing was envisioned in 2-3 weeks
 - o Luke Moger responded that full-scale treatment was envisioned for Spring 2014
- Tania Demchuk suggested that the pilot plant review could be through a notification, but that the full-scale treatment would require an application (could complete Joint MOE/MEM Permit to avoid duplication)
 - o Luke Moger confirmed that the pilot plant details could be provided by Monday, November 18th
 - o Luke Moger confirmed that the full-scale application would be drafted in late 2013/early 2014, to include the pilot plant testing results
- Tania Demchuk suggested that a pre-application meeting with MOE/MEM for full-scale treatment would be a good idea, incorporating results from the pilot plant testing
- Luke Moger asked as to what elements of the treatment application would require consultation
 - o Tania Demchuk confirmed that the details of the discharge (location, quality, amount, timing) would form the bulk of consultation, and that details of the facility itself would be the focus of MOE/MEM/MPMC internal dialogue
 - o Tania Demchuk confirmed that a notification should be sufficient for pilot plant testing, and wouldn't require formal consultation
- Diane Howe suggested that pilot plant information submitted by other BC operations

may be provided for reference

- Diane Howe asked if it was it was still planned to submit an updated mine permit amendment for mine life extension
 - o Luke Moger confirmed that a permit amendment application and corresponding 5-year reclamation and closure plan was slated for late 2013/early 2014, as the incorporation of results of this short-term treatment were to be incorporated

Next Steps

- Luke Moger to submit pilot plant details as per information outlined on the "General Mines Act Permitting Recruitment for Water Treatment" provided by Jennifer McConnachie could be completed by Monday, November 18th
- MEM to review (MOE informed) this information and (pending review) approve notification for pilot plant (estimated 2-3 weeks)
- MPMC to conduct pilot plant research (estimated 2 weeks)
- MPMC to submit full-scale treatment application, pending pilot plant results and vendor selection (estimated mid-December 2013/early January 2014)

If anyone should have anything to add that I have missed or misinterpreted, please let me know.

Thanks again for connecting today.

Kindest Regards,

Luke

cid:image003.jpg@01CD2EA3.DDA5A5E0



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Fax: +1 (250) 790-2613

E-mail: LMoger@MountPolley.com

From: [McConnachie, Jennifer MEM:EX](#)
To: [Howe, Diane J MEM:EX](#); [Demchuk, Tania MEM:EX](#)
Subject: FW: Polley Influent Parameters Exceeding Canadian/BC Water Quality Criteria
Date: Friday, March 7, 2014 11:48:39 AM
Attachments: Treatment Plant with BCWQG.xlsx

Diane,

Another email that you may want to review re: Mount Polley.

Jen

From: Bings, Dan P ENV:EX
Sent: Wednesday, January 22, 2014 12:36 PM
To: McConnachie, Jennifer MEM:EX
Cc: Hill, Douglas J FLNR:EX; Demchuk, Tania MEM:EX; Kerley, Jason F FLNR:EX
Subject: Polley Influent Parameters Exceeding Canadian/BC Water Quality Criteria

Hi Jen, respecting your query as to which analytes in the source water exceeded water quality objectives, I've revised the first trial results spreadsheet (attached) to red flag the influent parameters which exceed guidelines. They are summarized as follows:

Exceeding acute or chronic aquatic life criteria were:

1. Copper
2. Iron
3. Selenium
4. Zinc
5. Nitrate
6. Nitrite
7. Sulphate
8. Phosphorous

Exceeding drinking water criteria were:

1. Total dissolved solids (aesthetic)
2. Manganese (aesthetic)

3. Selenium
4. Sulphate (aesthetic)

The first pilot was effective in meeting all the preceding objectives with the exception of some nitrate and all nitrite results (aquatic life). The second pilot will incorporate an undisclosed pre-treatment intended to meet the nitrogen objectives. As well, MPMC has sent a bulk sample to another technology provider for bench testing as a contingency should the second pilot not be successful in meeting the nitrogen objectives.

Dan Bings

Environmental Protection Officer

Ministry of Environment

Cariboo Region

PH: (250) 398-4897 FX: (250) 398-4214

BC Pollution Free

From: [Luke Moger](#)
To: [Demchuk, Tania MEM:EX](#)
Cc: [Don Parsons](#); Chris Carr s.22 ; [Beattie, Brent C MEM:EX](#); [Eldridge, Terry](#); [Haynes, Andy \(Andy_Haynes@golder.com\)](#)
Subject: RE: Mt Polley TSF 2015 Freshet Embankment - follow-up to March 11 site visit discussion
Date: Tuesday, March 24, 2015 1:41:13 PM

Hi Tania;

Golder has indicated that they will have analyses formalized by the end of the week to be provided to MEM.

Kindest Regards,

Luke Moger, PMP

Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Demchuk, Tania MEM:EX [mailto:Tania.Demchuk@gov.bc.ca]
Sent: March-24-15 11:24 AM
To: Luke Moger
Cc: Don Parsons; Chris Carr s.22 ; Beattie, Brent C MEM:EX
Subject: Mt Polley TSF 2015 Freshet Embankment - follow-up to March 11 site visit discussion
Importance: High

Hi Luke,

I wanted to follow-up on the information discussed during our close-out meeting following the site visit on March 11. Chris Carr raised up a concern regarding the delay in construction of the CSM wall and the impact that this may have on embankment stability and seepage if the TSF was required to store the 2015 Freshet prior to completion of embankment construction. It was suggested at the wrap-up meeting that analyses be carried out (by Golder Associates) to determine the pond water level limits at various stages of embankment/CSM wall construction.

We have not seen the results of this analysis. Given that this could be a significant concern, it should be addressed without delay. Please let me know when you will be able to share this analysis with MEM.

As always, please don't hesitate to call if you have any questions.

Thank-you,
Tania

Tania Demchuk, MSc, PGeo
Mount Polley Project Manager

Sr Environmental Geoscientist
Mines and Mineral Resources Division
Ministry of Energy and Mines
250-952-0417

From: Narynski, Heather M MEM:EX
Sent: Monday, March 31, 2014 11:38 AM
To: Luke Moger
Cc: Howe, Diane J MEM:EX; Warnock, George MEM:EX
Subject: RE: Mount Polley Mine Tailings Storage Facility Stage 9 2013 As-Built and Annual Review Report

Thanks Luke,

I have successfully downloaded the 2013 TSF As-built and Annual Review Report and added to our records for future review. Please ensure any recommendations made by your consultant are addressed. Recommendations related to health and safety or geotechnical stability are considered to be mandatory requirements.

Kind Regards,
Heather

From: Luke Moger [<mailto:lmoger@mountpolley.com>]
Sent: Monday, March 31, 2014 8:57 AM
To: Warnock, George MEM:EX
Cc: Howe, Diane J MEM:EX; Narynski, Heather M MEM:EX
Subject: RE: Mount Polley Mine Tailings Storage Facility Stage 9 2013 As-Built and Annual Review Report

Hi George;

Thank you for the speedy follow up. I am sending a copy via HighTail.com (formerly YouSendIt.com) due to inbox file size limitations, and will send a hard copy as outlined below. If you would kindly confirm electronic receipt of this report that would be greatly appreciated.

Kindest Regards,

Luke Moger, PMP
Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Warnock, George MEM:EX [<mailto:George.Warnock@gov.bc.ca>]
Sent: Monday, March 31, 2014 8:42 AM
To: Luke Moger
Cc: Howe, Diane J MEM:EX; Narynski, Heather M MEM:EX
Subject: RE: Mount Polley Mine Tailings Storage Facility Stage 9 2013 As-Built and Annual Review Report

Hello Luke,

You can send the pdf version to Diane, Heather Narynski, and myself. A single hard copy should be sent to Victoria c/o Heather at:

Ministry of Energy and Mines
6th Floor – 1810 Blanshard St.
Victoria, BC
V8W 9N3

Thank you,

George

From: Luke Moger [<mailto:lmoger@mountpolley.com>]
Sent: March-31-14 8:27 AM
To: Howe, Diane J MEM:EX
Cc: Warnock, George MEM:EX
Subject: Mount Polley Mine Tailings Storage Facility Stage 9 2013 As-Built and Annual Review Report

Hi Diane;

I am in receipt of the Mount Polley Mine Tailings Storage Facility Stage 9 2013 As-Built and Annual Review Report.

I have an electronic copy that I am able to distribute in addition to hard copies. If you would be able to confirm the individuals from MEM that you would like to receive a copy (electronic and/or hard) then I will gladly see that they get one. I have cc'd George Warnock on this e-mail as historically he has been our MEM contact for geotechnical components of our operations.

Kindest Regards,

Luke



Luke Moger, PMP
Project Engineer, Mine Operations
Mount Polley Mining Corporation
PO Box 12
Likely, BC V0L 1N0
Canada

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Fax: +1 (250) 790-2613
E-mail: LMoger@MountPolley.com

Narynski, Heather M MEM:EX

MP000184

From: Narynski, Heather M MEM:EX
Sent: Monday, March 31, 2014 11:38 AM
To: Luke Moger
Cc: Howe, Diane J MEM:EX; Warnock, George MEM:EX
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Kind Regards,
Heather

From: Luke Moger [<mailto:lmoger@mountpolley.com>]
Sent: Monday, March 31, 2014 8:57 AM
To: Warnock, George MEM:EX
Cc: Howe, Diane J MEM:EX; Narynski, Heather M MEM:EX
Subject: RE: Mount Polley Mine Tailings Storage Facility Stage 9 2013 As-Built and Annual Review Report

Hi George;

Thank you for the speedy follow up. I am sending a copy via HighTail.com (formerly YouSendIt.com) due to inbox file size limitations, and will send a hard copy as outlined below. If you would kindly confirm electronic receipt of this report that would be greatly appreciated.

Kindest Regards,

Luke Moger, PMP
Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Warnock, George MEM:EX [<mailto:George.Warnock@gov.bc.ca>]
Sent: Monday, March 31, 2014 8:42 AM
To: Luke Moger
Cc: Howe, Diane J MEM:EX; Narynski, Heather M MEM:EX
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V8W 9N3

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George

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Sent: March-31-14 8:27 AM

To: Howe, Diane J MEM:EX

Cc: Warnock, George MEM:EX

Subject: Mount Polley Mine Tailings Storage Facility Stage 9 2013 As-Built and Annual Review Report

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Kindest Regards,

Luke



Luke Moger, PMP

Project Engineer, Mine Operations

Mount Polley Mining Corporation

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E-mail: LMoger@MountPolley.com

Narynski, Heather M MEM:EX

MP00239

From: Luke Moger <lmoger@mountpolley.com>
Sent: Tuesday, April 1, 2014 2:57 PM
To: Warnock, George MEM:EX
Cc: Howe, Diane J MEM:EX; Narynski, Heather M MEM:EX
Subject: RE: Mount Polley Mine Tailings Storage Facility Stage 9 2013 As-Built and Annual Review Report

Hi George;

Hardcopy of the report was sent out today as per your instructions below.

Kindest Regards,

Luke Moger, PMP

Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Warnock, George MEM:EX [<mailto:George.Warnock@gov.bc.ca>]
Sent: Monday, March 31, 2014 8:42 AM
To: Luke Moger
Cc: Howe, Diane J MEM:EX; Narynski, Heather M MEM:EX
Subject: RE: Mount Polley Mine Tailings Storage Facility Stage 9 2013 As-Built and Annual Review Report

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Ministry of Energy and Mines
6th Floor – 1810 Blanshard St.
Victoria, BC
V8W 9N3

Thank you,

George

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Sent: March-31-14 8:27 AM
To: Howe, Diane J MEM:EX
Cc: Warnock, George MEM:EX
Subject: Mount Polley Mine Tailings Storage Facility Stage 9 2013 As-Built and Annual Review Report

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Kindest Regards,

Luke



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Project Engineer, Mine Operations
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E-mail: LMoger@MountPolley.com

Bellefontaine, Kim MEM:EX

From: Warnock, George MEM:EX
Sent: Friday, April 13, 2012 3:38 PM
To: 'Luke Moger'; 'rbrown@mountpolley.com'
Cc: 'tfisch@mountpolley.com'; 'wrennie@mountpolley.com'; 'jmoore@mountpolley.com'; 'dreimer@mountpolley.com'; Rothman, Stephen MEM:EX; Howe, Diane J MEM:EX
Subject: Mount Polley Mine - Geotechnical Site Visit April 12, 2012
Attachments: Mount Polley_120412_01.JPG; Mount Polley_120412_02.JPG; Mount Polley_120412_03.JPG; Mount Polley_120412_04.JPG; Mount Polley_120412_05.JPG; Mount Polley_120412_06.JPG; Mount Polley_120412_07.JPG; Mount Polley_120412_08.JPG; Mount Polley_120412_09.JPG; Mount Polley_120412_10.JPG; Mount Polley_120412_11.JPG; Mount Polley_120412_12.JPG; Mount Polley_120412_13.JPG; Mount Polley_120412_14.JPG; Mount Polley_120412_15.JPG; Mount Polley_120412_16.JPG

Hello Luke and Ryan,

Thanks again for your time yesterday – I appreciate the information that you provided and the site tour of the Mount Polley mine. As discussed, my visit was not intended as a formal geotechnical inspection, but simply as an opportunity to learn more about your operation. However, I thought that a few comments were in order, namely:

- Mount Polley is commended for the decision to strip organics from the footprint of all roads and waste rock dumps. I believe that this pro-active approach is paying dividends in terms of improved stability during construction, which (I believe) ultimately saves time and money for the mine.
- Mount Polley is commended for utilizing controlled blasting and scaling in the development of final pit walls. Most of the pit walls appear to be in very good shape.
- I recommend that consideration be given to the development of a written procedure for work near the toe of pit walls by personnel on foot. This could include the use of spotters (as required or if requested by the employee at risk), restrictions on work during periods of heavy precipitation, prohibitions for entry by non-essential personnel, prohibiting breaks in the danger zone, etc. This would be a good topic for a safety meeting as well.
- I recommend that consideration be given to the development of a written procedure for work in the run-out zone of waste rock spoils. This could include a pre-entry visual inspection, the use of spotters (if required or as appropriate), prohibitions during inclement weather or during periods of poor visibility, etc.
- I recommend that wirelines be purchased or manufactured so that they are available for use if required. Wirelines should be utilized on high waste rock dumps and/or where signs of deformation are observed.
- Please check your files to see if two documents required under the August 15, 2011 permit have been submitted to the Ministry: i.) Pit Slope Design Report for the C2 and Boundary Zone Pit (Section B 1.(a)), and ii.) Standard Waste Dump Operating Procedures (Section B.2.(c)(i)). I was unable to locate these documents in our files.

I have attached photographs taken during the site visit. Unfortunately, some of them are not all that clear due to poor visibility at the time of the site visit. Photograph descriptions as follows:

- Photo 1: Southwest Corner of Spring Pit – viewed toward the west.
- Photos 2 to 4: Panorama of Northeast wall (single benching)
- Photo 5: View of Waste Haul Road from the PAG stockpile.
- Photo 6: View to west from the NAG Base Dump – stripped foundation, soil toe berm, and ditch.
- Photo 7: View of double benching on North wall in distance and sump in foreground.
- Photo 8: View of stripped foundation ahead of Waste Haul Road.

Photo 9: Area with minor re-alignment and two new culverts.

Photos 10 and 12: Outer side of Perimeter embankment – currently at angle of repose – ultimate slope angle to be 2H : 1V.

Photo 11: Beach and water outfall on inside of perimeter embankment.

Photo 13: 47m high Main embankment constructed of NAG waste rock – view to southeast.

Photo 14: View to northwest of South embankment.

Photo 15: Wight Pit Green Giant Fault Failure – note area of unloading at top.

Photo 16: Underground portal protected by mesh.

Regards,

George Warnock, P.Eng.

Manager, Geotechnical Engineering

Ministry of Energy and Mines

Mines and Minerals Division

Phone: 250-565-4327

From: [Luke Moger](#)
To: [Howe, Diane J MEM:EX](#)
Cc: [Warnock, George MEM:EX](#); [McConnachie, Jennifer MEM:EX](#); [Demchuk, Tania MEM:EX](#); [Art Frye](#)
Subject: MPMC Water Treatment/Tailings Storage Facility Planning
Date: Tuesday, May 6, 2014 10:15:42 AM
Attachments: image001.png

Hi Diane;

I was hoping to connect with you about planning a meeting for an update on MPMC's Tailings Storage Facility (TSF) design and water treatment strategies.

Following up on our RMDRC meeting, we are at a point now where we feel we have enough information to provide some more concrete detail around our short-term water management strategy (we have selected a water treatment method and provider) and the flow-through impacts on TSF design. After talking with our TSF tailings design engineering (BGC – Todd Martin), he feels it would be a good idea to touch base specifically on our TSF design, as we are approaching our ultimate dam design and are proposing an intermediate design corresponding to our short-term water management strategy implementation, to be followed with a life-of-mine ultimate TSF design based on our to-be-submitted M-200 Permit amendment reflecting our updated (2023) mine plan. I have reviewed the TSF proposal in brief with George Warnock, and I would appreciate a chance to tie it all together with the whole permitting team.

Please advise if you would be available to meet as outlined above: I project that the water treatment update would take about two (2) hours, depending on attendees and depth of discussion desired by MEM/MOE, to be followed by a one and a half (1 ½) hour discussion around TSF permitting and planning. We are available to come to Victoria to meet, or set up an online meeting; it would be preferable to have a medium in which we can share presentations rather than a phone conference.

We are hoping to be able to connect in late May/early June, and have proposed dates of May 20/21 or June 2-6.

Please let me know if this is something that MEM would be interested in entertaining, or if you have any general comments/questions on the proposal above.

Kindest Regards,

Luke



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Fax: +1 (250) 790-2613
E-mail: LMoger@MountPolley.com

From: [Demchuk, Tania MEM:EX](#)
To: [Katie McMahon](#)
Cc: [Colleen Hughes](#); [Art Frye](#); [McConnachie, Jennifer MEM:EX](#); [Howe, Diane J MEM:EX](#)
Subject: FW: M-200 Permit Seep Sampling Requirements
Date: Thursday, May 22, 2014 8:09:53 AM

Hi Katie,

Thanks for your email and questions.

We are okay with the concept of modifying sampling programs to reduce the number of sample locations where it makes sense (e.g. clusters of seeps). Based on Steve's comment it sounds like even making this single change could greatly assist with sampling effort and costs.

It would be useful to review the proposed program in consideration of updated water quality modelling so you can make sure that relevant information (correct locations and sampling frequencies/parameters) is being collected to detect changes on site early and inform water quality model inputs. Information from seeps can provide valuable insight into changes conditions on the site, and as such we would like to see sampling completed annually (high flow and low flow) for now, not every two years. This could be updated in future as per Steve's comment below and if there is information to support the change. With respect to collecting only field measurements to track fundamental shifts, we would want to see how field measurements can be calibrated to act as proxies for lab analyses. For example, I am curious if field measurements would capture changes for parameters such as selenium and any other parameters of concern for the site?

Because we are anticipating an application very soon, I would suggest that the monitoring program could be presented in that document. If you wanted to discuss a draft before application submission we can arrange for that but as noted above, it would be useful to be able to consider the monitoring program in conjunction with modelling. Does that sound like a reasonable approach to move forward? I see that there is another MDRC meeting scheduled for mid-June, as well as a meeting on June 2 with MEM and MOE. Perhaps you can introduce us to the proposed plan (with maps of sample locations and an outline of monitoring frequency and parameters) at one of these meetings if the agenda allows and that timing works for you having the information pulled together. We could also take a look at a draft program and have a follow-up call if you want to send us something in advance of the application.

Lastly, just a question, are you currently monitoring flow at any of the seep locations? And, if not, would this be useful information to inform future updates to the loading model?

Happy to have a phone call to talk about this more if you like.

Cheers,
Tania

Tania Demchuk, MSc, GIT
Senior Environmental Geoscientist,
BC Ministry of Energy and Mines

From: Katie McMahan [<mailto:kmcmahan@mountpolley.com>]
Sent: Wednesday, May 21, 2014 8:43 AM
To: Demchuk, Tania MEM:EX; McConnachie, Jennifer MEM:EX
Cc: Art Frye; Colleen Hughes
Subject: M-200 Permit Seep Sampling Requirements

Hi Tania and Jen,

The 2013 amendment to our Mines Act Permit entitled "Amendment to Permit M-200 Permit Approving Northwest PAG Dump Expansion and South Haul Road" included the following two requirements:

- "Sampling of seepages from the waste rock dumps, high grade ore stockpiles, and Temporary PAG Stockpile shall be completed twice per year." (2a)
- "An on-site water quality monitoring program, outlining the locations and frequency of water quality samples shall be submitted with the next Reclamation and Closure Plan or the next application for permit amendment, whichever is submitted first. This program shall include a monthly monitoring program for key seepage, ditch and sump locations." (2c)

Mount Polley recognizes the value of seep sampling to obtain information on how specific sources contributing to water chemistry, what minerals are reacting, and trends over time. That said, we also find this sampling program to be onerous and costly. With the goal of reducing the number of samples required while still collecting valuable and necessary seepage water chemistry data from dumps and stockpiles, Stephen Day of SRK Ltd. was consulted.

His recommendations were:

- "...there are clusters of seeps at many locations. My usual experience is that these clusters don't have markedly different chemistry and you can pick one to sample that represents the group. My impression is that this could reduce the number of sampling points by well over 50%. [Review of seep sample results, which are presented in the 2013 Annual Environmental and Reclamation Report indicated this is the case at many seepage sites at Mount Polley.]
- Low flow conditions in some cases can represent contact water but can also represent non-contact groundwater with reduced contact water influence. High flow conditions may actually be the best time because that is when you get most effect from infiltration through waste rock. We often see lowest pHs during snowmelt. Until you understand what is going on, the survey should be bi-annual."
- However, you could consider doing a complete water chemistry survey every two years and field measurements in the intervening years. I expect the field measurements will provide sufficient tracking of fundamental shifts."

Based on this information, Mount Polley would like to request:

- Monthly sampling requirements be limited to ditches and sumps currently monitored, as this chemistry data contributes to load models which are used in short and long term water management planning (i.e. treatment and discharge systems, key areas to target reductions, etc.).
- Seep surveys of waste dumps and stockpiles be completed bi-annually during high and low flow conditions, taking samples every second year and field parameters (pH, conductivity, and temperature) annually. Note that in the future a request to revise the sampling program may be made once we have an improved understanding of seasonal influences and variations.
- In locations where groups of seeps can be assumed to come from the same source based on location and in situ parameters, a sample from a representative seep be acceptable.

Please let me know if you would like any additional information, and how best to move forward with this request. We are available to discuss this by phone in the upcoming weeks.

Best regards,

Katie McMahan, P. Ag

Environmental Technologist
Mount Polley Mining Corporation
Phone: (250) 790-2215 ext. 2120
Email: kmcmahan@mountpolley.com

From: Narynski, Heather M MEM:EX
Sent: Tuesday, May 27, 2014 4:59 PM
To: Warnock, George MEM:EX
Cc: Rothman, Stephen MEM:EX; Hoffman, Al MEM:EX
Subject: Mt. Polley TSF dam freeboard

Hi George,

I provide the following brief summary in response to the notification MEM received today regarding a potential "dam breach" at the Mt. Polley TSF.

- Event occurred on Saturday, May 24th as a result of a large rainfall event (approx 24 mm in 24 hrs) – still ongoing precipitation on site
- Water level rose to within 0.7 m freeboard (possibly less freeboard).
- Luke has indicated that they don't believe the dam "overtopped" but will be checking data records (he was on the road when the event occurred) – however our "notification" indicated otherwise.
- No additional water is being directed to the TSF and instead is being sent to the mill as well as an option to redirect to one of the pits if needed
- No snow remains in catchment area for additional water
- Standing water was observed at the toe of the downstream dam – cannot test water to see whether it's from the TSF as the water is now gone.
- No sediment was observed within the seepage
- TSF water levels are now being monitored daily (and MEM recommended to monitor more frequently as required)
- MEM recommended that all staff are familiarized with emergency response procedures should there be more issues arising with the dam
- Mt. Polley is currently raising the dam core at approximately 5 low spots including corner "3" which was the area indicated in the "notification".
- All dam raises are within permitted elevation (El. 970 m)
- Mt. Polley confirmed that last year's dam raise was constructed as per the design and incorporated the stabilization berm (an As-built report was submitted to MEM)
- AMEC is currently present on site and are evaluating the situation and any resulting design implications
- MEM asked Luke to follow-up with a geotechnical incident form (and in future provide MEM with a call regarding similar events) – would be considered a dangerous occurrence
- Previously scheduled meeting for June 2nd will discuss the incident in more detail once Mt. Polley has time to review the data and will also include discussion around future dam construction and requirements to move toward an FOS of 1.5 (currently at 1.3)
- Michael Cullen was part of the discussions and will be carrying out a site inspection this year (his site inspection could be moved forward if considered necessary)

At this time it appears Mt. Polley has the situation under control. Follow-up will be required to confirm whether "overtopping" and a possible unauthorized discharge occurred as well as discussions on future dam design and operations.

My apologies for the brief summary, but it's been a busy day. If you have any additional questions or concerns please feel free to give me a call.

Thanks,
Heather

Heather Narynski, P.Eng
Sr. Geotechnical Inspector
Ministry of Energy and Mines
1810 Blanshard St., Victoria, BC V8W 9N3
Wk: 250-387-0883
Cell: 250-893-3396

From: Narynski, Heather M MEM:EX
Sent: Tuesday, May 27, 2014 5:01 PM
To: 'Luke Moger'
Cc: Warnock, George MEM:EX; Rothman, Stephen MEM:EX
Subject: Advice of Geotechnical Incident Form
Attachments: Advice of Geotechnical Incident_2013.doc

Hi Luke,

I have attached an "Advice of Geotechnical Incident Form". As discussed, please complete and forward to me as soon as possible. Please also keep me informed should site conditions change.

MEM would consider this event to be a dangerous occurrence as per Section 1.7.3 (2) of the Code which includes "cracking or subsidence of a dam or impoundment dike, unexpected seepage or appearance of springs on the outer face of a dam or dike; loss of adequate freeboard, washout or significant erosion of a dam or dike, any of which may adversely affect the integrity of such structures"

Thanks,
Heather

Heather Narynski, P.Eng
Sr. Geotechnical Inspector
Ministry of Energy and Mines
1810 Blanshard St., Victoria, BC V8W 9N3
Wk: 250-387-0883
Cell: 250-893-3396

From: Luke Moger <lmoger@mountpolley.com>
Sent: Wednesday, May 28, 2014 5:07 PM
To: Narynski, Heather M MEM:EX
Cc: Warnock, George MEM:EX; Rothman, Stephen MEM:EX; Ostritchenko, Dmitri (Dmitri.Ostritchenko@amec.com); Art Frye; Dale Reimer
Subject: RE: Advice of Geotechnical Incident Form
Attachments: Advice of Geotechnical Incident - Mount Polley - 2014 05 27.pdf

Follow Up Flag: Follow up
Flag Status: Completed

Hi Heather;

Please find attached the form completed as requested – as indicated, we are still gathering all of the information for a detailed event timeline, and will submit this in combination with a report from our design engineer, who has been on site since Sunday.

