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MOUNT POLLEY MINING CORPORATION
MOUNT POLLEY PROJECT
TAILINGS STORAGE FACILITY
AND ANCILLARY FEATURES

MAY 1, 1997 SITE INSPECTION
(REF. NO. 1627/4)

JUNE 3, 1997

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DATE: 8 May, 1997
TIME:

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SENDER: kde

FILE NO: 1627.01
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PAGES: 1 of 7

APPROVED: KJB

TO: Mount Polley Mining Corporation

FAX No. : 250 790 2268

ATTN: Don Parsons

SUBJECT: Site Inspection (May 1, 1997)

Don,

A summary of comments from my May 1, 1997 site inspection is included on the following pages. Recommended action items for MPMC are underlined. Three of the significant action items are:

1. Southeast Sediment Pond - The spring at the corner must be closely monitored. A filter may be required if any signs of instability are observed in the fill above.
2. Main Embankment – The piles of "unsuitable" fill (with snow and ice) should be removed to waste so that the downstream toe of the fill and the nearby foundation soils can be inspected and monitored.
3. Main Embankment – All three outlets from the Chimney Drain need to be located and exposed so that they can be monitored.

There are several other action items on the summary which are not as critical, but should be addressed.

I recently spoke with George Headley about his site trip. We have tentatively rescheduled it for Tuesday May 27. I will send a copy my photos to you today. Please let me know if you have any comments or concerns.

Regards,

Ken Embree

cc: Malcolm Swallow, MPMC Vancouver
Brian Kynoch, IMC Vancouver

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1627.01
May 5, 1997

MOUNT POLLEY
SITE INSPECTION - MAY 1, 1997

1) Southeast Sediment Pond and Decant Sump/10" Outlet Pipe

Photo No.

(1, 2, 3) • Pond level is El. 1056.0 m, which is below the invert of the overflow culvert. Pond level is now decreasing.

(7, 8) • Spring located on west side of pond, just before corner.

(7, 8) • Water appears to be from below the embankment fill, probably in the top of the fractured bedrock at the till interface.

(7, 8) • Water exiting seep is clear. The length of the area where occasional springs are present at the corner is approx. 25 m.

(7, 8) • The fill above the spring does not appear to be adversely affected. The fill immediately above the spring is wetter, but not higher above (likely due to wetting from saturated material below).

• MPMC reports that the spring flows seem to be affected by the pond elevation (EWL). This is likely due to recharge from a higher pond onto the exposed fractured rock at the back of the pond. It was reported that the spring flows slowed down after the pond level dropped. The pond liner level needs to be confirmed.

(5, 6) • A walk along the toe revealed numerous springs exiting from the toe of the topsoil/stripping waste piles. The piles are saturated and unstable, with cracking and some slump failures. This is seen for the full length of the embankment, wherever stripping piles are present.

(5, 6) • As above, the fill above the wet stripping piles is not greatly affected and most cracking is on the groomed areas below the 2H:1V final (overall) toe.

Photo No.

- The springs and fill condition must be closely monitored. A graded filter should be installed (with filter fabric) if any signs of instability in the fill are observed.

(4) • The manhole sump currently has 3 of 4 pipes operating. Previously all 4 pipes were opened and the 10" outlet pipe to the T2 dropbox easily kept up. MPMC are planning to add another inlet pipe at the second lowest level. To do this, they propose to temporarily block the inlet ditch after the flow slows down, causing water to spill out the overflow culvert. The overflow culvert is not ready and needs riprap first. Also, the road/berm on the downhill side of the channel needs to be repaired at the overflow culvert because there is some

(3) minor cracking.

(4) • The manhole sump has water leaking in through one of the joints. This is a concern because it may mean that the fill is completely saturated. This should be inspected when the pond is lower.

(9) • A bypass tee for the 10" discharge pipe above the reclaim sump was discussed with MPMC. The bypass can be used to allow flows to be discharged to the environment, when possible (based on water quality, etc.). A good location for the bypass should be selected in the field. Knight Piesold will provide a design recommendation.

(9) • The 10" discharge line has a pressure rating of DR21 (80 psi).

(9) • The 10" discharge line currently cannot be shut off to permit flows to be passed to the environment. The flows either go to the T2 dropbox or to the reclaim sump. This flow routing will need to be changed if a bypass is installed.

2) T2 Dropbox/Reclaim Sump

Photo No.

(11) • Two anchor blocks have been placed on the bends on the reclaim line coming out of the pumphouse. Two more anchor blocks should be installed so that there are two at each section of the S-shaped curve.

(10) • An inverted block is recommended for the reclaim pipeline immediately up-gradient from the reclaim booster pump station. This is required to anchor the pipe in place, not just to prevent movement (like the regular anchor blocks do). If it is not possible to install this block because the pipe is in place, an alternative should be developed.

(10) • The T2 drop box needs repairs to concrete.

(10) • The overflow pipes from the reclaim booster sump to the T2 dropbox are not installed yet. MPMC to provide prefabricated pieces for NA because the pipes don't line up well. These pipes must be installed before any testing is started.

(12) • The overflow culvert at the overflow pond is higher than the inlet pipe. Therefore, the inlet pipe will back up if the pond is filled. The overflow culvert extends through the fill, with a riprap lined channel extending to the pipe containment channel (not a culvert all the way to the channel).

(11) • The tailings line appears to go up slightly where the pipes cross, uphill from the T2 dropbox. This should be fixed so that there are no high spots.