Kindest Regards,

Luke Moger, PMP
Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Narynski, Heather M MEM:EX [<mailto:Heather.Narynski@gov.bc.ca>]
Sent: May-27-14 5:01 PM
To: Luke Moger
Cc: Warnock, George MEM:EX; Rothman, Stephen MEM:EX
Subject: Advice of Geotechnical Incident Form

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Thanks,
Heather

Heather Narynski, P.Eng
Sr. Geotechnical Inspector
Ministry of Energy and Mines

From: Luke Moger <lmoger@mountpolley.com>
Sent: Thursday, May 29, 2014 8:26 PM
To: Howe, Diane J MEM:EX; Demchuk, Tania MEM:EX; McConnachie, Jennifer MEM:EX; Narynski, Heather M MEM:EX; Warnock, George MEM:EX; Metcalfe, Shelley ENV:EX; Matscha, Gabriele ENV:EX
Cc: Art Frye; Colleen Hughes; Daryl Dufault; Todd Martin (TMartin@bgcengineering.ca)
Subject: Mount Polley Mine :Short Term Water Treatment/Storage Facility Design
Attachments: June 2nd MEM v3_Final.pdf

Hi All;

Apologies for the delay; please find the presentation on the TSF prepared by BGC to be incorporated into discussion on Monday.

Kindest Regards,

Luke



Luke Moger, PMP
Project Engineer, Mine Operations
Mount Polley Mining Corporation
PO Box 12
Likely, BC V0L 1N0
Canada

Direct: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
E-mail: LMoger@MountPolley.com

June 2/14

Mount Polley - meeting prep:

- permit conditions for w.t pilots
 - results must be used to inform full application
- re: Stockpile PAG \Rightarrow condition of July 25, 2013 \Rightarrow assessment of seepage water quality before bigger than 12 Mt
 - w/ mitigations if necessary
- update on permitting timelines
- reminder of requirements for water treatment plant application
 - needs to have electrical + mechanical review
 - some Se treatment plants have H_2S issues

June 2/14

Mont Polley meeting

Diane, Jen, George, Shelley M, ~~Adam~~^{Adam}, Kymk, Brian Y, Tania
 Luke, Art, Ted, Colleen, Darryl Dufault (Pierre Stecko-minnow)
 (BGC) (BGC) (water treatment)

- water treatment.
- end of meeting for TAR questions.

agenda

- operations overview & site conditions
- Site Water management
- TSF design
- Permitting
- wrap-up.

Overview - summary of history.

- currently in Springer + Cariboo
- 415 employees, 365/yr
- 100,000 tpd mining, 22,000 tpd
- Cu, Ag, Au, magnetite - JV w/ Craigmont

- Springer + Cariboo - surface
- U/G right Pit - higher grade
- 2 active dumps SERDS + P&G stockpile
- extension to 2025 (current life of mine is to 2016 - permitted)

Site Conditions

- constrained by Bootjack + Polley lake to W + E., TSF to S.
- to 2025 expand SERDs + PAG dump + new tailings haul road
- waste rock also into TSF construction.
- space limited, water management is key*

June 21/14

Site Water Management:

- in surplus conditions

→ stored in TSF + Cariboo pit

↳ we cannot use Cariboo for mining.

→ think TSF is up to 9 Mm^3 .

Ditch efficiency? - good

* not quantified at all.

- 2 more phases in Springer, going back into Cariboo soon + starting push back in Springer for phase 4.

- Started discharge to Hazelton Crk in Apr.

↳ max out @ $70,000 \text{ m}^3$ Jun-Oct. (based on discharge criteria)

- main constraints → volume avail. of toe drain

→ flow vol. in Hazelton Creek (max dis. is 35% of flow)
(WT is monitoring point in Hazelton).

→ max permitted = 1.4 Mm^3 .

~~long~~

- Management Strategy:

- Surplus on site - TSF; Cariboo Pit,

- annual vol. = 1.5 Mm^3 .

→ West ditch adding water + helping manage.

→ want to return water to local watershed.

→ goal to get to neutral water condition.

* Big constraint on discharge is quantity of dam filtered water produced. ($170,000 \text{ m}^3$).

Short term → reduce existing surplus. ⇒ 3-5 yrs.

* Geotech issues.

- continue w/ long term discharge planning

Discharge design

- to ~~Reese~~ Potley Lake
- Quality = BC guidelines w/ lower N+P.
- 95% mixing at 100m from discharge
- 12 months/yr.
- total annual 3 Mm^3 .
- * Start 2014.

- need effluent mixing study
 - draft TAR (Minnow)
 - diffuser design (KFP)

→ Treatment facility at Tin borrow pit beside Hazelton discharge then pipe system to Potley Lake

→ Pilot treatment RO → 3 wks.

→ RFP for treatment ⇒ Newalta for R/O w/ Sept startup.
↳ Joint application w/ MEM/MoE.

⊛ Modelling update → Submitted? → see annual report!

TSF Discussion (BGC)

- Engineer of Record → moving to BGC - Todd Martin. (2014)
- Amec completing construction to 970 m. then over to BGC.

- TSF Status

- 2010 ⇒ extensive beaches. (original design intent).
- present → more water / smaller beaches along main embankment
 - note don't see big change in OLS perimetre w/ these higher pond level.

Water balance

- Long term target is get back to larger beaches.
 - ↳ smaller pond + water balance issue. (min. pond size for reclaim)

- conceptual closure - minimum pond + reclaim beaches.

June 21/16

3 Stages of Permitting for TSF.

- 1st \rightarrow 2.5 m beyond current.

* GW - would like to see moving toward higher FOS.

\hookrightarrow moving to 1.5.

④ need clear rationale for residual FOS of 1.1.

Phase 1 \Rightarrow July 2014 - to 972.5 m (may be revisited).

2 \Rightarrow Jan 2015 - interim (Oct 2019) elev. 982 m.

3 \Rightarrow TBD. - for Life of Mine (2017/2018 -ish)

- have assumed full W.T. discharge @ $3 \text{ Mm}^3/\text{yr}$ by July 2015.

- W.T. and \downarrow pond size critical component of design considerations

\hookrightarrow water management.

- maintain centerline construction, may need mid-elevation buttressing(?).

* - relocation of d/s infrastructure - weepage ponds, biosolids stockpiles, ABR, etc.

- dam break analysis (based on estimate of 2025 dam).

\hookrightarrow GW would be prudent.

- seismic stability - deformation analyses.

* May encounter RAG tails near end of mine life in WX.

Permitting Update

1. Water Discharge Permit - need permit in Sept. (application in June).

- update to discharge to Hazelton

\hookrightarrow Se in Sediment + other sources.

2. TSF update - late June/early July for 972.5 m.

- 5 yr plan

3. M-200 plan update

→ July/Early Aug.

- updated pit design
- updated dump designs
- updated RCP.

TD follow-up → review water quality modelling update in annual report
* edits to permit conditions from Katie re comingling monitoring.

TSF update

- all water being blocked to TSF (to Cariboo pit)
- static levels in TSF. ; building freeboard back,
- increased construction
- June 6 update to be submitted.
- no erosion on d/s space.
- free board - 0.6m @ corner 2 (50m) - till this morning
 - 0.9 on South embankment
 - 0.7-0.9 main embankment.
 - Corner 5 to perimeter pipe @ 1.6

GW - Pumps in area?

↳ using existing reclaim line and beefing up booster stn on reclaim line.

↳ reclaim system has capacity.

GW * get the pipe on hand.

↳ diesel pump to tie in.

* Get the contingency planning done now.

Pierre S re: TAR.

- Treatment = R/O, trials look good.

- concern ⇒ Polley lake eutrophied over time, need lower objectives for Nitrate + P. ; performance objective of 1/10th of guide for Nitrate

- Newalta will do design/build/operate

(Newalta will do design/build/operate)

June 2/14

Newalta - based in Calgary

- experience w/ tailings dewatering in oil sands.

- Chemically looks ok.

- goal to ensure discharge at limits to ensure geomorphic process maintain

- discharge - mixing study \rightarrow diffuser + mixing model

- temperature - \rightarrow 15% effluent dilution @ 100m.

\hookrightarrow 2m depth, no heating in process

\hookrightarrow to avoid concern w/ temp diff.

- water quality in Polley Lake good except Nitrate

- decrease in Phosphorous

\hookrightarrow 15%

\hookrightarrow will limit impacts from increased Nitrate

- other concern is re: ice formation \Rightarrow will need storage

- water is w/in a degree of Lake temp @ 2m depth.

- slightly buoyant plume but mixes quickly.

- $0.21 \text{ m}^3/\text{s} = 0.095 \text{ m}^3/\text{s}$ on ave thru yr.

- on annual average discharge basis the Mine has decreased historic flow

\hookrightarrow expect some benefit w/ adding this water back in.

- installing meter in Lake 100m from diffuser location.

- Baron, Pb, Ni, Nitrate slight increases.

- One set of tox tests assoc. for treatment plant effluent.

- osmotic stress issues?

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From: Warnock, George MEM:EX
Sent: Friday, June 6, 2014 4:54 PM
To: 'Luke Moger'
Cc: Rothman, Stephen MEM:EX; 'Dale Reimer'; 'Art Frye'; 'Ostritchenko, Dmitri (Dmitri.Ostritchenko@amec.com)'; Narynski, Heather M MEM:EX; 'Michael Cullen (s.22'; Howe, Diane J MEM:EX
Subject: RE: Advice of Geotechnical Incident Form Follow-up (Design Plan)
Attachments: MPMC & Design Engineer Plan and Timeline - Mount Polley Mine - 2014 06 0....pdf

Hello Luke,

s.22

I will respond on behalf of MEM.

Thank you for the update. The actions taken to date and the plan moving forward seem appropriate. Continued updates would be appreciated until the normal operating freeboard is re-established. Michael Cullen will follow this up with you further during his upcoming site inspection.

Regards,

George

From: Luke Moger [<mailto:lmoger@mountpolley.com>]
Sent: Friday, June 6, 2014 12:42 PM
To: Narynski, Heather M MEM:EX
Cc: Warnock, George MEM:EX; Rothman, Stephen MEM:EX; Dale Reimer; Art Frye; Ostritchenko, Dmitri (Dmitri.Ostritchenko@amec.com)
Subject: RE: Advice of Geotechnical Incident Form Follow-up (Design Plan)

Hi Heather;

As outlined in the Geotechnical Incident Form submitted by Mount Polley Mining Corporation (MPMC) on May 28, 2014 *Advice of Geotechnical Incident - Mount Polley - 2014 05 2.pdf*, please find attached a document (MPMC & Design Engineer Plan and Timeline - Mount Polley Mine - 2014 06 05.pdf) that provides the Joint MPMC/Design Engineer Plan and Timeline in remediating the loss of operating condition freeboard at tailings storage facility.

Kindest Regards,

Luke



Luke Moger, PMP
Project Engineer, Mine Operations
Mount Polley Mining Corporation
PO Box 12
Likely, BC V0L 1N0
Canada

Direct: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
E-mail: LMoger@MountPolley.com

Narynski, Heather M MEM:EX

MP00197

From: Narynski, Heather M MEM:EX
Sent: Wednesday, June 18, 2014 8:25 AM
To: Luke Moger
Subject: RE: Advice of Geotechnical Incident Form Follow-up (Design Plan) - Update #1

Thanks Luke,

I appreciate the update, and MPMC's commitment to providing the updates to MEM as indicated.

Heather

From: Luke Moger [<mailto:lmoger@mountpolley.com>]
Sent: Friday, June 13, 2014 11:41 AM
To: Narynski, Heather M MEM:EX
Cc: Rothman, Stephen MEM:EX; Dale Reimer; Art Frye; 'Ostritchenko, Dmitri (Dmitri.Ostritchenko@amec.com)'; 'Michael Cullen s.22'; Howe, Diane J MEM:EX; Warnock, George MEM:EX
Subject: RE: Advice of Geotechnical Incident Form Follow-up (Design Plan) - Update #1

Hi Heather,

Please find attached Update #1 attached, as outlined in the original MPMC & Design Engineer Plan and Timeline - Mount Polley Mine - 2014 06 05.pdf.

Kindest Regards,

Luke Moger, PMP
Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Warnock, George MEM:EX [<mailto:George.Warnock@gov.bc.ca>]
Sent: June-06-14 4:54 PM
To: Luke Moger
Cc: Rothman, Stephen MEM:EX; Dale Reimer; Art Frye; 'Ostritchenko, Dmitri (Dmitri.Ostritchenko@amec.com)'; Narynski, Heather M MEM:EX; 'Michael Cullen s.22'; Howe, Diane J MEM:EX
Subject: RE: Advice of Geotechnical Incident Form Follow-up (Design Plan)

Hello Luke,

s.22

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Thank you for the update. The actions taken to date and the plan moving forward seem appropriate. Continued updates would be appreciated until the normal operating freeboard is re-established. Michael Cullen will follow this up with you further during his upcoming site inspection.

Regards,

George

From: Luke Moger [<mailto:lmoger@mountpolley.com>]

Sent: Friday, June 6, 2014 12:42 PM

To: Narynski, Heather M MEM:EX

Cc: Warnock, George MEM:EX; Rothman, Stephen MEM:EX; Dale Reimer; Art Frye; Ostritchenko, Dmitri (Dmitri.Ostritchenko@amec.com)

Subject: RE: Advice of Geotechnical Incident Form Follow-up (Design Plan)

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Kindest Regards,

Luke



Luke Moger, PMP

Project Engineer, Mine Operations

Mount Polley Mining Corporation

PO Box 12

Likely, BC V0L 1N0

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Fax: +1 (250) 790-2613

E-mail: LMoger@MountPolley.com

Narynski, Heather M MEM:EX

MP00199

From: Michael Cullen s.22
Sent: Friday, June 20, 2014 4:38 PM
To: 'Luke Moger'; Narynski, Heather M MEM:EX
Cc: Rothman, Stephen MEM:EX; 'Dale Reimer'; 'Art Frye'; 'Ostritchenko, Dmitri'; Howe, Diane J MEM:EX; Warnock, George MEM:EX; Green, Jack E ENV:EX
Subject: RE: Advice of Geotechnical Incident Form Follow-up (Design Plan) - Update #2

Hello Luke

s.22 I am responding on her behalf.

Thank you for keeping us informed of the Mine's progress on the TSF issues. We are pleased to see that you are on schedule with the work. I look forward to reviewing the work and lessons learned during my site inspection this summer. I am sorting out dates for this inspection with Steve Rothman and will advise you shortly of the timing.

For MEM.

Michael Cullen PhD, PEng.
Michael Cullen Geotechnical Ltd
Office: 250 339 2633
Mobile: 250 703 6775

From: Luke Moger [<mailto:lmoger@mountpolley.com>]
Sent: Friday, June 20, 2014 2:32 PM
To: Narynski, Heather M MEM:EX
Cc: Rothman, Stephen MEM:EX; Dale Reimer; Art Frye; 'Ostritchenko, Dmitri (Dmitri.Ostritchenko@amec.com)'; 'Michael Cullen s.22'; Howe, Diane J MEM:EX; Warnock, George MEM:EX; jack.green@gov.bc.ca
Subject: RE: Advice of Geotechnical Incident Form Follow-up (Design Plan) - Update #2

Hi Heather,

Please find attached Update #2 attached, as outlined in the original MPMC & Design Engineer Plan and Timeline - Mount Polley Mine - 2014 06 05.pdf.

Kindest Regards,

Luke Moger, PMP
Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Luke Moger

Sent: June-13-14 11:41 AM

To: Narynski, Heather M MEM:EX

Cc: Rothman, Stephen MEM:EX; Dale Reimer; Art Frye; 'Ostritchenko, Dmitri (Dmitri.Ostritchenko@amec.com)'; 'Michael Cullen (s.22)'; Howe, Diane J MEM:EX; 'Warnock, George MEM:EX'

Subject: RE: Advice of Geotechnical Incident Form Follow-up (Design Plan) - Update #1

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Luke Moger, PMP

Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113

Fax: +1 (250) 790-2613

Email: LMoger@MountPolley.com

From: Warnock, George MEM:EX [<mailto:George.Warnock@gov.bc.ca>]

Sent: June-06-14 4:54 PM

To: Luke Moger

Cc: Rothman, Stephen MEM:EX; Dale Reimer; Art Frye; 'Ostritchenko, Dmitri (Dmitri.Ostritchenko@amec.com)'; Narynski, Heather M MEM:EX; 'Michael Cullen (s.22)'; Howe, Diane J MEM:EX

Subject: RE: Advice of Geotechnical Incident Form Follow-up (Design Plan)

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Regards,

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Sent: Friday, June 6, 2014 12:42 PM

To: Narynski, Heather M MEM:EX

Cc: Warnock, George MEM:EX; Rothman, Stephen MEM:EX; Dale Reimer; Art Frye; Ostritchenko, Dmitri (Dmitri.Ostritchenko@amec.com)

Subject: RE: Advice of Geotechnical Incident Form Follow-up (Design Plan)

Hi Heather;

As outlined in the Geotechnical Incident Form submitted by Mount Polley Mining Corporation (MPMC) on May 28, 2014 *Advice of Geotechnical Incident - Mount Polley - 2014 05 2.pdf*, please find attached a document (MPMC & Design Engineer Plan and Timeline - Mount Polley Mine - 2014 06 05.pdf) that provides the Joint MPMC/Design Engineer Plan and Timeline in remediating the loss of operating condition freeboard at tailings storage facility.

Kindest Regards,

Luke



Luke Moger, PMP

Project Engineer, Mine Operations

Mount Polley Mining Corporation

PO Box 12

Likely, BC V0L 1N0

Canada

Direct: +1 (250) 790-2215 ext. 2113

Fax: +1 (250) 790-2613

E-mail: LMoger@MountPolley.com

From: [Katie McMahan](#)
To: [Demchuk, Tania MEM:EX](#)
Cc: [McConnachie, Jennifer MEM:EX](#); [Howe, Diane J MEM:EX](#); [Colleen Hughes](#); [Art Frye](#)
Subject: RE: Mount Polley Revised Seep Sampling Program
Date: Monday, June 23, 2014 4:25:54 PM

Hi Tania,

Thanks for reviewing the plan. We will submit it with amendment package next month, and MOE will have an opportunity to review the draft plan at that point.

With regards to additional monitoring for the water treatment and discharge system, a full monitoring plan is being submitted with the TAR (hopefully later this week) for review by both MOE and MEM.

Best,

Katie McMahan, P. Ag

Environmental Technologist
Mount Polley Mining Corporation
Phone: (250) 790-2215 ext. 2120
Email: kmcmahan@mountpolley.com

From: Demchuk, Tania MEM:EX [mailto:Tania.Demchuk@gov.bc.ca]
Sent: June-18-14 4:17 PM
To: Katie McMahan
Cc: McConnachie, Jennifer MEM:EX; Howe, Diane J MEM:EX; Colleen Hughes; Art Frye
Subject: RE: Mount Polley Revised Seep Sampling Program

Hi Katie,

The draft proposal you have put together seems reasonable, and it is good to have the proposed plan clearly set out on paper with sites identified on a figure.

MEM will likely be ok with these updates to the monitoring requirements provided that:

- (a) MPMC is confident that there is sufficient information being collected to ensure that sources of changing water chemistry can be resolved (if this occurs), and
- (b) There is an understanding that requirements may change through time with changing site conditions. (I think you have already noted this in the document provided.)

I will review the plan in the context of the amendment application when everything is submitted next month. I would expect there may be some additional monitoring requirements associated with the water treatment project.

Lastly, I want to note that MEM's comments and requirements related to monitoring do not prevent MOE from having their own requirements for any additional monitoring on the mine site.

I appreciate the opportunity to provide input prior to the application submission.

Thank-you,
Tania

From: Katie McMahan [<mailto:kmcmahan@mountpolley.com>]
Sent: Monday, June 16, 2014 3:57 PM
To: Demchuk, Tania MEM:EX
Cc: McConnachie, Jennifer MEM:EX; Howe, Diane J MEM:EX; Colleen Hughes; Art Frye
Subject: Mount Polley Revised Seep Sampling Program

Hi Tania,

I have put together a draft version of a revised seep sampling program for submission with our next M-200 amendment application. It is attached for your review so that we can develop a sampling program you are satisfied with ahead of time, as we discussed on the phone the other day. Please let me know if you have any questions, and feel free to call me to discuss.

Best regards,

Katie McMahan, P. Ag

Environmental Technologist
Mount Polley Mining Corporation
Phone: (250) 790-2215 ext. 2120
Email: kmcmahan@mountpolley.com

Narynski, Heather M MEM:EX

MP00201

From: Warnock, George MEM:EX
Sent: Friday, June 27, 2014 11:35 AM
To: 'Luke Moger'
Cc: Rothman, Stephen MEM:EX; 'Dale Reimer'; 'Art Frye'; 'Ostritchenko, Dmitri (Dmitri.Ostritchenko@amec.com)'; 'Michael Cullen s.22'; Howe, Diane J MEM:EX; Green, Jack E ENV:EX; Narynski, Heather M MEM:EX
Subject: RE: Advice of Geotechnical Incident Form Follow-up (Design Plan) - Update #3

Thank you for the update Luke. Have a good weekend.

[Heather – the update has been filed.]

From: Luke Moger [<mailto:lmoger@mountpolley.com>]
Sent: Friday, June 27, 2014 11:04 AM
To: Narynski, Heather M MEM:EX
Cc: Rothman, Stephen MEM:EX; Dale Reimer; Art Frye; 'Ostritchenko, Dmitri (Dmitri.Ostritchenko@amec.com)'; 'Michael Cullen s.22'; Howe, Diane J MEM:EX; Warnock, George MEM:EX; Green, Jack E ENV:EX
Subject: RE: Advice of Geotechnical Incident Form Follow-up (Design Plan) - Update #3

Hi Heather,

Please find attached Update #3 attached, as outlined in the original MPMC & Design Engineer Plan and Timeline - Mount Polley Mine - 2014 06 05.pdf.

Kindest Regards,

Luke Moger, PMP
Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Luke Moger
Sent: June-20-14 2:32 PM
To: 'Narynski, Heather M MEM:EX'
Cc: 'Rothman, Stephen MEM:EX'; Dale Reimer; Art Frye; 'Ostritchenko, Dmitri (Dmitri.Ostritchenko@amec.com)'; 'Michael Cullen s.22'; 'Howe, Diane J MEM:EX'; 'Warnock, George MEM:EX'; jack.green@gov.bc.ca
Subject: RE: Advice of Geotechnical Incident Form Follow-up (Design Plan) - Update #2

Hi Heather,

Please find attached Update #2 attached, as outlined in the original MPMC & Design Engineer Plan and Timeline - Mount Polley Mine - 2014 06 05.pdf.

Kindest Regards,

Luke Moger, PMP

Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Luke Moger

Sent: June-13-14 11:41 AM

To: Narynski, Heather M MEM:EX

Cc: Rothman, Stephen MEM:EX; Dale Reimer; Art Frye; 'Ostritchenko, Dmitri (Dmitri.Ostritchenko@amec.com)'; 'Michael Cullen s.22'; Howe, Diane J MEM:EX; 'Warnock, George MEM:EX'

Subject: RE: Advice of Geotechnical Incident Form Follow-up (Design Plan) - Update #1

Hi Heather,

Please find attached Update #1 attached, as outlined in the original MPMC & Design Engineer Plan and Timeline - Mount Polley Mine - 2014 06 05.pdf.

Kindest Regards,

Luke Moger, PMP

Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Warnock, George MEM:EX [<mailto:George.Warnock@gov.bc.ca>]

Sent: June-06-14 4:54 PM

To: Luke Moger

Cc: Rothman, Stephen MEM:EX; Dale Reimer; Art Frye; 'Ostritchenko, Dmitri (Dmitri.Ostritchenko@amec.com)'; Narynski, Heather M MEM:EX; 'Michael Cullen (s.22)'; Howe, Diane J MEM:EX

Subject: RE: Advice of Geotechnical Incident Form Follow-up (Design Plan)

Hello Luke,

s.22

will respond on behalf of MEM.

Thank you for the update. The actions taken to date and the plan moving forward seem appropriate. Continued updates would be appreciated until the normal operating freeboard is re-established. Michael Cullen will follow this up with you further during his upcoming site inspection.

Regards,

George

From: Luke Moger [<mailto:lmoger@mountpolley.com>]

Sent: Friday, June 6, 2014 12:42 PM

To: Narynski, Heather M MEM:EX

Cc: Warnock, George MEM:EX; Rothman, Stephen MEM:EX; Dale Reimer; Art Frye; Ostritchenko, Dmitri

(Dm.Ostritch@amec.com)

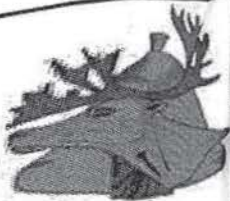
Subject: RE: Advice of Geotechnical Incident Form Follow-up (Design Plan)

Hi Father;

As outlined in the Geotechnical Incident Form submitted by Mount Polley Mining Corporation (MPMC) on Ma
Advice of Geotechnical Incident - Mount Polley - 2014 05 2.pdf, please find attached a document (MPMC
Engineer Plan and Timeline - Mount Polley Mine - 2014 06 05.pdf) that provides the Joint MPMC/Design Engi
Timeline in relating the loss of operating condition freeboard at tailings storage facility.

Kindest Regards

Luke



Luke Moger, PMP
Project Engineer, Mine Operations
Mount Polley Mining Corporation
PO Box 12
Likely, BC V0L 1N0
Canada

Direct: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
E-mail: LMoger@MountPolley.com

From: [Colleen Hughes](#)
To: [Howe, Diane J MEM:EX](#)
Cc: [Demchuk, Tania MEM:EX](#); [Luke Moger](#)
Subject: Application to treat and discharge water
Date: Wednesday, July 9, 2014 1:46:51 PM
Attachments: MPMC Application Cover Letter to MEM.pdf

Good Afternoon Diane

I have attached to this email a letter notifying Ministry of Energy and Mines of a departure from our current M200 approval. Luke Moger will be providing further details to MEM regarding the pipeline and treatment plant.

Regards,

Colleen Hughes, EP
Environmental Coordinator
Mount Polley Mining Corporation
PO Box 12
Likely, BC V0L 1N0
250-790-2617
chughes@mountpolley.com

 Please consider the environment before printing this e-mail.

Narynski, Heather M MEM:EX

MP00203

From: Luke Moger <lmoger@mountpolley.com>
Sent: Thursday, July 10, 2014 1:46 PM
To: Narynski, Heather M MEM:EX
Cc: Rothman, Stephen MEM:EX; Dale Reimer; Art Frye; 'Ostritchenko, Dmitri (Dmitri.Ostritchenko@amec.com)'; 'Michael Cullen s.22'; Howe, Diane J MEM:EX; Warnock, George MEM:EX; Green, Jack E ENV:EX
Subject: RE: Advice of Geotechnical Incident Form Follow-up (Design Plan) - Update #3

Hi Heather,

Please accept this e-mail as formal confirmation that the 1.3m standard operating freeboard at the TSF has been re-established. An AMEC representative is currently on site, and we will be completing an internal review and providing a freeboard management strategy update early next week.

Kindest Regards,

Luke Moger, PMP
Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Narynski, Heather M MEM:EX [mailto:Heather.Narynski@gov.bc.ca]
Sent: July-04-14 1:20 PM
To: Luke Moger
Cc: Rothman, Stephen MEM:EX; Dale Reimer; Art Frye; 'Ostritchenko, Dmitri (Dmitri.Ostritchenko@amec.com)'; 'Michael Cullen s.22'; Howe, Diane J MEM:EX; Warnock, George MEM:EX; Green, Jack E ENV:EX
Subject: RE: Advice of Geotechnical Incident Form Follow-up (Design Plan) - Update #3

Thanks Luke,

I appreciate the final update on the May 24th geotechnical incident regarding operating freeboard at MPMC's TSF. I'm pleased to hear the standard operating freeboard of 1.3 m is expected to be achieved by day-end (and that the minimum freeboard of 1.0 m has been achieved along all embankments).

As mentioned, please forward AMEC's freeboard management plan to MEM for our records once complete.

Kind Regards,
Heather

From: Luke Moger [mailto:lmoger@mountpolley.com]
Sent: Friday, July 4, 2014 9:13 AM
To: Narynski, Heather M MEM:EX
Cc: Rothman, Stephen MEM:EX; Dale Reimer; Art Frye; 'Ostritchenko, Dmitri (Dmitri.Ostritchenko@amec.com)'; 'Michael Cullen s.22'; Howe, Diane J MEM:EX; Warnock, George MEM:EX; Green, Jack E ENV:EX
Subject: RE: Advice of Geotechnical Incident Form Follow-up (Design Plan) - Update #3

Hi Heather,

Please find attached Update #4, as outlined in the original MPMC & Design Engineer Plan and Timeline - Mount Polley Mine - 2014 06 05.pdf. Please note that a minimum freeboard of 1.0m has been established, and as such, weekly reporting to MEM is planned to cease. Once 1.3m freeboard has been established (anticipated to be the end of today), MEM will be notified that MPMC is once again working under the standard operating conditions at the TSF. Prior to water being re-introduced to the TSF, the 1.3 minimum freeboard will be established, and a freeboard management plan will be discussed with our design engineer (AMEC) and forwarded to MEM.

Kindest Regards,

Luke Moger, PMP

Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Luke Moger

Sent: June-27-14 11:04 AM

To: 'Narynski, Heather M MEM:EX'

Cc: 'Rothman, Stephen MEM:EX'; Dale Reimer; Art Frye; 'Ostritchenko, Dmitri (Dmitri.Ostritchenko@amec.com)'; 'Michael Culler s.22'; 'Howe, Diane J MEM:EX'; 'Warnock, George MEM:EX'; jack.green@gov.bc.ca

Subject: RE: Advice of Geotechnical Incident Form Follow-up (Design Plan) - Update #3

Hi Heather,

Please find attached Update #3 attached, as outlined in the original MPMC & Design Engineer Plan and Timeline - Mount Polley Mine - 2014 06 05.pdf.

Kindest Regards,

Luke Moger, PMP

Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Luke Moger

Sent: June-20-14 2:32 PM

To: 'Narynski, Heather M MEM:EX'

Cc: 'Rothman, Stephen MEM:EX'; Dale Reimer; Art Frye; 'Ostritchenko, Dmitri (Dmitri.Ostritchenko@amec.com)'; 'Michael Culle s.22'; 'Howe, Diane J MEM:EX'; 'Warnock, George MEM:EX'; jack.green@gov.bc.ca

Subject: RE: Advice of Geotechnical Incident Form Follow-up (Design Plan) - Update #2

Hi Heather,

Please find attached Update #2 attached, as outlined in the original MPMC & Design Engineer Plan and Timeline - Mount Polley Mine - 2014 06 05.pdf.

Kindest Regards,

Luke Moger, PMP

Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113

Fax: +1 (250) 790-2613

Email: LMoger@MountPolley.com

From: Luke Moger

Sent: June-13-14 11:41 AM

To: Narynski, Heather M MEM:EX

Cc: Rothman, Stephen MEM:EX; Dale Reimer; Art Frye; 'Ostritchenko, Dmitri (Dmitri.Ostritchenko@amec.com)'; 'Michael Cullen s.22'; Howe, Diane J MEM:EX; 'Warnock, George MEM:EX'

Subject: RE: Advice of Geotechnical Incident Form Follow-up (Design Plan) - Update #1

Hi Heather,

Please find attached Update #1 attached, as outlined in the original MPMC & Design Engineer Plan and Timeline - Mount Polley Mine - 2014 06 05.pdf.

Kindest Regards,

Luke Moger, PMP

Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113

Fax: +1 (250) 790-2613

Email: LMoger@MountPolley.com

From: Warnock, George MEM:EX [<mailto:George.Warnock@gov.bc.ca>]

Sent: June-06-14 4:54 PM

To: Luke Moger

Cc: Rothman, Stephen MEM:EX; Dale Reimer; Art Frye; 'Ostritchenko, Dmitri (Dmitri.Ostritchenko@amec.com)'; Narynski, Heather M MEM:EX; 'Michael Cullen s.22'; Howe, Diane J MEM:EX

Subject: RE: Advice of Geotechnical Incident Form Follow-up (Design Plan)

Hello Luke,

s.22

I will respond on behalf of MEM.

Thank you for the update. The actions taken to date and the plan moving forward seem appropriate. Continued updates would be appreciated until the normal operating freeboard is re-established. Michael Cullen will follow this up with you further during his upcoming site inspection.

Regards,

George

From: Luke Moger [<mailto:lmoger@mountpolley.com>]

Sent: Friday, June 6, 2014 12:42 PM

To: Narynski, Heather M MEM:EX

Cc: Warnock, George MEM:EX; Rothman, Stephen MEM:EX; Dale Reimer; Art Frye; Ostritchenko, Dmitri

(Dmitri.Ostritchenko@amec.com)

Subject: RE: Advice of Geotechnical Incident Form Follow-up (Design Plan)

Hi Heather;

As outlined in the Geotechnical Incident Form submitted by Mount Polley Mining Corporation (MPMC) on May 28, 2014 *Advice of Geotechnical Incident - Mount Polley - 2014 05 2.pdf*, please find attached a document (MPMC & Design Engineer Plan and Timeline - Mount Polley Mine - 2014 06 05.pdf) that provides the Joint MPMC/Design Engineer Plan and Timeline in remediating the loss of operating condition freeboard at tailings storage facility.

Kindest Regards,

Luke



Luke Moger, PMP

Project Engineer, Mine Operations
Mount Polley Mining Corporation
PO Box 12
Likely, BC V0L 1N0
Canada

Direct: +1 (250) 790-2215 ext. 2113

Fax: +1 (250) 790-2613

E-mail: LMoger@MountPolley.com

From: Narynski, Heather M MEM:EX
Sent: Friday, July 18, 2014 4:10 PM
To: Luke Moger
Cc: Warnock, George MEM:EX; Rothman, Stephen MEM:EX; Michael Cullen
s.22 Dale Reimer; Art Frye; Ostritchenko, Dmitri
(Dmitri.Ostritchenko@amec.com)
Subject: Re: Mount Polley Mine - Water Management Plan

Thanks Luke, I appreciate the update and concur with George. I will add the document to our records when I am back in the office next week.

Regards,
Heather

Sent from my iPhone

On Jul 18, 2014, at 2:57 PM, "Luke Moger" <lmoger@mountpolley.com> wrote:

Hi Heather,

Please find attached a water management plan for the TSF endorsed by our design engineer. I have discussed this with George Warnock and he has suggested that the plan is acceptable, as the proposed condition (1.1m) is still above the MEM indicator levels. As outlined in the attached document, we will still indicate to MEM when the temporary Normal Operating Level of 1.1m is revoked by AMEC and we revert to the 1.3m level.

Kindest Regards,

Luke

<image001.png>

Direct: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
E-mail: LMoger@MountPolley.com

<MPMC & Design Engineer Plan and Timeline (Water Management Plan) - Mount Polley Mine
- 2014 07 17.pdf>

From: [Luke Moger](#)
To: [Warnock, George MEM:EX](#)
Cc: [Howe, Diane J MEM:EX](#); [Dale Reimer](#); [Art Frye](#); [Daryl Dufault](#); [Todd Martin \(TMartin@bgcengineering.ca\)](#)
Subject: Mount Polley TSF - Stage 10 Design Report
Date: Monday, July 28, 2014 12:14:55 PM
Attachments: [image001.png](#)
[Transmittal Letter \(2014 TSF Construction\) - 2014 07 28.pdf](#)
[Stage 10 TSF Design \(BGC\) - 2014 07 25.pdf](#)

Hi George;

Following up on our previous discussion, please find attached a transmittal letter outlining the (also attached) Stage 10 raise design report for the Mount Polley Tailings Storage Facility. The raise design report (to 972.5m) has been prepared by BGC Engineering, who will take over Engineer-of-Record responsibilities from AMEC Earth and Environmental upon the completion of the current Stage 9 design (970.0m). Construction to the 970.0m elevation is currently projected for completion in late August of this season (2014).

I will be in receipt of hard copies of the design report next week; please advise who you would like me to send these to.

If you should have any questions or comments in regards to the report, please feel free to contact me at the information below.

Kindest Regards,

Luke



Direct: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
E-mail: LMoger@MountPolley.com

From: [Luke Moger](#)
To: [Howe, Diane J MEM:EX](#); [Demchuk, Tania MEM:EX](#)
Subject: FW: Application to treat and discharge water
Date: Tuesday, July 29, 2014 11:28:10 AM
Attachments: 0 - Discharge of Treated Water to Polley Lake (MEM) - 2014 07 29 (Cover Letter).pdf
1 - Discharge of Treated Water to Polley Lake (MEM) - 2014 07 29.pdf
A - Full Size Figures.pdf
B - Consultation Report Final.pdf
C1 - 516217 Cover Letter.pdf
C2 - 516217 Licence of Occupation.pdf
C3 - 516217 Management Plan.pdf
D0 - H2O Innovation Proposal P-13078 - Mount Polley.pdf
D1 - Appendix 2 - Preliminary Membrane Projection.pdf
D2 - Appendix 2a - Preliminary Membrane Projection.pdf
E1 - Single Line Diagram (Newalta) - 2014 06 27.pdf
E2 - Load List (Newalta) - 2014 06 27.pdf

Hi Diane and Tania;

Apologies – the first e-mail bounced due to a filter, and so I have had to attach all of the appendices individually.

Kindest Regards

Luke Moger, PMP

Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113

Fax: +1 (250) 790-2613

Email: LMoger@MountPolley.com

From: Luke Moger
Sent: July-29-14 11:09 AM
To: Howe, Diane J MEM:EX
Cc: 'Demchuk, Tania MEM:EX'; Colleen Hughes; Art Frye
Subject: RE: Application to treat and discharge water

Hi Diane;

Please find attached an electronic copy of the MEM component of the permit amendment application for the construction of the Water Treatment Plant at Mount Polley Mine.

Tania - please let me know how many hard copies you would like and to what address and I can package and send them off this week.

Kindest Regards,

Luke Moger, PMP

Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113

Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Demchuk, Tania MEM:EX [<mailto:Tania.Demchuk@gov.bc.ca>]
Sent: July-09-14 2:10 PM
To: Colleen Hughes; Howe, Diane J MEM:EX
Cc: Luke Moger
Subject: RE: Application to treat and discharge water

Hi Colleen,

Thank-you for the notice of the MOE permit amendment application.

Luke: Please ensure MEM receives a hard-copy of the Mines Act permit amendment application.

Give me a call or email if you have any questions.

Thanks,
Tania

From: Colleen Hughes [<mailto:chughes@mountpolley.com>]
Sent: Wednesday, July 9, 2014 1:47 PM
To: Howe, Diane J MEM:EX
Cc: Demchuk, Tania MEM:EX; Luke Moger
Subject: Application to treat and discharge water

Good Afternoon Diane

I have attached to this email a letter notifying Ministry of Energy and Mines of a departure from our current M200 approval. Luke Moger will be providing further details to MEM regarding the pipeline and treatment plant.

Regards,

Colleen Hughes, EP
Environmental Coordinator
Mount Polley Mining Corporation
PO Box 12
Likely, BC V0L 1N0
250-790-2617
chughes@mountpolley.com

 Please consider the environment before printing this e-mail.

Narynski, Heather M MEM:EX

From: Luke Moger <lmoger@mountpolley.com>
Sent: Monday, March 31, 2014 8:57 AM
To: Warnock, George MEM:EX
Cc: Howe, Diane J MEM:EX; Narynski, Heather M MEM:EX
Subject: RE: Mount Polley Mine Tailings Storage Facility Stage 9 2013 As-Built and Annual Review Report

Hi George;

Thank you for the speedy follow up. I am sending a copy via HighTail.com (formerly YouSendIt.com) due to inbox file size limitations, and will send a hard copy as outlined below. If you would kindly confirm electronic receipt of this report that would be greatly appreciated.

Kindest Regards,

Luke Moger, PMP
Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Warnock, George MEM:EX [<mailto:George.Warnock@gov.bc.ca>]
Sent: Monday, March 31, 2014 8:42 AM
To: Luke Moger
Cc: Howe, Diane J MEM:EX; Narynski, Heather M MEM:EX
Subject: RE: Mount Polley Mine Tailings Storage Facility Stage 9 2013 As-Built and Annual Review Report

Hello Luke,

You can send the pdf version to Diane, Heather Narynski, and myself. A single hard copy should be sent to Victoria c/o Heather at:

Ministry of Energy and Mines
6th Floor – 1810 Blanshard St.
Victoria, BC
V8W 9N3

Thank you,

George

From: Luke Moger [<mailto:lmoger@mountpolley.com>]
Sent: March-31-14 8:27 AM
To: Howe, Diane J MEM:EX
Cc: Warnock, George MEM:EX
Subject: Mount Polley Mine Tailings Storage Facility Stage 9 2013 As-Built and Annual Review Report

Hi Diane;

I am in receipt of the Mount Polley Mine Tailings Storage Facility Stage 9 2013 As-Built and Annual Review Report.

I have an electronic copy that I am able to distribute in addition to hard copies. If you would be able to confirm the individuals from MEM that you would like to receive a copy (electronic and/or hard) then I will gladly see that they get one. I have cc'd George Warnock on this e-mail as historically he has been our MEM contact for geotechnical components of our operations.

Kindest Regards,

Luke



Luke Moger, PMP

Project Engineer, Mine Operations
Mount Polley Mining Corporation
PO Box 12
Likely, BC V0L 1N0
Canada

Direct: +1 (250) 790-2215 ext. 2113

Fax: +1 (250) 790-2613

E-mail: LMoger@MountPolley.com



Cariboo Mine Development Review Committee Meeting

Date and Time: 9:00 am – 3:30 pm, November 5, 2014

Location: Mount Polley Mine Site

Chair: Rick Adams, MEM

Agenda

9:00 am	Welcome and safety (Dale Reimer)
9:10 am	Roundtable introductions (all)
9:20 am	MDRC Introductory comments (Rick Adams, Tania Demchuk) <ul style="list-style-type: none">• Scope and purpose of the committee
9:30 am	MOE EWG comments (Leigh-Ann Fenwick) <ul style="list-style-type: none">• Scope and purpose of the committee
9:40 am	Presentation from Mount Polley <ul style="list-style-type: none">• Proposed works and timeframes• Opportunities for questions and discussion throughout
11:00 am	Discussion, questions (all)
11:45 am	Meeting wrap-up and next steps (Rick Adams)
12:00 pm	Lunch break (bring your own lunch please)
12:30 pm	Site tour
3:00 pm	End of scheduled time on site, closing comments
3:30 pm	Depart Mount Polley Mine Site

Meeting Summary and Action Items

Presentation by Ryan Brown

- Review of activities completed on site since August 4, 2014 involving stabilization of the tailings storage facility and water collection. Have completed most activities inside the dam and the associated water management to stop, or slow, the flow of tailings, and filter water. Have placed a large volume of rock inside the dam upstream of and across the breach. In some areas where solids movement was the primary concern, waste rock has been pushed into the tailings gullies to stop the flow of tailings solids. In other areas carrying more water, water filtration was the priority. Pumping stations upstream of the dam and below the breach are working in concert to pump to the central collection sump, and then to the Springer Pit.

Total suspended solids have been significantly reduced in Hazeltine Creek. There has been no further movement of the dam.

- Polley Lake rose 1.6 to 1.7 m after the breach event. Initially pumped at 30,000 gpm until Polley Lake was lowered to the pre-breach level, and then stopped pumping. After the last rainfall event, resumed pumping. Not pumping anything to Springer Pit now as Polley Lake water quality is suitable for discharge to Hazeltine Creek. Pumping now at a lesser rate of 10,000 gpm on an as needed basis to maintain the lake level.
- All mine contact water is captured at the central collection sump and pumped to Springer Pit.
- Question/Comment regarding proportion of Polley Lake water being pumped to Springer Pit versus Hazeltine Creek and concern that water into Hazeltine Creek is causing additional tailings to Quesnel Lake.
 - Response: Polley Lake water is being pumped to Hazeltine Creek, not Springer Pit. Difficult to raise that much water to Springer Pit. Polley Lake water quality is suitable for discharge to Hazeltine Creek. Currently pumping at a lesser rate of approximately 10,000 gpm. The channel can accommodate that volume, and monitoring shows total suspended solids has declined considerably. It is monitored daily and turbidity is monitored more frequently. Company is working to complete sediment control ponds in the delta at the mouth of Hazeltine Creek.

Discussion by Don Parsons

- Expect November 15 for completion of geotechnical raw data collection. That is when Mount Polley could start it's construction work to repair the breach to an elevation required to collect and store spring freshet
- Overview of erosion and sediment control plans for Lower Hazeltine Creek
 - Ponds will be operational in approximately one month
 - Logs and debris have been re-handled at the delta
 - Daily monitoring of the creek shows that turbidity is variable
- For the longer term management of Polley Lake, investigating possible use of a historic channel below Polley Lake, and a weir to manage flows from Polley Lake at a rate the Hazeltine Creek channel can accommodate to avoid dislodging deposited tailings sediments. Sediment ponds at Hazeltine Creek are designed around a maximum flow rate and specified retention times, so flow has to be controlled upstream
- Part of a 3 pronged approach to stop more tailings from reaching Quesnel Lake: 1. stop the flow of tailings from behind the tailings dam; 2. resolve the tailings "plug" issue at Polley Lake; 3. and install settlement ponds for the Hazeltine Creek flow

- Question: What are the limits on pumping water to the sediment control ponds in lower Hazeltine instead of discharging into upper Hazeltine?
 - Response: best case scenario is to have a weir in place to store excess water and manage flows
- Question: What design criteria are being used?
 - Response: designing the channel for a 1 in 200 year 24 hr rain event

Rick Adams: General comment about ongoing investigations- MDRC process cannot interfere in any way with the ongoing investigations. Results of investigations are informing, and will continue to inform, the MDRC process.

Katie McMahan: Overview of mine contact water management

Presentation by Andy Haynes (Golder Associates)

- See presentation for details (PDF provided).
- Note: design of the proposed rock-fill berm and cut-off wall is being informed by results of the ongoing investigation.
- Overall design is to build a granular embankment within the breach, with a cut-off wall that extends into the competent core of the existing perimeter embankment. Will also construct a toe berm at the base of the perimeter embankment on either side of the breached area to elevate the factor of safety of the whole area.
- Question: explain buttressing in general
 - Response: Andy sketched on the white board to show how a buttress adds resisting force.
- Question: is there sufficient construction material available and will the crusher have to be re-started?
 - Response: There is sufficient material, including stockpiled filter material. Pit-run or existing waste rock will be used.
- Question: Can Golder provide information on the characteristics of the general fill on both sides of the cut-off wall?
 - Response: reference slide 36 – prefer that the general fill indicated on this slide be tailings because of lower hydraulic conductivity. Reviewing the feasibility to move tailings into this area. Could also use rockfill.
- Question: What is the schedule for construction of the buttress along the perimeter embankment?
 - Response: have started some foundation work. Pace of work must be compatible with the forensic investigation schedule. Buttressing will be in conjunction with tailings dam repair. 700,000 to 1,000,000 tonnes of rock required for the buttressing

- Question: Will there be stability analyses for drained and un-drained conditions?
 - Response: yes.
 - This information is requested with the application.
- Question: How is existing buttress tied into existing drainage and what about the transition between old toe drains to new toe drains?
 - Response: existing drainage will not be impeded by this design. Drains in the breach area are mostly to concentrate drainage for monitoring purposes. This drainage will flow to the breach pond.
- Question: What is the contingency for if the freshet is greater than a 1 in 25 year event?
 - Response: A berm to 955m (instead of 950 m) would manage water for the 1 in 200 year event.
 - Peak flow is partly controlled by amount of water pumped so have that as contingency as well
- Question: Is the required equipment available?
 - Response: yes, most readily available allows construction to depth of 25 m.
- Question: What is the general water management plan for water collected behind the berm?
 - Response: store freshet and pump out to dewater prior to 2016 freshet.
 - Note: the repair has the ability to be lifted to increase capacity over time.
- Question: What about the stability of the rest of the dam (impoundment)?
 - Response: that will be part of future analysis. Not pre-supposing anything right now, but this construction does not limit future work.
- Question: Are there any areas of further cracks?
 - Response: where the till core was exposed and impacted by the breach event, there are cracks in the till core
 - Excavation of the overlying dam materials will be advanced back over the till core until undamaged till core is found, which the cut off wall can then tie to
- Question: What is bentonite?
 - Response: naturally occurring clay, particularly fine and swells with addition of water. Very plastic, water retaining and flexible.
- Question: What was the decision making process around a 1 in 25 year event design vs a 1 in 200 year event design?
 - Response: The design will be for a 1 in 200 year event, which is an additional 500,000 m³ over the 1 in 25 year event.
- Question: What will be the freeboard?
 - Response: 1 to 2 m.

- Comment: a reminder that the dam repair work requires a Mines Act permit amendment, even though the work is being proposed in response to the Pollution Abatement Order.

Presentation of Mining Operations and Mill Restart Options

- Mount Polley Mining Corporation would like to advance the option of using Springer Pit to deposit tailings under a temporary permit for a set volume of production.
- The breach repair does not enable use of the tailings storage facility for tailings deposit from mining operations at this time.
- A pit lake study in 2010 indicated Springer Pit has 14,000,000 m³ of space, assuming a flood elevation of 1050 m- the elevation the pit is expected to fill to
- Currently there is 8,000,000 m³ of PAG rock on site which is required to be submerged in Springer Pit at end of mine life
- That leaves 6,000,000 m³ of available space in Springer Pit
- The proposal is to run the mill at half the normal milling rate to a maximum of 4,000,000 tonnes (~3,000,000 m³) of tailings (half the remaining capacity of Springer Pit after the PAG rock has been addressed).
- Proposal being put forward as it would:
 - allow generation of capital to reduce losses and help finance the repair work;
 - maintain almost full employment of crews;
 - retain existing trained employees;
 - provide regional economic benefits; and
 - provide a source for rock for buttressing other areas of the tailings dam through 2015 (instead of re-handling existing waste rock)
- Timing of this application is unclear- possibly mid-December.

ACTION ITEMS/NEXT STEPS/NEXT MEETING

- Tania to circulate information received from Mount Polley on November 4. (Completed on November 7)
- Chair to circulate minutes and presentations to MDRC
- **Mid-November:** Mount Polley to submit detailed application for proposed dam repair to collect and store freshet water
- **Immediately after:** Chair to forward application to all MDRC members- expect review of detailed design will be primarily under the purview of geotechnical specialists, and must be completed within one week of receipt



- **Last week November:** Cariboo MDRC meeting, or conference call, for First Nations and only those agencies with a specific interest- to report on results of detailed application review by geotechnical specialists, address any significant outstanding issues, and provide any final requirements to Mount Polley
- **1st week December:** Chair to provide Cariboo MDRC recommendation to Deputy Chief Inspector of Mines for permitting decision

Footnote: The above accelerated timelines are necessary to enable the company to construct repairs to the breach in time to prevent mobilization of further tailings from behind the dam to Quesnel Lake during spring freshet.

Cariboo MDRC - November 5 Meeting Attendance

Agency	Name	EMAIL	PHONE
Ministry of Energy and Mines	Rick Adams (Cariboo MDRC Chair)	Rick.Adams@gov.bc.ca	250-828-4583
	Tania Demchuk	Tania.Demchuk@gov.bc.ca	250-952-0417
	Chris Carr	Diane.Howe@gov.bc.ca	250-952-0183
	Diane Howe	Stephen.Rothman@gov.bc.ca	250-319-2054
	Steve Rothman	Carina.Doyle@gov.bc.ca	250-952-0668
Ministry of Environment	Carina Doyle	LeighAnn.Fenwick@gov.bc.ca	250-847-7425
	Leigh-Ann Fenwick	Hubert.Bunce@gov.bc.ca	250-751-3254
	Hubert Bunce	Stephanie.Huska@gov.bc.ca	250-398-4550
	Stephanie Huska	David.J.Weir@gov.bc.ca	250-398-4924
Ministry of Forests, Lands and Natural Resource Operations	Dave Weir	Harry.Jennings@gov.bc.ca	250-398-4360
	Harry Jennings	Jason.Kerley@gov.bc.ca	250-398-4249
	Jason Kerley	Michael.Gash@gov.bc.ca	250-398-4579
Ministry of Aboriginal Relations and Reconciliation	Mike Gash	Ken.Awmack@gov.bc.ca	250-398-4501
Ministry of Agriculture	Ken Awmack	Jacinda.Mack@NSTQ.org	250-302-1739
Williams Lake Indian Band/Xat'sull First Nation	Jacinda Mack	jkuipers@kuipersassoc.com	406-782-3441
	Jim Kuipers	aaron.higginbottom@williamslakeband.ca	250-296-3507 ext 113
Williams Lake Indian Band	Aaron Higginbottom	nrmanager@xatsull.com	250-989-2323
Soda Creek Indian Band (Xat'sull First Nation)	Julie Banks	amy@fairmining.ca	250-871-3627
	Amy Crook	carenvir@wlake.com	250-790-2456
	Richard Holmes	Robert.Birtles@interiorhealth.ca	250-809-9451
Interior Health Authority	Rob Birtles	jbell@cariboord.bc.ca	250-392-3351
Cariboo Regional District	Janice Bell	jsorley@cariboord.bc.ca	250-392-3351
Community of Likely	Joan Sorely	dwatt@telus.net	250-790-2446
	Doug Watt	Dreimer@mountpolley.com	250-790-2215
Mount Polley Mining Corporation	Dale Reimer	Afrye@mountpolley.com	250-790-2215
	Art Frye	rbrown@mountpolley.com	250-790-2215
	Ryan Brown	KMcmahen@mountpolley.com	250-790-2215
	Katie McMahan	Lmoger@mountpolley.com	250-790-2215
	Luke Moger	Darryl.Hussey@dfo-mpo.gc.ca	250-851-4962
Fisheries and Oceans Canada	Darryl Hussey	srobertson@imperialmetals.com	604-488-2669
Imperial Metals	Steve Robertson	dparsons@imperialmetals.com	604-488-2652
	Don Parsons	ahaynes@golder.com	604-296-4217
Golder Associates	Andy Haynes		
Distribute Meeting Minutes & Materials Also to:			
Williams Lake Indian Band	Chief Ann Louie	ann.louie@williamslakeband.ca	250-296-3507
	Willie Sellars	willie.sellars@williamslakeband.ca	250-296-3507
Soda Creek Indian Band (Xat'sull First Nation)	Chief Bev Sellars	b.sellars@xatsull.com	250-989-2323
	Donna Dixon	nrexecasst@xatsull.com	250-989-2323
Ministry of Forests, Lands and Natural Resource Operations	Robin Hoffos	Robin.Hoffos@gov.bc.ca	250-398-4744
Ministry of Environment	Shelley Metcalfe	Shelley.Metcalfe@gov.bc.ca	604 582-5332

AGENDA

MPMC – Regional Mine Development Review Committee (RMDRC)

Mount Polley Mine – 2nd Floor Boardroom

11/5/2014

9:00am

Meeting called by: RMDRC

Mount Polley Mine Update

- Operations Update
 - o Tailings Storage Facility Stabilization
 - o Polley Lake Water Level Reduction
 - o Polley Lake Plug
 - o Tailings Storage Facility Buttressing
- Hazeltine Creek/Quesnel Lake Restoration
- Geotechnical Investigation

Site Water Management

- Current Infrastructure and Water Management
- Current Water Storage
 - o Springer Pit
- Short-Term Strategy
 - o Springer Pit
 - o Tailings Storage Facility Construction
- Water Treatment

Tailings Storage Facility Remediation

- Golder Presentation

Mine Planning

- Resuming of Mining and Milling Operations

Permitting Forecast

- Tailings Storage Facility Buttressing
- Tailings Storage Facility Breach Repair
- Resumption of Milling Operations (Temporary)
- Renewed Operation Permit (Long-Term)
 - o Tailings Storage Facility Use (Long-Term)
 - o Water Treatment

From: [Luke Moger](#)
To: [Adams, Rick MEM:EX](#); [Andy Haynes \(ahaynes@golder.com\)](#)
Cc: [Demchuk, Tania MEM:EX](#); [Don Parsons](#)
Subject: RE: Raw Geotechnical Data to Support Detailed Application for Breach Repair, and Dec 5 MDRC Meeting
Date: Wednesday, November 26, 2014 1:55:06 PM

Hi Rick;

Following up on our conversations today, I thought I would make sure to capture responses to your e-mail below.

- 1) Yes, Golder is provided raw data from the geotechnical investigation program on site.
- 2) No, is not anticipated that any of this raw data will be provided as part of the permit application submission; however, interpretation completed by Golder of the data they have reviewed is included.
- 3) Raw data from the investigation that is 'owned' by MPMC (Golder), MEM (Klohn Crippen Berger) and the Panel (Thurber); thus, sharing of this data is not at the sole discretion of MPMC. As discussed, there would need to be some conversation held around confidentiality agreements in regards to the sharing of this data outside of the investigation parties. In principle (understanding that confidentiality agreements would be in place), MPMC would be willing to share raw data over which it has 'ownership'; this would include geophysics (seismic/resistivity) and cone penetration data.
- 4) Yes, we are aiming to have the permit application package in by the end of the week.
- 5) Yes, the December 5th, 2014 MDRC meeting in Williams Lake would work for us, but I don't know if we can host an online 'shared' meeting if being held at a government location (due to internet access limitations).

I trust that aligns with the conversations that we had today – please let me know if there is something that you feel is misrepresented.

Kindest Regards,

Luke Moger, PMP

Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Adams, Rick MEM:EX [mailto:Rick.Adams@gov.bc.ca]
Sent: November-26-14 8:11 AM
To: Luke Moger; Andy Haynes (ahaynes@golder.com)
Cc: Demchuk, Tania MEM:EX
Subject: Raw Geotechnical Data to Support Detailed Application for Breach Repair, and Dec 5 MDRC Meeting

Luke/Andy: I believe during the Nov 5 MDRC meeting Andy stated that Golder is being provided the

raw data from the geotechnical investigation (drilling) into the cause of the breach.

Please confirm if that is true. Second, both Chris Carr and Jim Kuipers have asked what data package will be provided with the detailed application for the breach repair. Further, both Chris Carr and Jim Kuipers have asked to be provided the raw data from the geotechnical investigation, and any other data, being used to inform Golder's design of the breach repair, as soon as possible, and in advance of the application submission if possible, so they can begin to review that data and further support expediting this review process. If there is any confidentiality provisions regarding access to that data, please advise as well.

Also, can you please confirm the detailed application package will still be submitted to MEM by the end of this week? Further to that, if so, then to continue expediting this process, MEM would like to schedule an MDRC meeting for the afternoon of Friday, December 5 in Williams Lake. Can you confirm your availability and readiness to present to the committee on that date? Can your GoTo meeting arrangements be set up from a provincial government worksite, or does that have to be set up from a Mount Polley site?

Please advise.

Rick Adams, RPF
Inspector of Mines
2nd Floor, 441 Columbia Street, Kamloops, BC V2C 2T3
Telephone: 250-828-4583

All electronic client submissions must be submitted to MMD-Kamloops@gov.bc.ca

From: Demchuk, Tania MEM:EX
To: Adams, Rick MEM:EX; (Aaron.Higginbottom@williamslakeband.ca); Amy Crook (amy@fairmining.ca); Andy Haynes (ahaynes@golder.com); ann.louie@williamslakeband.ca; Art Frye; Awmack, Ken AGRI:EX; b.sellers@xatsull.com; Birtles, Robert; Bunce, Hubert ENV:EX; Chris Carr s.22 Dale Reimer (dreimer@mountpolley.com); Darryl Hussey (Darryl.Hussey@dfo-mpo.gc.ca); Don Parsons; Donna Dixon; Doug Watt (dwatt@telus.net); Doyle, Carina MEM:EX; Fenwick, Leigh-Ann ENV:EX; Gash, Michael ABR:EX; Hoffos, Robin FLNR:EX; Howe, Diane J MEM:EX; Huska, Stephanie ENV:EX; Jacinda Mack (miningcoordinator@nstq.org); Jacinda Mack s.22); Janis Bell (jbell@cariboord.bc.ca); Jennings, Harry D FLNR:EX; Jim Kuipers (jkuipers@kuipersassoc.com); Joan Sorley (jsorley@cariboord.bc.ca); Julia Banks (nrmanager@xatsull.com); Katie McMahan (KMcmahan@mountpolley.com); Kerley, Jason F FLNR:EX; Luke Moger; Metcalfe, Shelley ENV:EX; Morris, Tricia ABR:EX; Rick Holmes (carenvir@wlake.com); Rothman, Stephen MEM:EX; Ryan Brown; Steve Robertson; Vanderburgh, Ken FLNR:EX; Weir, David J FLNR:EX; Willie Sellars (willie.sellars@williamslakeband.ca)
Subject: MDRC Referral: Mount Polley Application for Breach Repair for Freshet
Date: Saturday, November 29, 2014 12:46:00 PM

Hello Mine Development Review Committee,

Please find below a link to Mount Polley Mining Corporation's application for the dam breach repair for spring freshet. This link is also embedded in the attached cover letter, submitted to the Ministry of Energy and Mines to accompany the application package.

[1413803-008-R-Rev0-2000-2015 Freshet Embankment Design 28NOV_14.pdf](#)

You are invited to review this application and submit written comments to MDRC chair Rick Adams (Rick.Adams@gov.bc.ca) with a cc to me (Tania.Demchuk@gov.bc.ca), by the end of the day on

Monday December 8th, 2014.

A MDRC meeting is scheduled for Friday December 5th in Williams Lake to discuss this application. The meeting will be from 1:00 to 4:30 pm, in the Cariboo Room at 540 Borland Street; conference call information will be provided. Please ensure you have reviewed the application in advance of this meeting. This will be technical meeting that will focus on the breach repair application. In addition to MDRC reviewers, the company and Golder Associates will be present to answer questions about the application and breach repair design. A formal meeting invitation will be sent out early next week.

Best Regards,

Tania

Tania Demchuk, MSc, PGeo

Sr Environmental Geoscientist / Mount Polley Project Manager
Mines and Mineral Resources Division
Ministry of Energy and Mines
250-952-0417

From: Adams, Rick MEM:EX
Sent: Wednesday, November 26, 2014 4:49 PM
To: (Aaron.Higginbottom@williamslakeband.ca); Adams, Rick MEM:EX; Amy Crook (amy@fairmining.ca); Andy Haynes (ahaynes@golder.com); ann.louie@williamslakeband.ca; Art Frye; Awmack, Ken AGRI:EX; b.sellers@xatsull.com; Birtles, Robert; Bunce, Hubert ENV:EX; Chris Carr s.22 ; Dale Reimer (dreimer@mountpolley.com); Darryl Hussey (Darryl.Hussey@dfo-mpo.gc.ca); Demchuk, Tania MEM:EX; Don Parsons; Donna Dixon; Doug Watt (dwatt@telus.net); Doyle, Carina MEM:EX; Fenwick, Leigh-Ann ENV:EX; Gash, Michael ABR:EX; Hoffos, Robin FLNR:EX; Howe, Diane J MEM:EX; Huska, Stephanie ENV:EX; Jacinda Mack (miningcoordinator@nstq.org); Jacinda Mack s.22

Janis Bell (jbell@cariboord.bc.ca); Jennings, Harry D FLNR:EX; Jim Kuipers (jkuipers@kuipersassoc.com); Joan Sorley (jsorley@cariboord.bc.ca); Julia Banks (nrmanager@xatsull.com); Katie McMahan (KMcmahan@mountpolley.com); Kerley, Jason F FLNR:EX; Luke Moger; Metcalfe, Shelley ENV:EX; Morris, Tricia ABR:EX; Rick Holmes (carenvir@wlake.com); Rothman, Stephen MEM:EX; Ryan Brown; Steve Robertson; Vanderburgh, Ken FLNR:EX; Weir, David J FLNR:EX; Willie Sellars (willie.sellars@williamslakeband.ca)

Subject: Update: MDRC Meeting Date Changed to Afternoon of December 5, 2014 to Review Detailed Application for Breach Repair Phase of Mount Polley Freshet Project

Please be advised:

- Mount Polley Mining Corporation has confirmed the detailed application for the breach repair phase of the freshet project will be submitted to MEM by the end of this week;
- MEM will distribute the application package to the MDRC membership upon receipt- please expect an email with attachments from Tania Demchuk or myself later this week;
- MDRC will be called to convene a meeting from 1:00 to 4:30 pm Friday, December 5, in the Cariboo Room at 540 Borland Street, Williams Lake, for Mount Polley Mining Corporation to present their detailed application; and
- We expect this will be a highly technical, and largely geotechnical, discussion of the design specifics for the breach repair. Some agencies may choose not to participate if they deem they have enough of an understanding of the project following the conceptual design presented to MDRC on Nov 5.

Please put this as a place holder in your calendars at this time if you plan to participate in person, or by calling in. Additional information will be provided after we receive the detailed application package.

Rick Adams, RPF
Inspector of Mines
2nd Floor, 441 Columbia Street, Kamloops, BC V2C 2T3
Telephone: 250-828-4583

All electronic client submissions must be submitted to MMD-Kamloops@gov.bc.ca

From: Demchuk, Tania MEM:EX
To: ["Luke Moger"; Ryan Brown](#)
Cc: [Adams, Rick MEM:EX](#); [Bunce, Hubert ENV:EX](#); [Don Parsons](#); [Steve Robertson \(srobertson@imperialmetals.com\)](mailto:srobertson@imperialmetals.com)
Subject: Breach repair application - missing information
Date: Wednesday, December 3, 2014 11:49:00 AM
Importance: High

Luke and Ryan,

I have reviewed application for repair of the perimeter embankment for freshet 2015. In that review, I note that the plans for site-wide water management (or water treatment), as well as information related to ensuring that the construction materials will be non-PAG have not been provided. While the geotechnical design for the repair forms the critical piece to the application, the supporting information is equally important to enable reviewers to understand how the site as a whole will be managed with respect to spring freshet.

These information requirements were outlined in email correspondence to MPMC dated October 3 in advance of preliminary discussions, and again by email on October 22 in follow-up to the October 15 meeting at the MEM Victoria office. Luke, I note that you were not included in the distribution list for these two emails. Similar questions and comments were also raised (by others) during the MDRC meeting held at the mine site on November 5. Please provide this information asap to allow for a complete review of the proposal for freshet water management. I imagine that in addition to the geotechnical design, these two items will be raised for discussion during the MDRC meeting on Friday.

I will formalize any additional written comments that I have following the MDRC meeting this Friday, December 5 in Williams Lake.

Please let me know if you have questions about the above. I am travelling for the rest of the week but you can send me an email and I can call you.

Regards,
Tania

Tania Demchuk, MSc, PGeo
Mount Polley Project Manager
Sr Environmental Geoscientist
Mines and Mineral Resources Division
Ministry of Energy and Mines
250-952-0417

From: [Luke Moger](#)
To: [Howe, Diane J MEM:EX](#)
Cc: [Demchuk, Tania MEM:EX](#); [Adams, Rick MEM:EX](#); [Dale Reimer](#); [Don Parsons](#)
Subject: RE: 2015 Freshet Embankment Application
Date: Wednesday, December 10, 2014 4:40:14 PM
Attachments: image001.png

Dear Diane;

Please find attached supporting documentation to the 2015 Freshet Embankment Design application submitted to MEM on November 28th, 2014 (e-mail included below) as requested by Tania Demchuk in an e-mail from December 3rd, 2014 (please find a copy of this ep-mail attached).

In response to MEM's request, please find attached the following supporting documentation:

- 1) Request for supporting information from MEM (Tania Demchuk)
- 2) Site Water Management Update
- 3) Materials Management Update
- 4) An e-mail sent to FLNRO (Jason Kerley) in regards to consultation activities completed to date

Kindest Regards,

Luke Moger, PMP

Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Luke Moger
Sent: November-28-14 7:02 PM
To: Howe, Diane J EMNG:EX (Diane.Howe@gov.bc.ca)
Cc: Demchuk, Tania EMNG:EX (Tania.Demchuk@gov.bc.ca); rick.adams@gov.bc.ca; Dale Reimer; Don Parsons
Subject: 2015 Freshet Embankment Application

Dear Diane;

Please find attached a cover letter outlining Mount Polley Mining Corporations 2015 Freshet Embankment Design application.

As outlined in the letter, the design package is available for download through the link provided (also included below for ease of following):

[1413803-008-R-Rev0-2000-2015 Freshet Embankment Design 28NOV 14.pdf](#)

If you should have any questions or comments, please don't hesitate to contact me.

Kindest Regards,

Luke



Direct: +1 (250) 790-2215 ext. 2113

Fax: +1 (250) 790-2613

E-mail: LMoger@MountPolley.com

From: Demchuk, Tania MEM:EX
To: ["Jim Kuipers"](#); ["Dale Reimer"](#); ["Don Parsons"](#); ["Luke Moger"](#); ["Ryan Brown"](#); ["Aaron Higginbottom"](#); ["Willie Sellars"](#); ["Douglas \(Mobile\) Watt"](#); ["Eldridge, Terry"](#); ["Andy Haynes"](#); brian@brianolding.com; ["J. Mack"](#); ["Chris Carr"](#)
Cc: [Adams, Rick MEM:EX](#)
Subject: RE: DRAFT #2 - Mount Polley draft permit - reflecting Dec 11 discussion
Date: Monday, December 15, 2014 1:50:00 PM

Hi Jim,

Rick forwarded this email to me, as I too appear to be having email issues. As you noted, my comments in response to Doug Watt also address your comments below. Your third point has been addressed through revision of the references in the draft permit.

Thank-you for sending in your follow-up comments. We will be distributing information (e.g. finalized permit amendment, recommendations report, table of due dates) to the entire MDRC once a decision has been made.

Best Regards,
Tania

Tania Demchuk, MSc, PGeo
Mount Polley Project Manager
Sr Environmental Geoscientist
Mines and Mineral Resources Division
Ministry of Energy and Mines
250-952-0417

From: Jim Kuipers [mailto:jkuipers@kuipersassoc.com]
Sent: Monday, December 15, 2014 10:40 AM
To: Demchuk, Tania MEM:EX; 'Dale Reimer'; 'Don Parsons'; 'Luke Moger'; 'Ryan Brown'; 'Aaron Higginbottom'; 'Willie Sellars'; 'Douglas (Mobile) Watt'; 'Eldridge, Terry'; 'Andy Haynes'; brian@brianolding.com; 'J. Mack'; 'Chris Carr'
Cc: Adams, Rick MEM:EX
Subject: RE: DRAFT #2 - Mount Polley draft permit - reflecting Dec 11 discussion

Tania and Rick,

Sorry for my late reply. I realize you are probably in the last stages of finalizing the permit so am largely providing these comments for folks to consider as this and other matters go forward.

1. MPMC should be encouraged to allow for observers to the IERP technical meetings as well as to include representatives from both the MEM and First Nations on the IERP. As was discussed, this is commonly done in other jurisdictions by agreement with the project proponent and would greatly benefit facilitation of future mining permits and operations.
2. As demonstrated by comments provided by myself and Doug Watt, the CDA Dam hazard classification is subject to perception and bias and from the standpoint of the community and First Nations the Mt Polley tailings facility should be classified as Significant rather than High. As this does not change the immediate design features of the breach repair this may

not be of significance to this permit, but it should be realized that this matter needs to be further discussed and resolved before future use of the TSF can be considered and we believe a Significant classification is warranted for this facility based on demonstrated rather than previous hypothetical considerations.

3. It appears the draft is still referencing *Canadian Dam Association, Canadian Dam Safety Guidelines (2014)* The reference should be 2007, and it should also include reference to the *Technical Bulletin: Application of Dam Safety Guidelines to Mining Dams (2014)*

Jim K

From: Demchuk, Tania MEM:EX [<mailto:Tania.Demchuk@gov.bc.ca>]

Sent: Thursday, December 11, 2014 7:27 PM

To: Dale Reimer (dreimer@mountpolley.com); Don Parsons; Luke Moger; Ryan Brown; Aaron Higginbottom; Jim Kuipers; Willie Sellars (willie.sellars@williamslakeband.ca); Douglas (Mobile) Watt; Eldridge, Terry; Andy Haynes (ahaynes@golder.com); brian@brianolding.com; J. Mack; Chris Carr

s.22

Cc: Adams, Rick MEM:EX

Subject: DRAFT #2 - Mount Polley draft permit - reflecting Dec 11 discussion

Hi All,

Thank-you all for your time and discussion this afternoon. Please find attached a second draft of the permit for TSF Breach Repair. Edits have been made and comments added to reflect this afternoon's discussion. There are also some additional edits from ongoing internal review.

Comments and any additional edits should be added to the document using track changes, or submitted in writing via email. Please ensure these are sent to me with a cc to Rick Adams by **end of day Friday December 12** (tomorrow!).

Jacinda and Aaron – I do not have email information for Kirk or Thomas. Please forward this draft to them if appropriate.

Please call me if you have any questions.

Tania

Tania Demchuk, MSc, PGeo

Mount Polley Project Manager

Sr Environmental Geoscientist

Mines and Mineral Resources Division

Ministry of Energy and Mines

250-952-0417

From: [Luke Moger](#)
To: [Jim Kuipers](#); "Chris Carr"
Cc: [Demchuk, Tania](#) MEM:EX; [Adams, Rick](#) MEM:EX; [Don Parsons](#)
Subject: RE: Technical specifications TSF Breach Repair
Date: Tuesday, January 13, 2015 9:40:28 PM
Attachments: [image001.png](#)

Hi Jim;

Thank you for the comments – I think that we should be able to coordinate a site tour from our end with some advanced notice; please let me know how these discussions go. With some advanced notice we should also be able to make Golder available for a discussion of new data and corresponding design implications, if required. Of note, there is a site tour planned for the FN Implementation Committee and FN Breach Working Group planned for January 22nd, 2015 (I understand that you are unable to attend unfortunately) – we can add another more design review-targeted tour if desired.

In regards to the roll-out of the expert panel reports etc., MPMC would also be interested in having some clarification as outlined.

Kindest Regards,

Luke Moger, PMP

Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Jim Kuipers [<mailto:jkuipers@kuipersassoc.com>]
Sent: January-09-15 12:56 PM
To: 'Chris Carr'; Luke Moger
Cc: 'Demchuk, Tania' EMNG:EX; rick.adams@gov.bc.ca; Don Parsons
Subject: RE: Technical specifications TSF Breach Repair

From: Jim Kuipers [<mailto:jkuipers@kuipersassoc.com>]
Sent: Friday, January 09, 2015 11:35 AM
To: 'Chris Carr'; 'Luke Moger'
Cc: 'Demchuk, Tania' EMNG:EX; 'rick.adams@gov.bc.ca'; 'Don Parsons'
Subject: RE: Technical specifications TSF Breach Repair

Folks,

The data and other info are likewise appreciated and I've reviewed only part so far and plan on getting caught up by early next week and will provide any feedback I have.

I'm trying to do some scheduling and am thinking it might be good for us to get together at some point for a site tour, construction update, and review of the additional data that's been coming in. As I recall we discussed this but can't recall what we decided.

If you have any thoughts, particularly as to timing, it would be appreciated. Also, if you have any insights as to the roll-out of the expert panel report or other reports I'd be interested as trying to anticipate how to address these relative to both the TSF breach repair as well as other aspects with the FNs is a challenge.

Jim K

From: Chris Carr s.22
Sent: Friday, January 09, 2015 8:51 AM
To: 'Luke Moger'
Cc: 'Demchuk, Tania EMNG:EX'; rick.adams@gov.bc.ca; 'Don Parsons'; 'Jim Kuipers'
Subject: Technical specifications TSF Breach Repair

Hi Luke,

The technical specifications will be reviewed by MEM in due course.

Regards,

Chris Carr, P.Eng.
Senior Geotechnical Engineer
On behalf of the BC Ministry of Energy and Mines
Tel: 250 544-0763
Email: s.22

From: Luke Moger [<mailto:lmoger@mountpolley.com>]
Sent: December-26-14 10:35 PM
To: Jim Kuipers (jkuipers@kuipersassoc.com); 'Chris Carr' s.22
Cc: Demchuk, Tania EMNG:EX (Tania.Demchuk@gov.bc.ca); rick.adams@gov.bc.ca; Don Parsons
Subject: FW: Stability Analyses and Embankment Design Update [M-200 Permit - Approccing the TSF Breach Repair and Perimeter Embankment Buttress Design for 2015 Embankment]

Jim and Chris;

Please find attached (as referenced below) the 2015 Freshet Management Embankment Technical Specifications.

Kindest Regards,

Luke Moger, PMP

Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113

Fax: +1 (250) 790-2613

Email: LMoger@MountPolley.com

From: Luke Moger

Sent: December-26-14 10:31 PM

To: Howe, Diane J EMNG:EX (Diane.Howe@gov.bc.ca)

Cc: Demchuk, Tania EMNG:EX (Tania.Demchuk@gov.bc.ca); rick.adams@gov.bc.ca; Don Parsons; Dale Reimer

Subject: RE: Stability Analyses and Embankment Design Update [M-200 Permit - Approccing the TSF Breach Repair and Perimeter Embankment Buttress Design for 2015 Embankment]

Dear Diane;

As per clause C.2.(b) as set out in the December 17, 2014 M-200 Permit Amendment Approving TSF Breach Repair and Perimeter Embankment Rockfill Buttress Design for 2015 Freshet, please find attached a document with the construction specifications and QA/QC as required for submission prior to initial embankment construction.

If you should have any questions or comments, please don't hesitate to contact me.

Kindest Regards,

Luke



Luke Moger, PMP

Project Engineer, Mine Operations
Mount Polley Mining Corporation
PO Box 12
Likely, BC V0L 1N0
Canada

Direct: +1 (250) 790-2215 ext. 2113

Fax: +1 (250) 790-2613

E-mail: LMoger@MountPolley.com

From: [Luke Moger](#)
To: [Demchuk, Tania MEM:EX](#)
Cc: [Adams, Rick MEM:EX](#); [Howe, Diane J MEM:EX](#); [Don Parsons](#); [Dale Reimer](#)
Subject: RE: January 31 document submission - confirmation of receipt
Date: Wednesday, February 4, 2015 11:28:21 AM
Attachments: [image001.png](#)

Hi Tania;

Thank you for the follow up. I had not circulated this past the original e-mail to MEM yet; could you please advise who the designated contact(s) would be for the CRD and Likely? Is our Breach Technical Working Group (NR Managers for SCIB and WLIB and NsTQ Mining Coordinator) acceptable to MEM for the FN information transfer?

Kindest Regards,

Luke Moger, PMP

Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Demchuk, Tania MEM:EX [mailto:Tania.Demchuk@gov.bc.ca]
Sent: February-03-15 6:05 PM
To: Luke Moger
Cc: Adams, Rick MEM:EX; Howe, Diane J MEM:EX; Don Parsons; Dale Reimer
Subject: January 31 document submission - confirmation of receipt

Hi Luke,

Thank-you for the on-time submission of the following documents:

1. Adaptive Management Plan as per condition C.1.(e) of the December 17, 2014 permit amendment
2. Mine Site Water Monitoring Program as per condition D.2.(a) and C.4.(b) of the December 17, 2014 permit amendment.

These documents will be reviewed and follow-up will be completed as required.

Please confirm that the permit requirement to share reports with First Nations, Cariboo Regional District and Community of Likely has been fulfilled with respect to sharing of these reports (as per condition A.6.).

Regards,
Tania

From: Luke Moger [mailto:lmoger@mountpolley.com]

Sent: Saturday, January 31, 2015 12:06 AM

To: Howe, Diane J MEM:EX

Cc: Demchuk, Tania MEM:EX; Adams, Rick MEM:EX; Don Parsons; Dale Reimer; Eldridge, Terry; Haynes, Andy (Andy_Haynes@golder.com)

Subject: Adaptive Management Plan [M-200 Permit - Approccing the TSF Breach Repair and Perimeter Embankment Buttress Design for 2015 Embankment]

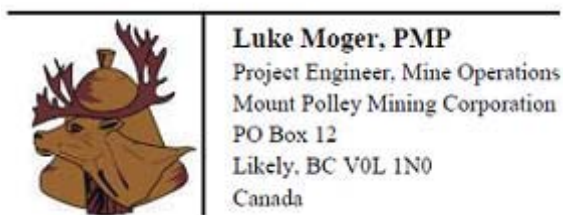
Dear Diane;

As per clause C.1.(E) as set out in the December 17, 2014 M-200 Permit Amendment Approving TSF Breach Repair and Perimeter Embankment Rockfill Buttress Design for 2015 Freshet, an Adaptive Management Plan has been prepared by the Engineer of Record, Golder Associates, for Mount Polley Mining Corporation – please find a copy attached.

If you should have any questions or comments, please don't hesitate to contact me.

Kindest Regards,

Luke



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E-mail: LMoger@MountPolley.com

Meeting Summary Notes

MEM/MOE/MPMC Conference Call

Date: February 4, 2015

Meeting Objective: Status update from MPMC on response to application screening comments and discussion of surplus water discharge

Attendees: MPMC: Don Parsons (DP), Luke Moger (LM), Ryan Brown (RB); Golder: Andy Haynes (AH), Terry Eldridge (TE), Lee Nikl (LN), Rob Millar (RM), Jordana Van Deest (JVD); MOE: Hubert Bunce (HB), Leigh-Ann Fenwick (LAF), Brian Yamelst (BY), Deb Epps (DE); MEM: Diane Howe (DH), Tania Demchuk (TD), Rick Adams (RA)

Key Messages:

- MPMC is developing an application for discharge of water from the site. The proposal being pursued right now is a pipeline with diffuser in Quesnel Lake. At a conceptual/scoping level, there is some confidence that this plan would meet MOE requirements. A lot of detailed work is now required to define plan and complete modelling. As part of such an application, MOE requires presentation of options to support that the proposed plan is the best option. There must be an assessment of best achievable technology. It is not clear right now that an fulsome options assessment has been completed.
- The timelines being proposed for receipt of discharge permit are very optimistic. MPMC would like the discharge permit in hand for September, with required construction commencing this summer; MOE has stated it will be a minimum 6 month review process; Golder requires approximately 3 months to prepare the application.
- MEM requires clarity regarding the proposed restricted restart, and specifically regarding mid- and long-term water balances and water management plans. MEM emphasized they cannot accept continuing use of the TSF for water storage. MEM will be sending further follow-up comments separately; however, it is clear that MEM will not be in a position to issue a permit by April 1, 2015 as requested by MPMC. MEM again advised MPMC they must contact the EAO to ensure their proposed restricted restart of operations, and any further mine plans going forward, remain in compliance with MPMC's EAO Certificate.
- MPMC would like to proceed with the applications for restricted restart, and would like to separate the review of those applications from the review of the application for discharge to the receiving environment. Government needs to provide clarity around if that is possible.

Action Items:

- Provision of summary notes for review (TD/RA) – complete (this document)
- MEM to provide additional comments regarding the restart application (MEM) - complete
- Golder has requested additional clarification from MOE on best achievable technology (MOE) - complete

Meeting notes:

- DP: Most important point is the need for long term water management.
 - Golder is engaged to look at passive water discharge options. Concept to use pipeline to discharge water to Quesnel Lake with diffuser; this will address the issue of surplus water and need for storage on the mine site. Initial conceptual modelling indicates that water quality guidelines can be achieved within a specified initial dilution zone from the diffuser.
 - More detailed analysis of this concept is required to assess volume, discharge point, and site water storage requirements.
 - Concept has been presented to MOE, who indicate this could be a viable option. An EMA permit amendment/update would be required. It is suggested that this be done in conjunction with the M-200 permit amendment.
 - MPMC and Golder are moving forward with more detailed modelling and analysis. They have completed initial modelling with Springer Pit average water quality, tailings supernatant water, central collection sump water, and any source would meet water quality guidelines after diffusing into Quesnel Lake.
 - This would be a passive system and would be designed for closure scenarios.
 - Indicated that construction of the pipeline could occur over the summer and discharge by September (2015) to address the issue of water surplus in the fall of 2015. It was noted there will need to be 1-2 million m³ of water maintained on site to meet operational requirements.
- TD: A plan to discharge water and avoid use of the TSF for surplus water storage address one of MEM's key concerns regarding use of the TSF for water storage. Is the suggested timeline realistic (for the permit review process and in consideration of First Nations and public consultation)?
- HB: Timelines are rather optimistic. The permitting process for MOE would be at least 6 months to review this significant application; there would be significant First Nations and public consultation processes required.
 - All available options need to be considered; the application must present the potential alternatives and what is the best achievable technology (as per MOE policy). This point was reiterated throughout the call.
- DP: MPMC requests that the discharge application be kept separate (separate review process) from the restart application because of timelines. The restricted restart and discharge of tailings to the Springer Pit is a separate application.
 - MEM notes that these issues are related, as the restart application highlights the surplus water management issue and use of the TSF to store water. The review of an application for discharge to Quesnel Lake will be challenging.
 - TE: spoke to closure scenario considerations. Pond would be 500,000 to 3 million m³ depending on time of year. Focus towards a dry closure scenario. For closure, the pond would be pushed towards the south side of the embankment so that a spillway in natural ground could be constructed. There are timeline issues with developing a design too early, there is time needed to review all the reports and consider those in the

design. The investigation reports are out, there is lots of review work to do, and then provide an appropriate design with factors of safety satisfactory to the regulators.

- DP: to avoid large water storage in TSF, they could end up needing water storage in a separate pond.
- TD: This site must have a discharge permit. MEM will not approve the TSF for long term storage of discharge water. There is recognition that the time needed to get a discharge permit, and the time at which you need to discharge, are not well aligned. Do you have treatment plans for that interim period?
- DP: Reverse osmosis water treatment creates an issue with brine management. It would take as long to construct the reverse osmosis treatment plant as it would to construct the pipeline to Quesnel Lake. The short and long range plan are both to discharge to Quesnel Lake.
- TD: What happens if discharge permit is not in place (and Springer pit capacity is reached)?
- DP: Then look at storage in the TSF. No place to put treatment brine other than Springer Pit.
 - TD: any option to have lined cell in TSF for brine storage (brainstorming, not suggesting this is the right solution)
- DP: Want to avoid contaminant build-up on the minesite.
- HB: discharge to Quesnel Lake through a diffuser is not the best available practice. What review of alternate technology solutions have been done.
 - DP: we have just discussed it internally with Golder, can look at options, don't know why it would take 6 months to get a discharge permit to Quesnel Lake, can manage water on site until 2016 freshet.
- TD: can you outline how you would manage water on site again until 2016.
- DP: pump during freshet this year, anything that can't pump from the central collection sump gets stored in the TSF behind the breach repair, pump to Springer Pit but it can only take so much, at 1030 m leads to exfiltration, then 1030 m to 1050 m exfiltrates to ground water to Bootjack Lake. After freshet 2016 reach capacity of storing water at 5-7 million m3 per year water surplus. Breach repair would get elevated 3-4 m by September, but if there was some reason why the Panel Report and the Klohn Report dealing with the GLU identified issues then need an alternative in our back pocket – which is a closure plan for the mine with a pipeline discharge to Quesnel Lake. We are trying to set up for closure.
- TD: Would the 3-4 m lift on the breach repair be to get the TSF to store water or tailings?
- DP: The lift on the breach repair would allow full mill production capacity to August 2016 with phased lifts to the tailings facility with appropriate buttressing to provide the factor of safety and Mount Polley has to also be prepared in the event they have to shut the mine down.
- LN: have done the feasibility work to show that a pipeline diffuser will meet the Metal Mine Effluent Regulation, the requirements normally in a discharge permit, and dilution zone requirements. They have run it by Hubert and Deb at MOE.
 - HB: In addition to the Independent Panel recommendation for best available technology, MOE has a best available technology policy so that standard still applies.
 - LN: the best technology for a closed mine is a system that is a passive system.

- HB: It has not been made obvious to him that all options have been fully considered. Economics does factor in but assessment needs to show that the water from Mount Polley meets water quality objectives at the IDZ, and that meeting the water quality objectives in the future is a viable option
- DP: we did get a permit it would be conditional on meeting water quality objectives, sampling requirements, and the first thing would be to confirm the design.
- DE: Given the sensitive situation all technology options need to be considered, analyzed, and provided to MOE
- LN: they have presented the best option only at this time due to the tight timelines, they appreciate all options need to be presented, but they still also have the end game – even if the mine closes, the rain still falls, and the mine still needs to discharge.
- DE: It's not just MOE, it's also being able to answer to First Nations and communities.
- LN: Mount Polley has previously considered reverse osmosis in detail, turn around in construction times, other options are not that good given the characteristics we have here, we know the challenge will be consultation, there will be strong concerns, we have concerns about the timelines involved, what about an Approval to get rid of water if things go for a shit.
- HB: MOE wouldn't typically provide an Approval on an existing permitted site, but the authorization mechanism is not critical, but the need for the authorization is.
- DP: Mount Polley wants early approvals, and an opportunity to determine the appropriate size and location of the diffuser.
- HB: Previously we had discharges to Hazeltine Creek, Bootjack Creek(??), and the reverse osmosis proposal. These were all previously considered and are now proving inadequate. We need to ensure this application is not inadequate.
- DP: Proposed plan sets the mine up for closure, as there is too much uncertainty around the TSF, so we are looking further forward to longer term and closure. Want to push forward even though the public will try to trip them up.
We think the best technology doesn't involve reagents, trucking of chemicals, brine, etc. It doesn't make sense to haul truckloads of reagents to remove a level of contaminants that doesn't cause pollution.
- LN: best available technology policy is not very clearly articulated, and we need to define what that policy looks like for this application.
- HB: agrees on the approach on what the receiving environment numbers will be, but are looking at what the best achievable technology is in this situation. Going to have to have a solid application package before it is released to the public. Need to address the alternative up front to cut down on the consultation issues is critical.
- RA: Questioned level of water analysis done so far.
- LN: Looked at water sources from 3 area: TSF 2013 and 2014 data; mine contact water from the TSF seepage pond; and Springer Pit post breach. Copper concentration was the highest in Springer Pit. Looked at 95th percentile for Springer Pit and background chemistry of Quesnel Lake. Then came up with predictions that show they meet water quality objectives within 25 m of the diffuser on the outfall pipe. That is with Springer Pit, which had the highest concentration of copper. That is assuming upstream treatment involves just solids removal through pond or sand filtration, and also scoped it to provide wetland treatment involving vertical or horizontal flow.

- DP: They have had Hazeltine Creek discharge of 1.7 million m³. Thought they could get to 3 million m³ (with RO treatment) but that was considering water volumes during operation and not contemplating closure at that time. Now they have to deal with the entire contact water volume which increases to 5 million m³ and can't go into Hazeltine Creek. Hazeltine Creek limit was 35% of total water volume which would now be exceeded so they have to go to Quesnel Lake.
- DP: Quesnel Lake is capable of receiving 5 million m³ of discharge. The other options are off the table because the discharge levels have increased. He wants to move to pursuing this option as the preferred one.
- TD: MEM needs to look to MOE for their comments on the viability of that option.
- HB: MOE needs to see a much more detailed application in order to provide comment.
- LN: We need to understand what is needed to support the restart of restricted operations to move forward, because the beaver away will take 6 months.
- TD: is that 6 months to get the discharge permit submitted?
- LN: if MEM won't permit the restart until they have a MOE discharge permit, then that is different than what Mount Polley anticipated. Tetra Tech has a hydrological model for Quesnel Lake, and he needs to talk to them, they can do the near field and the far field modelling, and will provide far superior answers. Might be 3 months to compile the discharge application.
- TD: MEM agrees this needs to be a far superior application for restart. We are still unclear on the requirement for the 3-4 m lift on the TSF. Don said for operations. Does that mean for storage of tailings or water? Also, it was noted that at 1030 m Springer Pit interaction with ground water increases. Don seemed to indicate will still use Springer Pit at 1030 m elevation to 1050 m elevation. What is the impact on ground water on those levels? MEM needs to understand discharge permit timing.
- HB: Reminder that Hazeltine Creek mitigation work still needs to be done as well.
- LN: identified names of those leading that work and that work is plowing ahead anyways, this would involve additional resources brought in, they will comply with the pollution abatement order.
- TD: Don are you able to clarify what a restart application would look like and Mount Polley's response to the screening comments.
- LM: the main sticking point is water management and also closure planning and reclamation costing. We have been working on water balance with Golder.
- DP: with or without the restart of operations and tailings going into Springer Pit, the conversation is exactly the same.
- TD: will there be an application for a lift to the breach repair for the restart.
- DP: I would not put a lift on the breach repair to store water, don't want to store more water there than we need to operate, otherwise discharge.
- RB: stopping at 1030 m isn't the only option for Springer Pit. We could continue to fill more.
- TD: if the plan going forward has Springer Pit exceeding 1030 m then water chemistry and impacts to ground water needs to be addressed.

- RB: some of the work done does include that and can include contact water going in, won't see anything different than we have already seen for supernatant and contact water.
- TD: then that needs to be characterized in the application so reviewers can understand potential impacts on groundwater.
- DP: that is a lot of work. We need a water discharge solution within 6 months. Not storing water.
- TD: need to review timing - it is going to take 3 months to get an application submitted, and then at least 6 months to permit that, so a permit within 6 months is not realistic. That is why I am asking the questions on Springer Pit exceeding 1030 m, and on the breach lift. Given the information provided and that we do not have an accepted application in front of us, MEM is going to be able to issue a permit by April 1st.
- DP: requests to keep the 2 applications separate. Question on monitoring wells, have ways of monitoring ground water already, can start modelling for Springer Pit, has been done before.
- RB: not sure what the missing pieces are.
- RA: asked questions on water management beyond when Springer Pit fills in August and the TSF fills by December in their current application. Application cannot go through MDRC process until they speak to mid to long term water management
- DP: we had this discussion to understand whether the permitting will go ahead. Anything he puts in will be speculative because they don't know what schedule will come out of the Independent Panel Report. If he had to put a schedule in place, they will have a breach repair lift by September and a discharge application in place to have Mount Polley running at full production by October or otherwise shut down the mine.
- TP: concern is what sort of conservative design are the reports going to push them into to make the TSF safe, and will that make the mining operation uneconomic.
- DP: the restart is the key to keep people working while they get the permitting in place. They were already having discussions today that if they can't figure out the permitting process, they are laying off people and sending them home.
- TD: we need to go away and have a conversation with MEM's other reviewers, but we will commit to replying with additional requirements for an acceptable application. It is important to reiterate that you will not have an MEM permit by April 1st. Based on comments from MOE and their timelines, Mount Polley needs to work backwards and see how their timelines and site requirements align. We will provide notes on this meeting to you.
- HB: there is a linkage between the restart of operations and the discharge from the site, you need to have the one before the other, without the long term solution in view the restart is impossible.
More detail would be needed to assess the viability of that application but not sure if that is worth the lost month and a half of production.
- DP: The reason we put in the restart application is it didn't really matter whether we restart or not, we still need to have that same discussion about discharge.
- LN: This seems like a discussion about finding a month and a half.
- TD: This is about having a successful MDRC process.
- LN: For about a month and a half.
- RA: this is not about whether a month and a half of restart operation is going to be responsible for closing this mine or not. I heard Don say earlier that the economics of this operation continuing depends on whether the investigation reports push them to such a conservative design on the tailings facility that the operations becomes uneconomic.

- DP: we have Terry and Andy working on a conservative design, see no reason to suggest we won't be running, can run at a 3:1 buttress on the back of the dam, no reason it can't run, that would be our plan, and it is just how we tie these processes together to get them across the finish line. Doesn't see any show stoppers in the Independent Investigation Report. In discussion with Andy and Terry he doesn't see any reason not to go ahead, and if he had a discharge permit sooner than later it will give them better water management including a bigger beach and better placement for pond water management.

Other items:

- TD: has the Mount Polley independent engineering review board been established and have meetings yet.
- DP: the participants have accepted the invitation, Terry is doing up a TOR and agenda specific to the Mount Polley facility, and once completed, meetings will be held.
- TD: please make sure the company connects with the EAO as well. MEM has shared the restart application with them and MEM wants to remind Mount Polley they have the responsibility to meet with the EAO and ensure Mount Polley is in compliance with the EAO Certificate.
- DP: just digging out old documents.
- TD: Rick and Tania will summarize the meeting and provide to you and then provide MEM's added requirements for an acceptable restart application.

From: [Dale Reimer](#)
To: [Demchuk, Tania MEM:EX](#)
Subject: RE: Imperial Metals, MEM, MOE discussion of Mount Polley
Date: Tuesday, February 24, 2015 9:17:44 AM

Hi Tania: I am unable to attend due to previous commitments. Don Parsons and others from our head office will be our representatives. Regards: Dale



Dale Reimer
General Manager
Mount Polley Mining Corporation
Box 12 Likely, B.C. V0L 1N0
Ph. 250-790-2600
Cell 250-305-8530

-----Original Appointment-----

From: Demchuk, Tania MEM:EX [<mailto:Tania.Demchuk@gov.bc.ca>]
Sent: February-23-15 3:18 PM
To: Brian Kynoch; Steve Robertson; Don Parsons; Dale Reimer; Shoemaker, Wes ENV:EX; Halls, Lori D ENV:EX; Nikolejsin, Dave MEM:EX; Morel, David P MEM:EX; Bunce, Hubert ENV:EX
Subject: Imperial Metals, MEM, MOE discussion of Mount Polley
When: February-25-15 9:15 AM-12:15 PM (UTC-08:00) Pacific Time (US & Canada).
Where: 200-580 Hornby St, Vancouver

Hello All,

Please see the proposed agenda for this discussion below.

Brian – Please forward to any other staff or consultants on your team who should be in attendance.

AGENDA

Purpose: Discussion of Restricted Restart plans and/or Care and Maintenance plans

Objective: Understand plans for the site moving forward

1. Introduction – purpose of meeting (Dave N)
2. Discussion of proposed plan going forward based on information requirements set out by MEM and MOE (all)
3. Restricted Restart plan
4. Water management and discharge
5. Possible options (short-term?) and associated information requirements
6. Clarity regarding necessary information (BC Gov)
7. Timing of necessary information submission (Imperial Metals)
8. Care and Maintenance Planning (all)
9. Closure Management Manual
10. Closure or Temporary Closure Plan

11. Clarity regarding necessary information (BC Gov)
12. Timing of necessary information submission (Imperial Metals)
13. Next steps (all)
14. Alignment of communication strategy/public engagement
15. Request by First Nations for meeting ASAP with government and company to look at conditions under which a mine could restart and ongoing remediation efforts

Suggested Attendees:

MEM – Dave Nikolejsin, David Morel, Tania Demchuk

MOE – Wes Shoemaker, Lori Halls, Hubert Bunce

Imperial Metals – Brian Kynoch, Don Parsons, Steve Robertson, Dale Reimer, technical staff/consultants (Golder Associates – Lee Nikl)

Regards,

Tania

Tania Demchuk, MSc, PGeo

Mount Polley Project Manager

Sr Environmental Geoscientist

Mines and Mineral Resources Division

Ministry of Energy and Mines

250-952-0417

AGENDA
February 25, 2015
9:15 – 12:15
200-580 Hornby Street, Vancouver

Purpose: Discussion of Mount Polley Mine Restricted Restart plans and/or Care and Maintenance plans

Objective: Understand plans for the site moving forward

1. Introduction – purpose of meeting (Dave N)
2. Discussion of proposed plan going forward based on information requirements set out by MEM and MOE (all)
 - a. Restricted Restart plan
 - b. Water management and discharge
 - c. Possible options (short-term?) and associated information requirements
 - d. Clarity regarding necessary information (BC Gov)
 - e. Timing of necessary information submission (Imperial Metals)
3. Care and Maintenance Planning (all)
 - a. Closure Management Manual
 - b. Closure or Temporary Closure Plan
 - c. Clarity regarding necessary information (BC Gov)
 - d. Timing of necessary information submission (Imperial Metals)
4. Next steps (all)
 - a. Alignment of communication strategy/public engagement
 - b. Request by First Nations for meeting ASAP with government and company to look at conditions under which a mine could restart and ongoing remediation efforts

Suggested Attendees:

MEM – Dave Nikolejsin, David Morel, Tania Demchuk,

MOE – Wes Shoemaker, Lori Halls, Hubert Bunce

Imperial Metals – Brian Kynoch, Don Parsons, Steve Robertson, Dale Reimer, technical staff/consultants
(Golder Associates – Lee Nikl)

From: [Dale Reimer](#)
To: [Demchuk, Tania MEM:EX](#)
Cc: donparsons@imperialmetals.com; [Luke Moger](#)
Subject: RE: Independent Engineering Review Board - questions
Date: Thursday, February 26, 2015 7:42:35 AM

H I Tania: Luke Moger will be the contact and will send a response to your below questions shortly.

Regards: Dale

From: Demchuk, Tania MEM:EX [mailto:Tania.Demchuk@gov.bc.ca]
Sent: February-25-15 7:29 PM
To: Don Parsons; Dale Reimer
Cc: Adams, Rick MEM:EX; Howe, Diane J MEM:EX
Subject: Independent Engineering Review Board - questions

Dale and Don,

We have received a number of questions regarding the establishment of your Independent Engineering Review Board in accordance with the December 17th permit amendment and I am seeking some input from you that I would like to provide as an update to the Mine Development Review Committee (by the end of the week if possible).

1. Have you established a Terms of Reference for the Panel? If so, when will it be shared with MEM and others? If not, when will this be completed?
2. I would like to ensure we are honouring the commitment to an open and transparent process, as such, I would like to share the names of your panel members with the MDRC. Please confirm that this is okay.
3. When is the first meeting of the Panel to occur? For some reason we are being asked about a meeting scheduled for March 5th and if this will be open to community members for observation.
4. There is a need for discussion of how and when reports from the Panel will be shared. I will include this as a topic to be addressed during our next discussion (likely early next week).

Could you please confirm for me who my primary contact should be for questions about your Panel. I will be in the office on Thursday and Friday this week, please feel free to call me if needed.

Thank-you,
Tania

Tania Demchuk, MSc, PGeo
Mount Polley Project Manager
Sr Environmental Geoscientist
Mines and Mineral Resources Division
Ministry of Energy and Mines
250-952-0417

From: [Luke Moger](#)
To: [Demchuk, Tania MEM:EX](#); [Ryan Brown](#)
Cc: [Chris Carr](#) s.22 [Jim Kuipers](#); [Eldridge, Terry](#); [Don Parsons](#)
Subject: RE: Breach Repair: MEM Request for Additional Information
Date: Thursday, March 5, 2015 2:18:04 PM
Attachments: [2015 03 05 - Golder Technical Specifications Clarification Update.pdf](#)

Tania;

Please find attached a letter from Golder Associates addressing Chris Carr's comments.

Kindest Regards,

Luke Moger, PMP
Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

-----Original Message-----

From: Demchuk, Tania MEM:EX [<mailto:Tania.Demchuk@gov.bc.ca>]
Sent: February-27-15 5:50 PM
To: Luke Moger; Ryan Brown
Cc: Chris Carr s.22 m Kuipers; Eldridge, Terry; Don Parsons
Subject: RE: Breach Repair: MEM Request for Additional Information

Hi Luke,

We understand that it is very busy and that there is a high workload related to reporting, development of plans and responding to questions. That said, March 31, 2015 is too late for a response to the outstanding geotechnical questions set out below.

Please provide a response. We can arrange for a discussion between Terry and Chris if that would be helpful.

Regards,
Tania

Tania Demchuk, MSc, PGeo
Mount Polley Project Manager
Sr Environmental Geoscientist
Mines and Mineral Resources Division
Ministry of Energy and Mines
250-952-0417

-----Original Message-----

From: Luke Moger [<mailto:lmoger@mountpolley.com>]
Sent: Friday, February 27, 2015 2:03 PM
To: Demchuk, Tania MEM:EX; Ryan Brown
Cc: Chris Carr s.22 ; Jim Kuipers; Eldridge, Terry; Don Parsons
Subject: RE: Breach Repair: MEM Request for Additional Information

Hi Tania;

I believe that this was followed up on by Ryan, but wanted to make sure that we were all on the same page.

As per clause C.1.(d), bullet point three (3) of the December 17, 2014 M-200 Permit Amendment, MPMC is to submit a revised design by March 31, 2015 that incorporates information from the final Panel Report. It is MPMC's intent that this update (completed by Golder) will include information from the Panel report, information from the KCB report, and information available from the current drilling being completed as part of the 2015 Site Investigation. Additionally, this update would include the information developed during construction of the 2015 Freshet Embankment and any of the changes that have been made to accommodate weather, ground or material conditions. Would MEM accept such requested updates, as outlined in the letter provided including those by Chris Carr, as part of this revised design report due on or before March 31, 2015? This would be the preferred option of MPMC and Golder.

Kindest Regards,

Luke Moger, PMP
Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

-----Original Message-----

From: Demchuk, Tania MEM:EX [<mailto:Tania.Demchuk@gov.bc.ca>]
Sent: February-26-15 8:52 AM
To: Ryan Brown
Cc: Luke Moger; Chris Carr s.22 Jim Kuipers
Subject: FW: Breach Repair: MEM Request for Additional Information

Ryan,
As discussed, here are the follow-up questions from Chris in response to the memo from Golder.
Tania

-----Original Message-----

From: Chris Carr [s.22
Sent: Tuesday, February 24, 2015 10:40 AM
To: Demchuk, Tania MEM:EX
Subject: RE: Breach Repair: MEM Request for Additional Information

Hi Tania,

I have reviewed the information included in the memo from Golder.

There are three issues that concern me:

Issue #1

The memo does not provide sufficient information to show how the geotextile is being installed. A cross-section may be useful. The geotextile must be in intimate contact with the adjacent fill materials to prevent voids and to reduce the possibility of fines collecting and clogging the geotextile. Is the geotextile installed with an overlap or are the laps machine sewn? How is puncturing of the geotextile avoided when placed over and adjacent to the sharp, angular aggregate that is being used as embankment fill?

Issue #2

The memo indicates that there are areas of placed filter that do not meet requirements for internal stability. Is this a concern?

Issue #3

The memo does not confirm that the tailings material placed on the upstream embankment has been, or is being, compacted to meet the required specification. The memo merely states that the material is being compacted.

One way of resolving these issues, rather than getting into more discussion, is to request the EOR to provide a letter stating that the design changes are not materially significant and that the constructed embankment will function in accordance with the design intent.

Regards,

Chris Carr, P.Eng.
Senior Geotechnical Engineer
On behalf of the BC Ministry of Energy and Mines
Tel: 250 544-0763
Email: s.22

-----Original Message-----

From: Demchuk, Tania MEM:EX [<mailto:Tania.Demchuk@gov.bc.ca>]
Sent: February-24-15 6:50 AM
To: Chris Carr
Subject: Fwd: Breach Repair: MEM Request for Additional Information

Hi Chris,

Are you able to take a look at this memo from Golder before the weekly breach repair update call on Thursday?

If there are any follow-up questions I can see if either Terry or Andy is available to sit in on the weekly call on Thursday morning.

Thank-you!
Tania

Tania Demchuk, MSc, PGeo
Mount Polley Project Manager
Sr Environmental Geoscientist
Ministry of Energy and Mines
(250) 952-0417

From my mobile device

Begin forwarded message:

From: "Luke Moger" <lmoger@mountpolley.com<<mailto:lmoger@mountpolley.com>>>
To: "Demchuk, Tania MEM:EX"
<Tania.Demchuk@gov.bc.ca<<mailto:Tania.Demchuk@gov.bc.ca>>>, "Dale Reimer"
<dreimer@mountpolley.com<<mailto:dreimer@mountpolley.com>>>, "Ryan Brown"
<rbrown@mountpolley.com<<mailto:rbrown@mountpolley.com>>>
Cc: "Chris Carr (s.22 >, "Warnock, George MEM:EX"
<George.Warnock@gov.bc.ca<<mailto:George.Warnock@gov.bc.ca>>>, "Andy Haynes"
(ahaynes@golder.com<<mailto:ahaynes@golder.com>>)"
<ahaynes@golder.com<<mailto:ahaynes@golder.com>>>, "Terry Eldridge"
(teldridge@golder.com<<mailto:teldridge@golder.com>>)"
<teldridge@golder.com<<mailto:teldridge@golder.com>>>, "Adams, Rick MEM:EX"
<Rick.Adams@gov.bc.ca<<mailto:Rick.Adams@gov.bc.ca>>>, "Howe, Diane J MEM:EX"

<Diane.Howe@gov.bc.ca<<mailto:Diane.Howe@gov.bc.ca>>>

Subject: RE: Breach Repair: MEM Request for Additional Information

Hi Tania;

Please find attached a Technical Memorandum from Golder Associates addressing Chris' comments.

Kindest Regards,

Luke Moger, PMP
Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113

Fax: +1 (250) 790-2613

Email: LMoger@MountPolley.com<<mailto:lmoger@mountpolley.com>>

From: Demchuk, Tania MEM:EX [<mailto:Tania.Demchuk@gov.bc.ca>]

Sent: February-20-15 10:41 AM

To: Dale Reimer; Luke Moger; Ryan Brown

Cc: Chris Carr s.22 ; Warnock, George MEM:EX; Andy Haynes

(ahaynes@golder.com<<mailto:ahaynes@golder.com>>);

Terry Eldridge (teldridge@golder.com<<mailto:teldridge@golder.com>>); Adams, Rick MEM:EX; Howe, Diane J

MEM:EX

Subject: RE: Breach Repair: MEM Request for Additional Information

Importance: High

Ryan,

In follow-up to the weekly update call this morning, I am sending this email as a reminder that Chris Carr has requested the information set out below.

It is the expectation of this ministry that a response will be received by end of day Monday, February 23. If it is not possible to address the information requests by that time, it is expected that a response will be received setting out how and when the information will be provided.

Please call me if you have questions or concerns about addressing this information request. I can be reached today at 250-818-6426.

Thank-you,

Tania

From: Adams, Rick MEM:EX

Sent: Friday, February 13, 2015 4:04 PM

To: Dale Reimer (dreimer@mountpolley.com<<mailto:dreimer@mountpolley.com>>);

Luke Moger; Ryan Brown

Cc: Chris Carr s.22 ; Warnock, George MEM:EX; Demchuk, Tania

MEM:EX; Andy Haynes (ahaynes@golder.com<<mailto:ahaynes@golder.com>>); Terry Eldridge

(teldridge@golder.com<<mailto:teldridge@golder.com>>)

Subject: Breach Repair: MEM Request for Additional Information

Dale, further to review of Ryan Brown's weekly update, and Luke Moger's Bi-Weekly Construction Progress Report #4, by our geotechnical consultant, the Ministry of Energy and Mines requests Mount Polley Mining Corporation immediately provide the following information:

. Specifications of the geotextile used including puncture resistance.

. Long-term filtration characteristics of the geotextile compared to the approved rock filter zone.

. Method of geotextile installation.

. Confirmation that the filter materials already placed meet the grain size distribution specified.

. Confirmation that the materials being used for upstream embankment construction will act to reduce seepage rates and are being compacted to meet design specification.

The Ministry of Energy and Mines further advises Mount Polley Mining Corporation that the Ministry of Energy and Mines must be notified in advance of proceeding with any changes to the breach repair design configuration.

We would be happy to discuss further with you and your consultants by conference call if required.

Rick Adams
Inspector of Mines
2nd Floor, 441 Columbia Street, Kamloops, BC V2C 2T3
Telephone: 250-828-4583

Meeting Summary Notes

Discussion of Mount Polley Mine Restricted Restart and Water Management Planning

Date: March 9, 2015

Location: Golder Offices, #200 2920 Virtual Way, Vancouver BC

Time: 10:00 – 4:30

Attendees:

MPMC: Don Parsons (DP), Dale Remier (DR), Luke Moger (LM), Ryan Brown (RB);

Golder: Lee Nikl (LN), Rob Millar (RM), Corne Pretorius (CP), Mike Herrell (MH)

First Nations: Chief Bev Sellars, Jacinda Mack, Willie Sellars, Kirk Dressler, Jim Kuipers, Cliff Thorstenson

MOE: Hubert Bunce (HB), Brian Yamelst (BY), Chris Swan (CS), Lori Halls (LH; 10:00-10:45 and ~3:45-4:30)

MEM: Diane Howe (DH), Chris Carr (CC), Brent Beattie (BB), Jennifer McConnachie (JM), Tania Demchuk (TD), Rick Adams (RA), David Morel (DM; ~10:00-10:45)

Summary Notes

Review of Restricted Restart plan (DP):

- The updated Restricted Restart application has been scaled down, does not include long term components. The volume of materials process is scalable to suit water storage capacity (mentioned ~8000 tpd). Noted that there may be a couple of months of work to be done on the mill before it can be started for ore processing.
- Indication of intention to follow March 13 application submission timeline.
- Comment on need for adaptive management approach “if ‘this’ happens then ‘that’ is the response.”

Review of Water Management Planning (Golder):

- Four PowerPoint presentations (distributed following the meeting)
- Draft document “Approach for Long-Term water Management Plan Development” provided in hardcopy at the meeting and via email following the meeting
- Discussion of short-term and long-term planning needs. Will need a short-term solution while the long-term plan is developed. Focus is on proven technologies and consideration of volume of water requiring discharge.
- Current water balance does not include use of TSF breach repair for water storage.
- Noted that any one of Hazeltine/Polley Lake, Bootjack/Morehead Lakes, or Edney Creek do not individually have sufficient capacity for required discharge volumes of 5-6 million m³.
- Question: has the outlet of Quesnel Lake been considered as a discharge location?
 - Response: need to run effluent mixing model to assess that option.
 - Discussion: consideration of fisheries values, and need for good data on the receiving environment location of the discharge.
- Water quality modelling has not yet been completed. SRK will provide source terms. Modelling will be completed in Goldsim.
 - Discussion: modelling should use ambient water hardness conditions (for the receiving environment)

- **Comment:** there is a need for any monitoring plans referenced in the application to be provided as part of the application.
- All water treatment technologies are being reviewed as options: active, passive and hybrid (semi-passive).
 - Will need to consider costs and schedule for required discharge in development of plans.
 - Question: has evaporation been considered? The application should address this option.
 - Comment: there are realities to understand with some of the proposed options, such as flow limitations.
 - Once discharge options are developed, need to narrow to four. It was suggested that a workshop to narrow the options would be a good approach.
- There was general discussion of the issue of pre-Q1 2016 water management requirements in the event that the storage elevation of Springer Pit reaches 1030 m asl.
- Plan to move forward:
 - The Restricted Restart application and the report “Approach for Long-Term water Management Plan Development” (Work-plan) will be submitted together.
 - The Work-plan will include a contingency plan to deal with greater than average water conditions prior to Q1 2016. This is needed to show what can be done quickly to manage additional water if needed. The contingency will include:
 - Water management method (i.e. discharge, other storage, etc.)
 - Triggers to implement contingency (i.e. start construction, start/stop discharge)
 - Schedule and constraints
 - Expected results
 - The Work-plan will include a forecast of the timeline and process for discharge permits
 - The Work-plan will include options screening for effluent discharge
- Previous screening comments from MEM and MOE were reviewed and MPMC provided information on how they are being addressed.
- First Nations representatives would like to see costing information in full when it is available.
- A meeting was planned for Golder to review the water balance model with Lorax (for MEM/MOE) on March 13.
- MEM will be requesting additional information about a mass balance for Springer Pit overflow to Bootjack Lake or Hazeltine Creek.
- Golder indicated the addition of the short-term contingency component to the Work-plan document would add time to its development.
- MPMC confirmed the intention to provide a draft of the Restricted Restart application to MEM, MOE and Jim Kuipers for a pre-screening on March 13.

Proposed Agenda

Discussion of Mount Polley Mine Restricted Restart and Water Management Planning

Date: March 9, 2015

Location: Golder Offices, #200 2920 Virtual Way, Vancouver BC

Time: 10:00 – 4:30

There is acknowledgement by all groups that time is of the essence regarding the ability of the mine to restart operations in a restricted manner. The “design and defend” approach for development of a permit amendment application is not an efficient way to proceed. The goal of this meeting is to facilitate discussion of expectations and options for consideration in development of the applications so they will be acceptable to all parties when they are submitted.

Meeting Objectives:

1. Clarification of Mount Polley Mining Corporation’s current plans related to the proposed Restricted Restart and water management
2. Discussion and clarification regarding expectations for the new Restricted Restart application
3. Discussion and development of options that are acceptable to all groups regarding water management and discharge planning
4. Agreement on approach for options assessment in development of water discharge application

Proposed Agenda:

10:00 – 10:10: Round table introductions (all)

10:10 – 10:30: Meeting objectives, review of proposed agenda (Tania)

10:30 – 11:00: Review of approach to address time-sensitive nature of Restricted Restart and development of long-term water management plans (MOE)

11:00 – 11:30: Clarification of MPMC applications – Restricted Restart/water management (Don Parsons)

11:30 – 12:15: Discussion and feedback (all)

12:15 – 1:00: LUNCH - provided

1:00 – 1:15: Review of MOE Long term water management work plan requirements

1:15 – 1:45: Options considered for long term water management and discharge; timelines to develop the information and application (Lee Nikl)

1:45 – 4:00: Group discussion of work plan, options assessment and discharge application (all)

4:00 – 4:30: Next steps – review action items, timelines, next meeting

From: [Swan, Chris L ENV:EX](#)
To: [Demchuk, Tania MEM:EX](#)
Cc: [Bunce, Hubert ENV:EX](#); [Yamelst, Brian H ENV:EX](#)
Subject: RE: Mount Polley - proposed meeting March 18th morning?
Date: Thursday, March 12, 2015 3:22:59 PM

Hi Tania,

s.22 After listening to the last call I'm not sure if my involvement should come later once a few more of the details arrive?

Hubert, can you give me a sense of what you are expecting with my involvement in this permit amendment process? Perhaps I get pulled in a bit later as the Bio would on any permit amendment? Not sure what you and Brian think about this?

My point being, don't hold the meeting up on my account. ☺

Chris

From: Demchuk, Tania MEM:EX
Sent: Thursday, March 12, 2015 3:12 PM
To: Don Parsons; Celine Lee; Yamelst, Brian H ENV:EX; Swan, Chris L ENV:EX; Jim Kuipers
Cc: Nikl, Lee; Jacinda Mack; Adams, Rick MEM:EX; McConnachie, Jennifer MEM:EX; Bunce, Hubert ENV:EX
Subject: Mount Polley - proposed meeting March 18th morning?

Hello All,

In follow-up to discussions on Monday and ongoing development of Golder's water management plan "work plan" for Mount Polley, I am wondering if people are available for a meeting in Vancouver on Wednesday March 18th (or by conference call if travel is a challenge)? Proposed time would be 9:00-12:00.

The purpose of this meeting would be a discussion of the contingency options for management of a greater than average water balance scenario (i.e. up to 1 in 200 year event). At the end of the meeting on Monday there was discussion that the Golder document would include information about the need for water discharge in the short term as a worst case scenario. As a group, it would be helpful to discuss the other options that may be preferred before moving to an emergency discharge before a permit is issued. This will also provide a good check-in point shortly before the new application is received.

Please let me know your availability as soon as possible.

Thank-you,
Tania

Tania Demchuk, MSc, PGeo
Mount Polley Project Manager
Sr Environmental Geoscientist

Mines and Mineral Resources Division
Ministry of Energy and Mines
250-952-0417

From: [Luke Moger](#)
To: [Demchuk, Tania](#) MEM:EX
Cc: [Dale Reimer](#); [Don Parsons](#); Chris Carr s.22 [Warnock, George](#) MEM:EX; [Narynski, Heather M](#) MEM:EX; [Beattie, Brent C](#) MEM:EX; [Hoffman, Al](#) MEM:EX; [Howe, Diane J](#) MEM:EX
Subject: RE: MPMC TSF Independent Engineering Review Panel - Terms of Reference
Date: Friday, March 13, 2015 10:10:28 AM
Attachments: [image001.png](#)
[2015 03 04 - MPMC Terms of Reference \(Independent Engineering Review Panel\) - Contact Information Removed.pdf](#)

Hi Tania;

Thank you for connecting this morning – as per our discussions, please see some comments/thoughts below.

1. I understand that MEM and MPMC agree that existing Terms of Reference capture the requirement for a report to be produced based on the first meeting of the IERP, and so in the short-term, we have covered off the intent of the M-200 Permit condition. MPMC can confirm that it is our intent (as captured in the Terms of Reference) to share a report, based on the IERP's review of the 2015 Freshet Embankment, with MEM and provide information to the First Nations, CRD and Community of Likely. The most appropriate method of dissemination for the latter parties (whether it be the transmittal of the report itself or through convening the MDRC or another medium) will require some further thought from MEM/MPMC; the commitment to share the information from the IERP with the three (3) latter parties remaining, but providing support and context for the report identified as being important. As discussed, it will be prudent to ensure that this is not construed as withholding or delaying sharing of this information by MPMC/MEM in providing this context and/or support.

Moving forwards with future reports from the IERP, I understand that both MEM and MPMC will have to give some thought to the report-sharing and subsequent dissemination process given that not all IERP reports will be appropriate to share with any and/or all of the referenced parties. It is my understanding that MEM is still refining its expectations around the implementation of IERPs around the province, and so may have some more clarity moving forwards. MPMC has committed to discussing this further internally and with the IERP members to draw on their knowledge and experience for providing some mutually acceptable verbiage around this for adoption into the Terms of Reference.

2. It is my understanding that all parties agree that there has been substantial discussion, presentation and consultation completed around the 2015 Freshet Embankment Design and ongoing construction. With the first convening of the IERP being focussed on this same topic, we understand that it is MEM's shared sentiment that perhaps it may be of more benefit to schedule IERP availability for discussion based on a future convening, perhaps with a more mid- or long-range timeframe being the context of the IERP meeting and subsequent availability to FN/community/stakeholders for discussion. Details for the planned convening are as covered in item "3."

I apologize for not having summarized the review of the Terms of Reference prior to their

submission to MEM in the transmittal e-mail. The Terms of Reference had, prior to the previous submission to MEM, been provided by e-mail to First Nations (Williams Lake Indian Band, Xatsull First Nation, NStQ, and FN Technical Advisor Jim Kuipers) for review and comment on February 21, 2015. No comments were received based on the document, and review of the document, including the proposed availability of the IERP for discussion and the dissemination of reports and sharing of information (including sensitivity around some potential IERP discussion topics) was followed up on during the joint TSF Breach Technical Working Group (MPMC/WLIB/XFN/NStQ) meeting on February 26, 2015; it was anecdotally confirmed at this meeting that there were no comments on the document.

As per recent discussions between MEM and MPMC, the provision of the Terms of Reference to CRD and local community/stakeholders should provide clarity around the process for public involvement; the Terms of Reference should serve to address the comments of the referenced e-mail from Doug Watt.

3. As discussed, there is tentatively a date set for mid-May for the next convening of the IERP.
4. Please find attached a copy of the Terms of Reference that is appropriate to be shared with the MDRC. Please note that IERP member names have been removed and a placeholder page inserted; as such, the transmittal e-mail from MEM to the MDRC will require provision of the names of the three (3) IERP members. The IERP members have consented that their names be shared with the MDRC, provided that personal contact information is not provided (as per the attached document). Additionally, they have indicated that, as per the Terms of Reference and their respective contracts, requests for information or discussion of involvement with MPMC TSF IERP should be completed through MPMC and not through them as individuals. I can confirm that these Terms of Reference were accepted at our first meeting and ratified, this copy; however, does not include signatures.

I trust that this reflects our discussions of these points, please let me know if I have misinterpreted or misrepresented anything in this e-mail.

Kindest Regards,

Luke Moger, PMP

Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113

Fax: +1 (250) 790-2613

Email: LMoger@MountPolley.com

From: Demchuk, Tania MEM:EX [mailto:Tania.Demchuk@gov.bc.ca]

Sent: March-10-15 9:07 AM

To: Luke Moger

Cc: Dale Reimer; Don Parsons; Chris Car s.22 Warnock, George MEM:EX; Narynski, Heather M MEM:EX; Beattie, Brent C MEM:EX; Hoffman, Al MEM:EX; Howe, Diane J MEM:EX

Subject: MPMC TSF Independent Engineering Review Panel - Terms of Reference

Hello Luke,

Thank-you for the submission of the IERP Terms of Reference, dated March 5, 2015. MEM has reviewed the document and has the following comments and questions for clarification:

1. The section "*Reporting and Deliverables*" appears to state that the only report that will be submitted to MEM is the report following the first meeting. MEM would like to ensure that it is clear that condition A.5(c) requires that a report prepared by the IERP be submitted to the Chief Inspector within one month following completion of every review meeting, not just the meeting referenced by condition A.5.(d) related to the "IERP technical review of the design of the 2015 Freshet Embankment and associated upgrades to the TSF."

Please provide clarification that it is the intent that a report will be provided to MEM within one month of each IERP meeting. It should be noted that under the conditions of the December 17, 2014 permit amendment, these reports would also be provided to First Nations, the Cariboo Regional District and the Community of Likely.

2. The IERP should be a standalone body that is not influenced by the mine, design consultant, regulators, First Nations, community, etc. However, there is high public interest in the discussions and functioning of the IERP for Mount Polley, due to the public interest in the mine following the breach and subsequent response activities. The Terms of Reference indicate that at a minimum the IERP shall be made available once per year for discussion with First Nations and stakeholders. Given the current degree of interest, could you please indicate if MPMC intends to provide a venue for IERP discussion with stakeholders in the near future? The involvement of the public and First Nations was raised during the drafting of the December 17th 2014 permit amendment, however requests for some form of involvement in the IERP's work was left for MPMC to determine. How has MPMC given consideration to including interested parties in some part of the IERP process?

For your reference I have attached an email sent to the MDRC from Doug Watt inquiring as to the process for public involvement.

3. It has been identified that there may be value in informing MEM prior to scheduled IERP meetings in the event that the MEM has any issues to provide to the IERP for consideration. Is MPMC able to share the meeting schedule with MEM?
4. There are no signatures on page 8 indicating that final sign-off and acceptance of the TOR has occurred. Is this considered the final draft? MEM would like to share the Terms of Reference and IERP member names with the MDRC.

I would be happy to discuss the above in more detail when we are on site with you tomorrow.

Regards,
Tania

Tania Demchuk, MSc, PGeo

Mount Polley Project Manager
Sr Environmental Geoscientist
Mines and Mineral Resources Division
Ministry of Energy and Mines
250-952-0417

From: Luke Moger [<mailto:lmoger@mountpolley.com>]

Sent: Thursday, March 5, 2015 4:45 PM

To: Hoffman, Al MEM:EX

Cc: Dale Reimer; Art Frye; Don Parsons; Morel, David P MEM:EX; Howe, Diane J MEM:EX; Thorpe, Rolly MEM:EX; Narynski, Heather M MEM:EX; Pocklington, Cheryl M MEM:EX; Rothman, Stephen MEM:EX; Warnock, George MEM:EX; Demchuk, Tania MEM:EX

Subject: MPMC TSF Independent Engineering Review Panel - Terms of Reference

Dear Mr. Hoffman,

As per the request in your January 9, 2015 letter addressed to Dale Reimer, *Re: Independent Review Panel*, please find attached the Terms of Reference for the Mount Polley Mining Corporation Tailings Storage Facility Independent Engineering Review Panel.

Kindest Regards,

Luke



Luke Moger, PMP
Project Engineer, Mine Operations
Mount Polley Mining Corporation
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Canada

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Fax: +1 (250) 790-2613
E-mail: LMoger@MountPolley.com

From: [Luke Moger](#)
To: [Demchuk, Tania MEM:EX](#)
Subject: RE: Phone call follow-up
Date: Friday, March 13, 2015 10:37:22 AM

Hi Tania;

Thanks for this; I have provided some comments below in red, and left your original text in for tracking. As a general comment, may it be useful to provide Al Hoffman's letter confirming acceptance of the IERP members proposed by MPMC (details of which are captured in the Terms of Reference) along with the information provided by your proposed e-mail below and the Terms of Reference? I believe that this letter from Mr. Hoffman was provided to First Nations (as per the comments contained therein) and this may provide some background/context for the formation of the IERP and the Province's expectations to those who weren't included on the initial correspondence...just a thought.

Kindest Regards,

Luke Moger, PMP

Project Engineer, Mining Operations
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Email: LMoger@MountPolley.com

From: Demchuk, Tania MEM:EX [mailto:Tania.Demchuk@gov.bc.ca]
Sent: March-12-15 5:02 PM
To: Luke Moger
Subject: Phone call follow-up

Hi Luke,

Thanks for your phone message. Sorry I'm not able to connect today; I will give you a call on your cell tomorrow morning around 9:00.

Here is the draft response for the MDRC regarding comments from Doug Watt. It would be good to get any feedback from you on this tomorrow as well if that's ok? Specifically I would like to make sure that the last part about when the IERP might be made available reflects the intention of MPMC.

I would like to send the update to the MDRC by end of day tomorrow.

Thank-you,
Tania

DRAFT

Thank-you for the comments and concerns regarding the specifics of the ~~Mount Polley Mine Independent Engineering Review Panel (IERP)~~ Mount Polley Mining Corporation (MPMC) Tailings Storage Facility (TSF) Independent Engineering Review Panel (IERP) as well as considerations for the broader implementation of Independent Tailings Dam Review Boards at mines across BC.

The province has committed to implementing the recommendations in the Expert Panel Report, including implementation of Independent Tailings Dam Review Boards (ITDRB). The details of how this recommendation is to be implemented, composition of the ITDRBs, reporting requirements and opportunities for observers are details that are still to be determined (clarify “by the Province”?). In the development of requirements related to ITDRBs, there is a need to balance the ability of these groups to conduct highly technical discussions related to existing designs and future plans at the site, with the desire for involvement by community members and First Nations.

With respect to Mount Polley specifically, there were discussions related to the inclusion of observers during development of permit conditions for the Breach Repair. It was noted during these discussions that there was a need to balance requests for observers with the need to enable highly technical discussions between the IERP panel members and the Engineer of Record. The form of public engagement and inclusion of observers at IERP meetings was left for the company MPMC to address in their Terms of Reference for the IERP. The Ministry of Energy and Mines (MEM) received the Terms of Reference for the IERP on Thursday March 5, 2015 and understands that the first meeting of this panel was held from March 2 to 4, 2015.

There are two points identified where activities of the IERP will be shared with public and First Nations. The first, as set out in the December 17th Mines Act permit amendment, is the requirement for a report from the IERP to be submitted to MEM following IERP meetings. These reports are required to be shared with First Nations, Community of Likely and Cariboo Regional District pursuant to the conditions of the permit. The second opportunity ~~to~~ for public involvement is set out in the Terms of Reference, whereby “*At a minimum, the IERP shall be made available once per year, as organized by MPMC, for discussion with stakeholders and First Nations in regards to their continued work on the Mount Polley Mine TSF.*” The Terms of Reference are attached to this response, and include a listing of the IERP members. The personal contact information for the IERP members (Page 9) has been removed for the transmittal of this document, but the IERP members are: Nigel Skermer, HR (Rod) Smith and John Brodie.

The ~~Ministry~~ MEM has highlighted the significant public interest in the ongoing activities related to the ~~tailings storage facility~~ TSF and the mine in general to MPMC. The first convening of the IERP, as highlighted in the Terms of Reference was focussed on the review of the 2015 Freshet Embankment. Given the extensive discussion, presentation and review already having taken place with First Nations and communities of interest on this aspect of the TSF, MPMC and MEM have suggested that it may be of more benefit to schedule IERP availability for discussion based on a future convening; perhaps with a more mid- or long-range timeframe being the context of the IERP meeting and subsequent availability to First Nations and communities of interest for discussion. ~~It is anticipated that the IERP may be made available to the public during discussions of future plans regarding the TSF.~~

Please continue to contact myself and Rick Adams with any questions.

Tania Demchuk, MSc, PGeo

Mount Polley Project Manager

Sr Environmental Geoscientist

Mines and Mineral Resources Division

Ministry of Energy and Mines

250-952-0417

From: [Luke Moger](#)
To: [Demchuk, Tania MEM:EX](#)
Subject: RE: M-200 Permit Clause C.5 (B)
Date: Thursday, March 26, 2015 4:25:49 PM
Attachments: [image001.png](#)

Hi Tania;

Following up on our phone conversation this morning, I wanted to confirm my understanding that it is acceptable to MEM that MPMC provide an update on the TSF Breach Repair stability for the existing construction condition this week (in the form of sensitivity analyses for water elevations and buttress completion as requested by Chris Carr), and that the April 1 deliverable under clause C.5 (b) of the M-200 Permit be provided instead upon completion of the 2015 Freshet Embankment (currently projected as April 23, 2015 for the completion of the CSM Wall).

Kindest Regards,

Luke Moger, PMP

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Mount Polley Mining Corporation

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Email: LMoger@MountPolley.com

From: Demchuk, Tania MEM:EX [mailto:Tania.Demchuk@gov.bc.ca]
Sent: March-25-15 4:23 PM
To: Luke Moger
Subject: RE: M-200 Permit Clause C.5 (B)

Hi Luke,

I will get clarification on this from the geotechnical team and follow-up with you (tomorrow).

Cheers,

Tania

From: Luke Moger [mailto:lmoger@mountpolley.com]
Sent: Wednesday, March 25, 2015 3:41 PM
To: Demchuk, Tania MEM:EX
Subject: M-200 Permit Clause C.5 (B)

Hi Tania;

I was just hoping to get some clarification on a clause in the M-200 Permit; condition C.5 (B) requires that:

By April 1, 2015, the Permittee shall submit a letter from the Engineer of Record stating that the TSF Breach Repair has been constructed in accordance with design.

It is my understanding that the intent of this clause was for this letter to be provided at the time that the TSF Breach Repair had been completed; as such, this is not aligned with an April 1, 2015 delivery. Does my understanding agree with your interpretation/MEM's intent for the clause, (i.e. should this letter be provided upon completion of the TSF Breach Repair) or would MEM like to have a letter provided for the work completed up to April 1 as per the existing verbiage.

Kindest Regards,

Luke



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From: [Luke Moger](#)
To: [Demchuk, Tania](#) MEM:EX; [Chris Carr](#)
Cc: [Don Parsons](#); [Beattie, Brent C](#) MEM:EX; [Eldridge, Terry](#); [Haynes, Andy \(Andy_Haynes@golder.com\)](#)
Subject: RE: Mt Polley TSF 2015 Freshet Embankment - follow-up to March 11 site visit discussion
Date: Monday, March 30, 2015 6:13:19 PM
Attachments: [RE Mt Polley TSF 2015 Freshet Embankment - follow-up to March 11 site visit discussion.msg](#)

Hi Tania;

As per Chris Carr's request, we have followed up with Golder. Please see the attached e-mail from Terry with an explanation; please let me know if you would still like to discuss on the Thursday call and I will try and have Terry join us for part of it.

Kindest Regards,

Luke Moger, PMP

Project Engineer, Mining Operations
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Email: LMoger@MountPolley.com

From: Demchuk, Tania MEM:EX [mailto:Tania.Demchuk@gov.bc.ca]
Sent: March-30-15 3:40 PM
To: Chris Carr; Luke Moger
Cc: Don Parsons; Beattie, Brent C MEM:EX
Subject: RE: Mt Polley TSF 2015 Freshet Embankment - follow-up to March 11 site visit discussion

Hi Luke,
Please include this as a topic for discussion at the Thursday update call.
Thank-you,
Tania

From: Chris Carr [s.22](#)
Sent: Monday, March 30, 2015 1:43 PM
To: 'Luke Moger'
Cc: 'Don Parsons'; Beattie, Brent C MEM:EX; Demchuk, Tania MEM:EX
Subject: RE: Mt Polley TSF 2015 Freshet Embankment - follow-up to March 11 site visit discussion

Hi Luke,

I have reviewed the report prepared by Golder Associates dated March 27, 2015. The report indicates minimum factors of safety of 1.53 for the various pond water levels analysed at elevation 940 m, 945 m and 949 m. The analyses assume that the cut-off wall has been constructed.

Since the cut-off wall is only partially completed (50 m length completed by March 25, 2015) the stability of the remaining ~300 m without a cut-off wall should be determined for the various pond water levels and related phreatic surfaces.

Please discuss this issue with your consultant.

Regards,

Chris Carr, P.Eng.
Senior Geotechnical Engineer
On behalf of the BC Ministry of Energy and Mines
Tel: 250 544-0763
Email: s.22

From: Luke Moger [<mailto:lmoger@mountpolley.com>]
Sent: March-27-15 7:35 PM
To: Demchuk, Tania MEM:EX
Cc: Don Parsons; Chris Carr s.22 ; Beattie, Brent C MEM:EX; Eldridge, Terry; Haynes, Andy (Andy_Haynes@golder.com)
Subject: RE: Mt Polley TSF 2015 Freshet Embankment - follow-up to March 11 site visit discussion

Hi Tania;

As discussed, please find attached a copy of a document prepared by Golder in response to MEM's questions arising from the March 11, 2015 site visit.

Kindest Regards,

Luke Moger, PMP

Project Engineer, Mining Operations
Mount Polley Mining Corporation

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From: Demchuk, Tania MEM:EX [<mailto:Tania.Demchuk@gov.bc.ca>]
Sent: March-24-15 11:24 AM
To: Luke Moger
Cc: Don Parsons; Chris Carr s.22 ; Beattie, Brent C MEM:EX
Subject: Mt Polley TSF 2015 Freshet Embankment - follow-up to March 11 site visit discussion
Importance: High

Hi Luke,

I wanted to follow-up on the information discussed during our close-out meeting following the site visit on March 11. Chris Carr raised up a concern regarding the delay in construction of the CSM wall and the impact that this may have on embankment stability and seepage if the TSF was required to store the 2015 Freshet prior to completion of embankment construction. It was

suggested at the wrap-up meeting that analyses be carried out (by Golder Associates) to determine the pond water level limits at various stages of embankment/CSM wall construction.

We have not seen the results of this analysis. Given that this could be a significant concern, it should be addressed without delay. Please let me know when you will be able to share this analysis with MEM.

As always, please don't hesitate to call if you have any questions.

Thank-you,
Tania

Tania Demchuk, MSc, PGeo
Mount Polley Project Manager
Sr Environmental Geoscientist
Mines and Mineral Resources Division
Ministry of Energy and Mines
250-952-0417

From: [Luke Moger](#)
To: [Jim Kuipers \(jkuipers@kuipersassoc.com\)](mailto:jkuipers@kuipersassoc.com); "Chris Carr" s.22
Cc: [Demchuk, Tania MEM:EX](#); [Don Parsons](#)
Subject: FW: Design Update [M-200 Permit - Approving the TSF Breach Repair and Perimeter Embankment Buttress Design for 2015 Embankment]
Date: Monday, March 30, 2015 7:07:09 PM
Attachments: [image001.png](#)

Dear Chris and Jim;

As per the below e-mail, I will be transferring you a copy of the Design Update for the 2015 Freshet Embankment prepared by Golder for MPMC.

Confirmation of receipt and successful download would be appreciated.

Kindest Regards,

Luke Moger, PMP

Project Engineer, Mining Operations
Mount Polley Mining Corporation

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Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Luke Moger
Sent: March-30-15 7:03 PM
To: Howe, Diane J EMNG:EX (Diane.Howe@gov.bc.ca)
Cc: Demchuk, Tania EMNG:EX (Tania.Demchuk@gov.bc.ca); rick.adams@gov.bc.ca; Don Parsons; Dale Reimer; 'Eldridge, Terry'
Subject: Design Update [M-200 Permit - Approving the TSF Breach Repair and Perimeter Embankment Buttress Design for 2015 Embankment]

Dear Diane;

As per clause C.1 (D) bullet point three (3), as set out in the December 17, 2014 M-200 Permit Amendment Approving TSF Breach Repair and Perimeter Embankment Rockfill Buttress Design for 2015 Freshet, an update to the design of the TSF Breach Repair based on additional information in the final report of the Expert Review Panel has been prepared by Golder for MPMC.

Due to size limitations, the Design Update will be transferred via HighTail – confirmation of receipt would be much appreciated. I will also be providing a copy, under separate cover, to MEM Geotechnical Reviewer Chris Carr and First Nations Technical Advisor Jim Kuipers, on which I will copy Tania Demchuk.

If you should have any questions or comments, please don't hesitate to contact me.

Kindest Regards,

Luke



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Cariboo Mine Development Review Committee (MDRC) Meeting

Project: Mount Polley Mine Return to Restricted Operations Application

Date and Time: March 31, 2015, 10:00 am – 4:00 pm

Location: Pioneer Complex, Williams Lake

Attendees:

Rick Adams (MDRC Chair)

Imperial Metals: Don Parsons, Steve Robertson, 'Lyn Anglin

Mount Polley Mining Corporation (MPMC): Dale Reimer, Luke Moger, Ryan Brown, Katie McMahan

Golder Associates: Lee Nikl, Rob Millar

Soda Creek Indian Band: Susan Aspinall, Julia Banks, Jim Kuipers

Williams Lake Indian Band: Willie Sellars, Kirk Dressler, Amy Crook

Community of Likely: Doug Watt

City of Williams Lake: Laurie Walters, Jason Ryll

Cariboo Regional District: Joan Sorley

MOE: Chris Swan, Hubert Bunce, Brian Yamelst

MEM: Jennifer McConnachie, Chris Carr, Brent Beattie, Diane Howe, Steve Rothman, Tania Demchuk, Justin Bourne (Lorax)

FLNRO: Bev Wassenaar, Jason Kerley

MARR: Mike Gash

MAGri: Ken Awmack

FOC: Darryl Hussey

Environment Canada: Janice Boyd

Minutes:

- Roundtable introductions
- MDRC Chair (Rick Adams) provided an overview of the meeting agenda, and general process for the review of the Restricted Restart Application.
 - A two week review period has now commenced, review comments from the MDRC members are due on **April 13, 2015**
 - Comments should be submitted to: MtPolleyMinePermit@gov.bc.ca
 - There will be an MDRC check-in call on Thursday April 9, from 10:00-12:00 as an opportunity to ask for any clarifications prior to submitting review comments. Call details will be sent out in a meeting invite.

Presentations by Mount Polley Mining Corporation and Golder Associates:

Site Water Balance:

- The water balance information presented provides a bracket (conservative case and expected case) on when Springer Pit elevation may reach 1030 m asl. Estimated to occur between July and September (maybe October) of this year.
- A video was shown of the Springer Pit current status, the 1030 m elevation was pointed out. Current pit lake elevation is 1006 m asl.
- Capacity between current elevation and 1030 m is approximately 3-4 million m³
- Springer Pit lake is increasing in volume by approximately 50,000 m³ water per day.
- The water balance model has under-predicting the actual volume of water in the pit. This is believed to be due to tailings dewatering, which is currently not included in the model, but this volume is believed to be decaying over time.
- The point was made that this under-prediction could result in an underestimate of Springer Pit filling time and that effort should be made to determine, if possible, how tailings dewatering may change the predictions going forward.
- MPMC noted difficulty in attribution of differentiating effect of snowmelt over tailings from effect of tailings dewatering.

Water Quality:

- Constituents of Potential Concern have been identified as a first pass by comparing monitoring data to the Metal Mine Effluent Regulation and BC Water Quality Guidelines, as well as any parameters showing an increasing trend.
- Using BC Water Quality Guidelines as a reference is very conservative as those guidelines are intended for levels in the receiving environment, not for levels in mine contact water and tailings supernatant.
- Development of a water quantity and water quality model in GoldSim is in progress. SRK Consulting are providing input source terms.
 - A question was raised regarding the identification of Antimony in the tables presented.

Discharge Options:

- There are two locations that can handle the full estimate volume of water that will require discharge:
 - Quesnel Lake or Quesnel River
 - Estimated dilution ratios are provided in the presentation based on flow in both Quesnel Lake and Quesnel River
 - If Quesnel Lake is selected, the Tetrattech model of the lake would be used to assess the best location and depth for the discharge.
 - State of knowledge about Quesnel River is not as developed and additional fieldwork and modelling would be required to assess this option. Quesnel River is a longer route,

and has concerns of public access to the pipeline and private property crossings requirements.

- There is a need for a short-term discharge permit while the longer term plan is finalized and permitted.
- **Short term options:**
 - Discharge to Hazeltine Creek, which is currently non-fish bearing, with a compliance point in Quesnel Lake
 - Question regarding this discharge and filling of interstitial spaces in channel with mine contact water (in particular Se as a potential concern)
 - Response indicated that there will be no fish during this time and that when different water is introduced to system it would flush out the interstitial spaces.
 - Discharge via pipeline to Quesnel Lake
 - It was noted that if discharge to Hazeltine moves forward, there will be issues to address with Edney Creek - which is fish bearing, including inputs, flow mixing and need for fish barriers from a fisheries perspective.
 - Polley Lake is not viewed as an option as it also needs to start discharging soon, and putting more water into Polley Lake would be counter-productive.
 - Neither Polley Lake nor Bootjack Lake would be able to accept the volumes required to be discharged.
- Under the short term option, water treatment would be lime addition at the Mill if needed, with an option for TSS removal and pH adjustment prior to discharge.
 - Additional work is required to determine if lime would be effective to remove the COPCs, however it was noted that under current conditions it is expected that the mill process water will have the best quality of the water on site.
 - Some discussion that mill could be programed to meet required water discharge volumes.
 - Question about mixing lime directly into the pit. Still needs to be addressed.
- Longer term treatment options are being assessed to determine Best Available Technology for the site. This will include assessment of reliability, effectiveness, and cost effectiveness using an approach that considered site-specific factors.
- There are outstanding questions regarding the understanding of the groundwater model for Springer Pit.
 - Golder hydrogeologist and government expert (from Lorax Environmental) will have follow-up conversation on this issue.
 - Point made that all planning is assuming that the 1030 pit lake elevation is the elevation where an increased groundwater interaction starts to occur.
 - MOE has requested additional information regarding consequence to Bootjack Lake if groundwater seepage starts from Springer Pit.

- It was noted that groundwater well elevations are being monitored weekly, and requested that water quality monitoring at these wells also be increased.
- It was noted that this is also a longer term closure issue that will need to be addressed for the site (in addition to surface discharge out of Springer Pit at closure).

Restricted Restart Application overview:

- The proposal is to mill a total of 4 million tonnes of ore, at a daily rate of 10,000 to 12,000 tonnes per day for up to one year. Mining will be in the Cariboo Pit and the Zuke underground. The underground is the source of higher grade ore at the mine.
- The proposal is within the existing mine footprint.
- Future considerations include: Long-term water management plan, Reclamation and Closure Plan development, the tailings storage facility including the 2015 drilling investigation and closure requirements for the facility.
- Question regarding groundwater seep monitoring locations. Response: they are upstream of the west ditch. No monitoring between mine site and Bootjack Lake.
- Water management goal is to keep the Springer Pit Lake below 1030 m asl if possible.
- Non-potentially acid generating waste rock from the restart is planned to be used in the TSF buttressing. (application will be required for this design, expected in May).
- Updated reclamation costs are included in the application, but do not include water management costs or remediation work outside the mine area.
- Comment: The observation has been made by the MDRC chair that the Statutory Decision Makers for MOE and MEM will require confidence regarding plans for the short-term water discharge permit that has been stated to be required by July, in order to enable decision making on the Restricted Restart Proposal.
- It was also noted by MOE that the timelines presented for long-term water discharge permitting are optimistic.
- Clarity was provided that MOE will need a Technical Assessment Report and application for the short term water discharge permit. This process will also require a 30-day public notification period in accordance with the public notification regulation.
- MOE is optimistic that it will be possible to move through the short-term discharge authorization process by July.

Independent Engineering Review Panel Update:

- Mount Polley had the first meeting of the Independent Expert Review Panel (IERP) on March 2-4, 2015, and has received the draft report. This report will be distributed to MEM and in



accordance with the permit requirements (report will be shared with First Nations, Cariboo Regional District and Community of Likely).

- A summary of the IERP process and key results was provided in the PowerPoint presentation.
- Another meeting will be scheduled once the breach repair is completed, and possible future agenda topics were provided in the presentation.

Environmental Assessment Office update:

- Mount Polley provided slides with their Environmental Assessment Certificate and a summary of their assessment that the proposed Restricted Restart plan and the discharge of surplus water from the mine are not material alterations.

Next Steps:

- Review comments are due on Monday, April 13 and should be submitted to MtPolleyMinePermit@gov.bc.ca
- The application documents are available for download here: <http://www2.gov.bc.ca/gov/topic.page?id=BB2BE7299657481185F9E1C95698E91A>
- There will be an MDRC check-in call at 10:00 on Thursday, April 9. A meeting invite will be sent.
- Future MDRC and community meeting dates will be provided as soon as possible. It is anticipated that there will be another in-person MDRC meeting scheduled towards the end of April.

From: [Luke Moger](#)
To: [Demchuk, Tania MEM:EX](#); [Ryan Brown](#); [Jim Kuipers](#); Chris Carr s.22 [Adams, Rick MEM:EX](#)
Cc: [Don Parsons](#)
Subject: RE: MPMC Breach Repair: weekly update call
Date: Thursday, April 2, 2015 12:47:11 PM

Hi All;

Following up on our weekly update conversation this morning, Golder Construction has confirmed that the pre-drill rig is now on site and is targeted to be operational by tomorrow. The target completion date for the CSM Wall is April 24, 2015.

Kindest Regards,

Luke Moger, PMP

Project Engineer, Mining Operations
Mount Polley Mining Corporation

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Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

-----Original Appointment-----

From: Demchuk, Tania MEM:EX [<mailto:Tania.Demchuk@gov.bc.ca>]
Sent: January-27-15 10:59 AM
To: Demchuk, Tania MEM:EX; Luke Moger; Ryan Brown; J. Mack; 'Aaron Higginbottom'; Julia Banks (nrmanager@xatsull.com); Jim Kuipers; Amy Crook (amy@fairmining.ca); Chris Carr s.22); Rothman, Stephen MEM:EX; Adams, Rick MEM:EX
Subject: MPMC Breach Repair: weekly update call
When: April-02-15 8:30 AM-9:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: Conference call: 1-877-353-9184; Participant cod s.15

Hi All,

Here is a recurring meeting request for the weekly breach repair update call.

*Note that on Thursday January 29th, Rick Adams will moderate the call, and I know that a number of people (including myself) will not be available due to a conflicting meeting.

Conference call: 1-877-353-9184; Participant code s.15

Suggested agenda:

- General site update (conditions, weather, etc)
- Polley Lake and outlet construction update
- Update on breach repair work:
- Discussion of progress and timeline
- Challenges
- Implementation of contingencies

- Cutter Soil Mixer contract update and discussion of Code requirements
- Other

Best Regards,

Tania Demchuk, MSc, PGeo

Mount Polley Project Manager

Sr Environmental Geoscientist

Mines and Mineral Resources Division

Ministry of Energy and Mines

250-952-0417



Cariboo Mine Development Review Committee (MDRC) Meeting
Project: Mount Polley Mine Return to Restricted Operations Application

Date and Time: April 9, 2015, 10:00 am – 11:00 am

Location: conference call

Attendees:

Rick Adams (MDRC Chair)

Imperial Metals: Don Parsons, Steve Robertson, 'Lyn Anglin

Mount Polley Mining Corporation (MPMC): Dale Reimer, Luke Moger, Ryan Brown, Katie McMahan, Art Frye

Golder Associates: Lee Nikl, Rob Millar

NStQ: Celine Lee

Soda Creek Indian Band: Julia Banks, Stephen Olsen

Williams Lake Indian Band: Willie Sellars, Aaron Higginbottom, Kirk Dressler

Community of Likely: Doug Watt

MOE: Hubert Bunce

MEM: Jennifer McConnachie, Brent Beattie, Diane Howe, Steve Rothman, Tania Demchuk, Nick Vukovic, Justin Bourne (Lorax), Scott Jackson (Lorax)

FLNRO: Dave Weir, Jason Kerley

Environment Canada: Janice Boyd

Minutes:

A roundtable by group/agency provided an opportunity to summarize comments and ask and questions.

Soda Creek Indian Band / Williams Lake Indian Band:

- Internal discussion still required regarding review comments. Waiting to receive comments from technical reviewer. Anticipated on-time submission.

MOE:

- Indicated that more information was required to understand groundwater monitoring, proposed treatment for water going to the pit and additional details about water quality in the Springer Pit.
- It was noted that additional critical information is required to support the discharge permit application.

- Long-term water management also important, understand Springer Pit water quality trends and the potential for groundwater flow and quality between Springer Pit and Bootjack Lake.
- Response (by Golder): there is a commitment to additional groundwater well installation; a technical memo regarding Springer Pit lake chemistry will be provided. The ambitious timeline for the TAR and short-term discharge application is approximately one month. The short-term plan will also include an options assessment.
- It was noted that the only way to proceed is to have a short-term plan in place while the long-term plan is developed.

MEM:

- Similar comments regarding Springer Pit lake chemistry to MOE.
- Closure Management Manual is requested in review comments
- Follow-up on the IERB report is required (follow-up requirements have been sent under separate cover to MPMC from MEM)
- Lorax provided an overview of their comments: more information is required regarding rate of tailings water draw down, the water balance should be updated to reflect current site conditions, double check on water going from Cariboo Pit to Springer Pit.
- Groundwater model is reasonably complete and well explained. Follow-up questions have been answered and are included with review comments. Additional question regarding transient effects and sensitivity has been requested.
- Response (by Golder): Work is ongoing to address the questions. Preliminary assessment indicates that tailings drawdown does not account for total volume of water discrepancy between modelled and actual in the water balance.
- Response (by MPMC): Working on getting better flow monitoring over next week or so.

Environment Canada:

- When a new discharge is initiated, the MMER requires notification 60 days prior to start of discharge. This needs to follow Section 9 and 10.1 of the regulation (MMER). The notice must include the discharge location. This does not hold up provincial level permitting process.

Community of Likely:

- Questions about increases to groundwater quality sampling frequency (Golder indicated will be addressed in the review comments).
- Noted there are varying opinions regarding location for water discharge. People are concerned with impacts to fish and also scouring if the newly constructed Hazeltine Creek channel is used.
- Golder indicated that another meeting in Likely will be needed to explain the details of the proposed plan. The Technical Assessment Report for MOE will include assessment of options. If the TAR indicates pollution, mitigation would be required.



- Question regarding comparison of water quality with historic conditions. Golder confirmed this will be done.

FLNRO:

- Construction of works for the water discharge will require a permit (Water Act), and access or a pipeline route will require a Lands Act authorization.

Next Steps:

- Review comments are due on Monday, April 13 and should be submitted to MtPolleyMinePermit@gov.bc.ca
- The application documents are available for download here: <http://www2.gov.bc.ca/gov/topic.page?id=BB2BE7299657481185F9E1C95698E91A>

From: [Bunce, Hubert ENV:EX](#)
To: [MtPolley MinePermit MEM:EX](#)
Subject: MoE Comments re Mt Polley tailings deposition application
Date: Tuesday, April 14, 2015 11:10:51 AM

MoE comments by Brain Yamelst dated April 8 2015

“In summary, the application to discharge tailings and continued and increased storage of mine contact water in Springer Pit includes the general information required. However, a detailed technical review of potential impacts is not included (or predicted) and subject to the future inlet flows, none of which are predicted in the application.

My general comments include:

- The Executive Summary includes the situation to date, but does not include information on the proposed actions (i.e., mill operation, associated discharges, etc.), and most important, future decisions on water management and related time frames,
- The application segregates background site and breach information into Appendix A, limits scope to a restricted operation (i.e., processing of up to 4,000,000 tonnes of ore over one year period) and related site water management plan, and (i.e., and discharges), and assumes ore properties have been adequately predicted for PAG, NAG,
- The development of a long-term management plan is noted, along with awareness of stakeholder approval, but is separated from the application,
- Received comment Tables 1.2.1 through 1.2.5 appropriate to include, not acceptable cut and paste as it cannot be read,
- Springer Pit lake water chemistry is not adequately summarized, without trending or prediction, considering there is potential for discharge in the near future,
- The existing groundwater flow and quality is not well described and the recommended monitoring program improvements (i.e., new wells) appear to be subject to a future discharge authorization (i.e. the need to have a discharge authorization by July 2015),”

Hubert Bunce
A/Director, Mount Polley
Environmental Protection, Regional Operations
ph (250) 751-3254 fax (250) 751-3103
2080A Labieux Road
Nanaimo BC V9T 6J9

Please consider the environment before printing this email
BC Pollution Free

EP Mount Polley Website <http://www.env.gov.bc.ca/eemp/incidents/2014/mount-polley/>

From: [Demchuk, Tania MEM:EX](#)
To: [Luke Moger](#); [Don Parsons](#)
Cc: [Adams, Rick MEM:EX](#); [MtPolley MinePermit MEM:EX](#)
Subject: FW: additional Comments from Brian on MPMC application to date
Date: Thursday, April 16, 2015 4:12:43 PM

Hi Luke and Don,

Please see the comments below from MOE. Note that I have requested additional clarification regarding these comments. However, in the interest of providing these to you in a timely fashion, I am forwarding them in advance of any clarification. Please let us know if you have specific questions about these comments that will help clarify the expectations for your response.

Thank-you,
Tania

Tania Demchuk, MSc, PGeo
Mount Polley Project Manager
Sr Environmental Geoscientist
Mines and Mineral Resources Division
Ministry of Energy and Mines
250-952-0417

From: Bunce, Hubert ENV:EX
Sent: Thursday, April 16, 2015 1:51 PM
To: Adams, Rick MEM:EX; Demchuk, Tania MEM:EX
Cc: Yamelst, Brian H ENV:EX
Subject: additional Comments from Brian on MPMC application to date

In regard to MPMC's Permit Amendment Application, Mount Polley Mine Return to Restricted Operations Revision 1, dated March 20, 2015, I have the following additional comments:

- The target of maintaining Springer Pit below 1030m has been set, but consequence of exceeding that level has not included review or assessment of slope stability down gradient (i.e., and potential to impact Bootjack Lake),
- The monitoring program as presented in section 3.5 is appropriate in the near term; triggers and related additional monitoring have been noted, and subject to review by a Qualified Person, but none are well defined; the permit section 3.8 requires quarterly reporting of data only, without on-going analysis or assessment that may be more suitable to the short-term operation; there is no existing permit requirement for immediate notification of subsurface discharge conditions changing (i.e. discharge commencing) ; all of which may result in additional permit discussion and requirements.

In general, the application contains the assessment criteria required for a decision to authorize discharge of tailings to Springer Pit. However, additional permit review and discussion (i.e. will take some time) of new and supplemental requirements is required.

Hubert Bunce
A/Director, Mount Polley
Environmental Protection, Regional Operations

ph (250) 751-3254 fax (250) 751-3103

2080A Labieux Road

Nanaimo BC V9T 6J9

Please consider the environment before printing this email

BC Pollution Free

EP Mount Polley Website <http://www.env.gov.bc.ca/eemp/incidents/2014/mount-polley/>

From: [Luke Moger](#)
To: [Demchuk, Tania MEM:EX](#)
Cc: [McConnachie, Jennifer MEM:EX](#)
Subject: RE: Water Montiroing Update - RMDRC
Date: Friday, April 24, 2015 2:34:39 PM
Attachments: [image001.png](#)

Hi Tania;

Being more specific, we had discussed with Jen and talked about including it in the OMS so that it was collected in one place, please see below revision:

1. An updated water flow and water quality monitoring program for on-site water (i.e. not necessarily all monitoring points that are captured by the EMA permit) is required. The existing water management plan appears to focus on water levels, not continuous flow, and does not include water quality monitoring. (Information Requirement)

MPMC is updating the site Operation, Maintenance and Surveillance (OMS) Manual to include monitoring completed as part of MEM and MoE (EMA) requirements and including additional monitoring completed by MPMC. The updated OMS Manual will be provided by May 8, 2015.

Kindest Regards,

Luke Moger, PMP

Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Demchuk, Tania MEM:EX [mailto:Tania.Demchuk@gov.bc.ca]
Sent: April-24-15 2:01 PM
To: Luke Moger
Subject: RE: Water Montiroing Update - RMDRC

Hi Luke,

We'll need to understand timing of when that will be complete and when an updated water monitoring plan will be received (if needed). This is required prior to permitting.

Thanks,
Tania

From: Luke Moger [mailto:lmoger@mountpolley.com]
Sent: Friday, April 24, 2015 1:55 PM
To: Demchuk, Tania MEM:EX
Subject: Water Montiroing Update - RMDRC

Hi Tania;

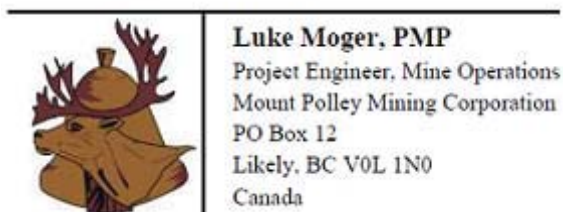
Another comment with an update from our discussions, is this a fair representation?

1. An updated water flow and water quality monitoring program for on-site water (i.e. not necessarily all monitoring points that are captured by the EMA permit) is required. The existing water management plan appears to focus on water levels, not continuous flow, and does not include water quality monitoring. (Information Requirement)

An updated Water Monitoring Plan was prepared for the MOE in January of 2015. In follow-up discussion with MEM, MEM will be reviewing this Water Monitoring Plan against MEM water monitoring requirements as part of a gap analysis to be completed with MPMC.

Kindest Regards,

Luke



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Fax: +1 (250) 790-2613

E-mail: LMoger@MountPolley.com

From: [Swan, Chris L ENV:EX](#)
To: [Bunce, Hubert ENV:EX](#); [Yamelst, Brian H ENV:EX](#); [Demchuk, Tania MEM:EX](#)
Cc: [Epps, Deb ENV:EX](#)
Subject: short term water mgmt - idea
Date: Tuesday, April 28, 2015 11:27:36 AM
Attachments: [P4276777.JPG](#)

Hi all,

I was at the Mt Polley Mine site yesterday checking out progress on Hazeltine Creek. Joe Grant, the MPMC person in charge of rebuilding the creek, took us around. He has been paying attention to problems on the mine site along the way as he's the one tasked with fixing them as they arise.

I've attached a photo from inside the truck of the dust blowing around off the dry tailings dam. The amount and extent of the dust was really bad – the photo doesn't show it very well. We talked about the water cannons and how they may not be effective. He had an idea which I thought was worth pursuing. He thought that a water cover should be brought in again both to control dust and resettle the tailings so that there would be one flat layer of tailings not multiple dry canyons which increases the surface area for wind erosion. He needs to talk to someone about the dry stacking process.

This seems like it would fit with the short term water management issue – why not use the water to resettle the tailings and help with the dust issue, then release the water when the long term strategy is in place. Would MEM entertain this kind of idea?

Regards,
Chris





Cariboo Mine Development Review Committee Meeting Agenda

Project: Mount Polley Mine Return to Restricted Operations

Date and Time: 1:00-4:30 pm, Tuesday, April 28, 2015

Location: Cariboo Meeting Room, 2nd Floor, 540 Borland Street, Williams Lake, and by GOTO Meeting at:

1. Please join my meeting.

s.15

2. Use your microphone and speakers (VoIP) - a headset is recommended. Or, call in using your telephone.

Dial +1 (647) 497-9353

Access Code s.15

Audio PIN: Shown after joining the meeting

Meeting ID s.15

Preliminaries

- Introductions
- Housekeeping

Agenda

1. Mount Polley Mine Corporation response to comments on Return to Restricted Operations Application
2. MDRC final comments to Mount Polley Mine Corporation on Return to Restricted Operations Application
3. Mount Polley Mine Corporation update on Short Term Water Management Plans
4. Next Steps in MDRC review process- MEM & MOE
5. Adjourn



Cariboo Mine Development Review Committee (MDRC) Meeting

Project: Mount Polley Mine Return to Restricted Operations Application

Date and Time: April 28, 2015, 1:00 pm – 4:00 pm

Location: Williams Lake and conference call

Attendees:

Rick Adams (MDRC Chair)

Imperial Metals: Don Parsons, Steve Robertson, 'Lyn Anglin

Mount Polley Mining Corporation (MPMC): Dale Reimer, Luke Moger, Katie McMahan, Art Frye

Golder Associates: Lee Nikl, Rob Millar

Soda Creek Indian Band: Julia Banks

Williams Lake Indian Band: Willie Sellars, Aaron Higginbottom, Kirk Dressler, Celine Lee

Community of Likely: Doug Watt

City of Williams Lake: Walt Cobb (mayor)

Cariboo Regional District: Joan Sorely, Janis Bell

MOE: Hubert Bunce, Brian Yamelst, Chris Swan

MEM: Jennifer McConnachie, Chris Carr, Brent Beattie, Diane Howe, Steve Rothman, Tania Demchuk,

Justin Bourne (Lorax), Scott Jackson (Lorax)

FLNRO: Jason Kerley, Ken Vaneburgh, Bev Wassenaar

Agriculture: Ken Awmack

Environment Canada: Janice Boyd

Minutes:

- Presentation by Mount Polley Mining Corporation (MPMC) reviewing responses to technical review comments.
- Note that next Community meeting would be held in Likely on May 13, 2015
- Presentation by Golder (Rob Millar) regarding water balance
 - Question regarding rate of proposed water treatment and discharge. Response: 750,000 m³/s or 9.5 million m³ water per year (initially). The request will be to discharge 0.3m/s initially and decrease that to 0.2m/s once existing site surplus is managed.
 - Regarding discussion of groundwater flow around Springer pit it was noted that 2 additional groundwater wells will be installed with data loggers and monthly sampling.
 - Once water elevation in pit exceeds 1030 m asl, it will take one year for groundwater to flow from pit to Bootjack lake.

- Question regarding long term discharge requirements. Response: if site is operating expect annual surplus of 4 M m³.
 - Question regarding dilution criteria applied for water discharge options. MOE confirmed that municipal sewage discharge guidance is most robust. Golder indicated this was on the conservative side but used as a starting point barring any other guidance.
- Clarification was provided by MOE and MEM that goal for short-term water discharge permitting is summer not fall, but stated that July 1 is overly optimistic.
- Comment that some water storage would be required to address high volumes of water during freshet.
- Comment: Community of Likely prefers option for discharge to Quesnel River and request to keep this option available in considerations. This followed on discussion that the 1:100 dilution ratio was more difficult to achieve throughout the year compared to Quesnel Lake.
- Review of possible pipeline routes. Comment that consideration should be given to ditch route between Polley Lake and Bullion Pit (to Quesnel River). This is being included in the options assessment. Question about power generation potential.
- Predicted discharge water quality was being worked on at the time of the meeting.
- Two short-term discharge options were identified:
 - Hazeltine Creek (note that channel is constructed to convey 1.6 m/s water but would limit to 0.8 m/s).
 - Pipeline discharge to either Quesnel Lake or Quesnel River.
- Water treatment prior to discharge: TSS removal e.g. Veolia and in pit treatment.
- Question about if solids characteristics impact treatment effectiveness. It was indicated that there can be a ramp up period to optimize treatment. Goal is 5-7 TSS units.
- TSF Embankment is identified as a contingency with a capacity of 2 million m³ storage capacity.
- Environment Canada noted reminder of MMER requirements.
- MDRC Chair reminder that an acceptable TAR is required prior to permitting decisions.
- Comment: request for ability to review the site OMS manual as well as the Emergency Response Planning documentation. Follow-up required.

Next Steps:

- MPMC responses will be submitted on April 30 and final follow-up comments from MDRC due on May 8 and should be submitted to MtPolleyMinePermit@gov.bc.ca
- The application documents are available for download here:

s.15

From: [Luke Moger](#)
To: [Demchuk, Tania MEM:EX](#)
Subject: RE: Design Update [M-200 Permit - Approving the TSF Breach Repair and Perimeter Embankment Buttress Design for 2015 Embankment]
Date: Wednesday, April 29, 2015 4:46:28 PM
Attachments: [image001.png](#)
[Design Update M-200 Permit - Approving the TSF Breach Repair and Perimeter Embankment Buttress Design for 2015 Embankment.msg](#)

Hi Tania;

You should be receiving the file shortly via Hightail under the original transmittal to Diane (e-mail attached). I will also include you on the transmittal to Chris Carr.

Kindest Regards,

Luke Moger, PMP

Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Demchuk, Tania MEM:EX [mailto:Tania.Demchuk@gov.bc.ca]
Sent: April-29-15 4:30 PM
To: Luke Moger
Subject: RE: Design Update [M-200 Permit - Approving the TSF Breach Repair and Perimeter Embankment Buttress Design for 2015 Embankment]

Thanks Luke.

Please also send a high-tail link to me so that I can download and file the document.

Tania

From: Luke Moger [<mailto:lmoger@mountpolley.com>]
Sent: Wednesday, April 29, 2015 4:09 PM
To: 'Chris Carr' s.22
Cc: Demchuk, Tania MEM:EX
Subject: FW: Design Update [M-200 Permit - Approving the TSF Breach Repair and Perimeter Embankment Buttress Design for 2015 Embankment]

Chris;

Please see e-mail below, I will be sending a copy of the Design Update to you via HighTail shortly.

Kindest Regards,

Luke Moger, PMP

Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Luke Moger
Sent: April-29-15 4:07 PM
To: Howe, Diane J EMNG:EX (Diane.Howe@gov.bc.ca)
Cc: Demchuk, Tania EMNG:EX (Tania.Demchuk@gov.bc.ca); rick.adams@gov.bc.ca; Don Parsons; Dale Reimer; 'Eldridge, Terry'
Subject: Design Update [M-200 Permit - Approving the TSF Breach Repair and Perimeter Embankment Buttress Design for 2015 Embankment]

Dear Diane;

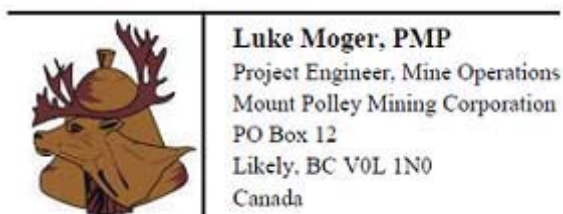
As per clause C.1 (D) bullet point four (4), as set out in the December 17, 2014 M-200 Permit Amendment Approving TSF Breach Repair and Perimeter Embankment Rockfill Buttress Design for 2015 Freshet, an update to the design of the TSF Breach Repair based on information from the additional site investigation has been prepared by Golder for MPMC.

Due to size limitations, the Design Update will be transferred via HighTail – confirmation of receipt would be much appreciated.

If you should have any questions or comments, please don't hesitate to contact me.

Kindest Regards,

Luke



Direct: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
E-mail: LMoger@MountPolley.com

From: [Luke Moger](#)
To: [Demchuk, Tania MEM:EX](#)
Subject: RE: UPDATE: weekly breach repair update call
Date: Thursday, April 30, 2015 9:50:48 AM

Hi Tania;

Just as a heads up, talking with Julia on Tuesday, it is my understanding s.22
s.22 but probably worth a follow up with Julia - apologies if you already had.

Kindest Regards,

Luke Moger, PMP

Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Demchuk, Tania MEM:EX [mailto:Tania.Demchuk@gov.bc.ca]
Sent: April-30-15 9:43 AM
To: Luke Moger; Ryan Brown; 'Aaron Higginbottom'; Julia Banks (nrmanager@xatsull.com); Amy Crook (amy@fairmining.ca); Chris Carr (s.22 Rothman, Stephen MEM:EX; Adams, Rick MEM:EX; Bunce, Hubert ENV:EX; Fenwick, Leigh-Ann ENV:EX; Yamelst, Brian H ENV:EX; Don Parsons; celine.lee@williamslakeband.ca
Subject: UPDATE: weekly breach repair update call

Good Morning All,

This morning's weekly update call was the final scheduled call in the series of meeting that took place during the construction of the breach repair in the perimeter embankment of the Mount Polley TSF. These calls have been supplemented by the bi-weekly report that is also distributed to this group from Mount Polley to provide a written update on the ongoing construction activities.

Some key points from this morning's call:

- Construction of the CSM cut-off wall is now completed. The Golder team remains on site doing follow-up quality assurance work and as-built report updates.
- Some additional work around the north and south abutments will be conducted now that the CSM equipment is not in the way anymore. This includes some upstream sloping and stabilization activities.
- Soil stripping and perimeter buttress placement continues. Work on the buttress is expected to be complete in 3-4 weeks.
- All water management systems around the breach area continue to be operational.
- The bi-weekly reports will continue to be submitted until completion of the buttressing work.

- Other notes included: the Polley Lake weir is currently closed while Hazeltine Creek sediment ponds are cleaned out (one day of work left on that); it is estimated that there are 2 weeks of construction remaining on the Hazeltine Creek channel construction.

Given that the focus of the weekly calls was intended to be the breach repair itself and subsequent water management, it was agreed this morning that the calls are no longer required. I imagine that in the future if there is a need to organize a check-in call that can be done on an as needed basis. Note that the weekly update calls with MOE regarding ongoing remediation activities continue to be held on Wednesdays.

Please let me know if you have any concerns with the above notes.

Best Regards,
Tania

Tania Demchuk, MSc, PGeo
Mount Polley Project Manager
Sr Environmental Geoscientist
Mines and Mineral Resources Division
Ministry of Energy and Mines
250-952-0417

From: [Luke Moger](#)
To: [Demchuk, Tania MEM:EX](#); [Don Parsons](#)
Cc: [MtPolley MinePermit MEM:EX](#); Chris Carr s.22 ; [Beattie, Brent C MEM:EX](#)
Subject: RE: Draft OMS Manual [M-200 Permit - Approving the TSF Breach Repair and Perimeter Embankment Buttress Design for 2015 Embankment]
Date: Wednesday, May 6, 2015 9:28:52 AM
Attachments: [image001.png](#)

Hi Tania;

As per or phone follow-up, my apologies for not acknowledging this e-mail earlier, we are incorporating Chris' comments into our OMS along with other updates. Once complete, the OMS will be provided to MEM.

Kindest Regards,

Luke Moger, PMP

Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Demchuk, Tania MEM:EX [mailto:Tania.Demchuk@gov.bc.ca]
Sent: April-15-15 12:24 PM
To: Luke Moger; Don Parsons
Cc: MtPolley MinePermit MEM:EX; Chris Carr s.22 ; Beattie, Brent C MEM:EX
Subject: Re: Draft OMS Manual [M-200 Permit - Approving the TSF Breach Repair and Perimeter Embankment Buttress Design for 2015 Embankment]

Hi Luke,

Please review and respond to the email below summarizing Chris Carr's review of the draft OMS manual submitted on March 27th.

Thank-you,
Tania

Tania Demchuk, MSc, PGeo

Mount Polley Project Manager
Sr Environmental Geoscientist
Mines and Mineral Resources Division
Ministry of Energy and Mines
250-952-0417

From: Chris Carr s.22
Sent: Tuesday, April 14, 2015 3:16 PM
To: Demchuk, Tania MEM:EX
Cc: Beattie, Brent C MEM:EX; Narynski, Heather M MEM:EX; Warnock, George MEM:EX

Subject: RE: Draft OMS Manual [M-200 Permit - Approving the TSF Breach Repair and Perimeter Embankment Buttress Design for 2015 Embankment]

Hi Tania,

I have reviewed the draft OMS manual submitted by MPMC. The document includes the major components of an OMS as suggested by MAC in “Developing an Operation, Maintenance and Surveillance Manual for Tailings and Water Management Facilities”.

The title of the OMS is “Revision for 2015 Freshet Embankment” however much of the document covers the water management system including ditches and sumps and also includes Springer Pit. I suggest that the title be changed to be more representative of the infrastructure included.

There is very little mention of OMS requirements for Springer Pit in the main document. The OMS should include a discussion of action to be taken if, and when, the pond water level reaches elevation 1030 m? An update to the OMS may be required when these details are known.

Personnel Organization Chart is mislabelled and should be Figure 2.2.

The OMS Manual indicates that the mine has existing procedures for OMS orientation and training. How often is OMS training provided and is this training offered to contactors?

The main document indicates that Appendix B includes a plan showing instrument locations however I could not find it.

On page 83 the trigger level for slope inclinometers is 1 mm in the GLU. Since readings are to be taken weekly does this imply 1 mm/week or is it total displacement from baseline? Is this movement along a discrete plane or within the entire GLU unit? I assume this trigger applies to the upper GLU.

The trigger level for SAA is 1 mm in the GLU. Since readings are to be taken weekly does this imply 1 mm/week or is it total displacement from baseline? Is this movement along a discrete plane or within the entire GLU unit?

The trigger level for survey monuments is 0.01 m horizontal and 0.01 m vertical. Does this represent the total movement from baseline reading?

APEGBC has recently published a Professional Practice Guideline for Legislated Dam Safety Reviews in British Columbia. The Ministry will be checking that future DSRs follow the Practice Guideline and include an Assurance Statement indicating the safety status of the dam.

The document should be finalized and signed.

Regards,

Chris Carr, P.Eng.

Senior Geotechnical Engineer
On behalf of the BC Ministry of Energy and Mines
Tel: 250 544-0763
Email: s.22

From: Demchuk, Tania MEM:EX
Sent: Sunday, March 29, 2015 11:28 AM
To: 'Luke Moger'; Howe, Diane J MEM:EX
Cc: Adams, Rick MEM:EX; Don Parsons; Dale Reimer; Eldridge, Terry
Subject: RE: Draft OMS Manual [M-200 Permit - Approving the TSF Breach Repair and Perimeter Embankment Buttress Design for 2015 Embankment]

Hi Luke,

Thank-you the draft OMS manual has been successfully downloaded. MEM will follow-up with any comments or questions following its review.

Tania

Tania Demchuk, MSc, PGeo
Mount Polley Project Manager
Sr Environmental Geoscientist
Mines and Mineral Resources Division
Ministry of Energy and Mines
250-952-0417

From: Luke Moger [<mailto:lmoger@mountpolley.com>]
Sent: Friday, March 27, 2015 7:31 PM
To: Howe, Diane J MEM:EX
Cc: Demchuk, Tania MEM:EX; Adams, Rick MEM:EX; Don Parsons; Dale Reimer; Eldridge, Terry
Subject: Draft OMS Manual [M-200 Permit - Approving the TSF Breach Repair and Perimeter Embankment Buttress Design for 2015 Embankment]

Dear Diane;

As per clause C.3 (B) as set out in the December 17, 2014 M-200 Permit Amendment Approving TSF Breach Repair and Perimeter Embankment Rockfill Buttress Design for 2015 Freshet, a draft version of the Operation, Maintenance and Surveillance (OMS) Manual for the 2015 Freshet Embankment has been prepared by Mount Polley Mining Corporation with input from Golder as the Engineer of Record.

Due to size limitations, the draft OMS Manual and corresponding Appendices (A through C) will be transferred via HighTail – confirmation of receipt would be much appreciated.

If you should have any questions or comments, please don't hesitate to contact me.

Kindest Regards,

Luke



Luke Moger, PMP
Project Engineer, Mine Operations
Mount Polley Mining Corporation
PO Box 12
Likely, BC V0L 1N0
Canada

Direct: +1 (250) 790-2215 ext. 2113

Fax: +1 (250) 790-2613

E-mail: LMoger@MountPolley.com

From: [Luke Moger](#)
To: [Demchuk, Tania MEM:EX](#)
Cc: "Chris Carr" s.22
Subject: RE: Design Update [M-200 Permit - Approving the TSF Breach Repair and Perimeter Embankment Buttress Design for 2015 Embankment]
Date: Wednesday, May 13, 2015 4:26:04 PM

Chris;

I will be sending you a copy of the Updated Design Report referenced below via HighTail shortly - confirmation of receipt would be appreciated.

Regards,

Kindest Regards,

Luke Moger, PMP
Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

-----Original Message-----

From: Demchuk, Tania MEM:EX [<mailto:Tania.Demchuk@gov.bc.ca>]
Sent: May-13-15 6:55 AM
To: Luke Moger
Cc: Howe, Diane J MEM:EX; Adams, Rick MEM:EX; Don Parsons; Dale Reimer; Eldridge, Terry
Subject: Re: Design Update [M-200 Permit - Approving the TSF Breach Repair and Perimeter Embankment Buttress Design for 2015 Embankment]

Hi Luke,

I will try to download this one today and let you know if I am able to. Has this also been sent to Chris Carr? If not, could you please send him the link?

Thank-you!

Tania

Tania Demchuk, MSc, PGeo
Mount Polley Project Manager
Sr Environmental Geoscientist
Ministry of Energy and Mines
(250) 952-0417

From my mobile device

On May 12, 2015, at 1:54 PM, Luke Moger <lmoger@mountpolley.com<<mailto:lmoger@mountpolley.com>>>>
wrote:

Dear Diane;

An update has been prepared to the Design Report as submitted below based on corrections to some of the water content values of the foundation soils along the Perimeter Embankment.

I will be transferring a copy via Hightail - confirmation of receipt would be much appreciated.

Kindest Regards,

Luke Moger, PMP
Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com<<mailto:lmoger@mountpolley.com>>

From: Luke Moger
Sent: April-29-15 4:07 PM
To: Howe, Diane J EMNG:EX (Diane.Howe@gov.bc.ca<<mailto:Diane.Howe@gov.bc.ca>>)
Cc: Demchuk, Tania EMNG:EX (Tania.Demchuk@gov.bc.ca<<mailto:Tania.Demchuk@gov.bc.ca>>);
rick.adams@gov.bc.ca<<mailto:rick.adams@gov.bc.ca>>; Don Parsons; Dale Reimer; Eldridge, Terry
Subject: Design Update [M-200 Permit - Approving the TSF Breach Repair and Perimeter Embankment Buttress Design for 2015 Embankment]

Dear Diane;

As per clause C.1 (D) bullet point four (4), as set out in the December 17, 2014 M-200 Permit Amendment Approving TSF Breach Repair and Perimeter Embankment Rockfill Buttress Design for 2015 Freshet, an update to the design of the TSF Breach Repair based on information from the additional site investigation has been prepared by Golder for MPMC.

Due to size limitations, the Design Update will be transferred via HighTail - confirmation of receipt would be much appreciated.

If you should have any questions or comments, please don't hesitate to contact me.

Kindest Regards,

Luke

<image001.png>

Direct: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
E-mail: LMoger@MountPolley.com<<mailto:lmoger@mountpolley.com>>

From: [Luke Moger](#)
To: [Demchuk, Tania MEM:EX](#)
Cc: Chris Carr s.22 [Beattie, Brent C MEM:EX](#); [Eldridge, Terry](#)
Subject: RE: Mount Polley TSF
Date: Tuesday, May 19, 2015 3:50:24 PM
Attachments: [2015 05 19 - Response to MEM Comments \(Golder\).pdf](#)

Hi Tania;

As requested, please find attached a Technical Memorandum from Golder addressing the comments provided by Chris Carr.

s.22

Kindest Regards,

Luke Moger, PMP

Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113
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Email: LMoger@MountPolley.com

From: Demchuk, Tania MEM:EX [mailto:Tania.Demchuk@gov.bc.ca]
Sent: May-15-15 9:00 AM
To: Luke Moger
Cc: Chris Carr s.22 [Beattie, Brent C MEM:EX](#)
Subject: FW: Mount Polley TSF
Importance: High

Good morning Luke,

Please see the comments below from Chris Carr regarding the updated breach repair embankment design. s.22 A response prior to that time would be greatly appreciated if at all possible.

Regards,
Tania

Tania Demchuk, MSc, PGeo
Mount Polley Project Manager
Sr Environmental Geoscientist
Mines and Mineral Resources Division
Ministry of Energy and Mines
250-952-0417

From: Chris Carr s.22
Sent: Thursday, May 14, 2015 4:27 PM
To: Demchuk, Tania MEM:EX
Cc: Beattie, Brent C MEM:EX; Narynski, Heather M MEM:EX
Subject: Mount Polley TSF

Hi Tania,

I have reviewed the report titled "2015 Freshet Management Embankment Design" prepared by Golder Associates, dated May 8, 2015.

The report provides detailed information for the breach repair design and foundation conditions including Appendices for Construction Drawings, Technical Specifications, Geotechnical Characterization of Foundation Materials and Laboratory Testing. Undrained shear strength (peak and remoulded) and effective stress parameters (peak and residual) are presented for the Upper GLU and the Lower GLU, along with material properties for the other foundation units and for the embankment materials.

The report is Revision 3 of the design document and includes information collected from the site investigation carried out along the Perimeter Embankment.

The report includes stability analyses for the Perimeter Embankment Buttress. The report suggests that the Upper GLU is confined to the breach area and that only the Lower GLU is present, in areas, under the remainder of the Perimeter Embankment. A table providing a summary of the moisture contents and index properties for the GLU under the Perimeter Embankment (excluding the breach area) would be useful to show that the GLU encountered has properties that are similar to the Lower GLU. This is important since the strength parameters for the two GLU units are different and could have an influence on the calculated factor of safety.

Table 19 indicates that the calculated static factor of safety for Sections 3+400 and 3+535 is 1.4 for total stress analysis based on a preconsolidation pressure of 700 kPa (Figure 14). The required minimum factor of safety would however be achieved if the preconsolidation pressure is 900 kPa. Justification for adopting a preconsolidation pressure of 900 kPa is therefore required.

It is noted that additional piezometers, 3 slope inclinometers and 14 survey monuments are to be installed in the 2015 Freshet Management Embankment and abutment areas.

Could you forward these comments to MPMC. If possible, a response by end of day next Wednesday would be helpful otherwise I will discuss with Brent.

Regards,

Chris Carr, P.Eng.
Senior Geotechnical Engineer
On behalf of the BC Ministry of Energy and Mines
Tel: 250 544-0763

Email:

s.22

From: [Luke Moger](#)
To: [Demchuk, Tania MEM:EX](#); [Bunce, Hubert ENV:EX](#); [Adams, Rick MEM:EX](#)
Subject: RE: TAR Submission List
Date: Friday, May 29, 2015 9:53:13 AM
Attachments: [image001.png](#)

Hi Tania;

Thanks for the update – will do!

Kindest Regards,

Luke Moger, PMP

Project Engineer, Mining Operations
Mount Polley Mining Corporation

Tel: +1 (250) 790-2215 ext. 2113
Fax: +1 (250) 790-2613
Email: LMoger@MountPolley.com

From: Demchuk, Tania MEM:EX [mailto:Tania.Demchuk@gov.bc.ca]
Sent: May-29-15 9:25 AM
To: Luke Moger; Bunce, Hubert ENV:EX; Adams, Rick MEM:EX
Subject: RE: TAR Submission List

Hi Luke,

Thank-you for checking on this. Please send the TAR to the list of people you have identified below, this will be the screening team. Rick or I will send an email to this team outlining the screening period and highlighting that they will receive an electronic copy directly from yourself.

Tania

From: Luke Moger [mailto:lmoger@mountpolley.com]
Sent: Friday, May 29, 2015 7:23 AM
To: Demchuk, Tania MEM:EX; Bunce, Hubert ENV:EX; Adams, Rick MEM:EX
Subject: TAR Submission List

Hi Tania/Hubert/Rick;

I was just wanting to follow up on the TAR submission process. Should we be providing this to MEM/MoE for distribution within the groups, or to the RMDRC Chair? I am assuming it would go to both?

Additionally, we have identified the following individuals for the initial submission, please let me know if you would like MPMC to submit directly, or if MEM/MoE/RMDRC would like to refer the TAR with some comments for context. If you have any additions/subtractions, also please let me know!

- Rick Adams (RMDRC)
- Tania Demchuk (MEM)
- Brian Yamelst (MoE)
- Chris Swan (MoE)
- Darryl Hussey (DFO)
- Aaron Higginbottom (WLIB)
- Julia Banks (SCIB)
- Doug Watt (Likely)

Kindest Regards,

Luke



Luke Moger, PMP

Project Engineer, Mine Operations

Mount Polley Mining Corporation

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