3) Bootjack Creek Crossing

Photo No.

(13) • The fill slopes look good, with no signs of instability.

(14) • Dirty water is entering Bootjack Creek just before pipe arch

Photo No.

culvert (from road construction). This is being fixed by MPMC who are_installing rock for erosion protection in ditch.

(14) • Contractor was placing wearing course on road just upstream of Bootjack Creek crossing.

4) Pipe Outlets

Photo No.

(15, 16) • Mark 1a is installed, with high flows from the Southeast Sediment Pond and Millsite Sump.

(16) • The discharge channel at Mark 1a is too flat at the start and may sand up if tailings are discharged. MPMC are planning to extend the HDPE pipe from the Mark 1a valve to a steeper, more open area.

(20) • The Polley Lake pipeline continues to pump water at a maximum rate of 5400 US gpm. MPMC are planning to pump 2 more weeks. The access road is very soft and is not trafficable.

5) Perimeter Embankment

Photo No.

(21, 22) • The Seepage Collection Pond (PESCP) looks good. The current water level is El.928 approx. The seepage recycle pump is working and discharging local runoff back into the TSF. The pipeline is buried 1m through the fill.

• The downstream area has some ponded water and extensive areas are very soft, with fill over buried snow. This will need to be removed to stripped original ground surface for Stage II construction. The soil is especially soft at the SCP

Photo No.

area where there were many disturbances.

- The embankment and pipeline look good. The crest is very soft and slippery (will need cleanup/excavation for Stage II).
- Runoff into the TSF is being directed away from the embankment.
- There is one area of stripping waste adjacent to the embankment at the left abutment (Ch. 42+50 to 43+00). This may need to be moved during the summer.

6) Main Embankment

Photo No.

- Flows in the drain monitoring sump are low and clear.

(23) • The current water level at the Seepage Collection Pond (MESCP) is approx. El. 909.3. The outlet pipe at the drain monitoring sump is still plugged and the sump is being pumped out. The plug will be removed as the 2 or 3 pumps in the seepage recycle sump are now keeping up with inflows.

(23) • Runoff from additional areas downstream of the Main Embankment is being diverted to the MESCP. MPMC should provide an estimate/sketch of all areas diverted into the MESCP so that any additional flows can be included in the water balance.

- There is a slight flow from one of the Toe Drain Main Conveyance Pipes (right side). MPMC should confirm why.

(24) • There is extensive erosion where runoff has entered the north side of the MESCP. This should be repaired by placing more fill (crushed rock is acceptable) in the eroded area. Suitable storm runoff control measures (a runoff channel) should be incorporated to minimize the possibility of future erosion.

(25, 26) • There are 2 seepage recycle pipes that return water to the TSF. One pipe is buried 1 m deep in the embankment fill and

Photo No.	
	the other is on the crest. The ends of the pipes should be pulled out of the water as the pond level rises inside the TSF.
	• The area downstream of the MESCP/ Bootjack-Morehead connector road (the old creek bed) should be re-graded and re-vegetated.
(25)	• There is a damp spot on the downstream face of the embankment fill at the location of the seepage recycle pipes (Ch. 19+25). It appears to be related to the presence of wet "unsuitable" material piled against the downstream toe of the embankment. The damp material has small surficial slumps and is also cracking. This dampness and cracking is evident at many places on the downstream face.
(25, 30, 31, 32, 33, 34)	• The pile of wet "unsuitable" fill included snow and ice from clearing of the Stage 1a El. 920 Zone B crest. The result is that the overbuilt area is unstable, with loose fill and cracking evident. Moisture is being absorbed by drier fill above the "unsuitable" fill piles, resulting in more slumping and cracking. Some cracks may be as high as El. 918 m. This "unsuitable" fill is continuous below the Stage Ia crest and slumping and cracking are especially obvious where the "unsuitable" fill piles are larger. There are occasional seeps coming out of the melting unsuitable fill piles. These seeps are believed to be the result of melting snow and ice in the "unsuitable" fill piles. All "unsuitable" material should be removed and the downstream slope redressed over the area as described above.
	• There is a small spring coming out of the red glacial till/bedrock contact downstream of the embankment at the right abutment.
	• Only one outlet drain (Ch. 20+50) for the chimney drain was visible and was not flowing. The other two outlet drains (Ch. 19+50 and Ch. 21+50) should be located and exposed so they can be monitored.

Photo No.

- There is a spring near the location of the outlet drain at Ch. 21+50. The water is probably from saturated unsuitable fill. This should be verified by exposing the outlet drain, as above.

(27)
- Nine (9) six inch spigots are being set up (3 sections x 3 spigots/section). Only 5 or 6 spigots should be operated at start-up. The front 3 or 4 spigots should be turned off (by clamping the material handling hose or installing a blind flange) and discharge should always be out of the spigots starting from the downstream end of the movable discharge section. The optimum number of spigots will be determined during operations.

(27)
- The movable discharge section is set up at the right abutment (Ch. 16+00 to 19+00). It should be moved to the deepest part of the basin (Ch 19+50 to 21+50) as soon as a beach develops at the right abutment.
- MPMC are planning to install 18" HDPE pipes below the material handling hose for the spigots. Slots will be cut at 1 m (on slope) increments. The HDPE pipes will need to be anchored to the upstream face of the embankment.
- The material handling hose connected to each offtake needs to be anchored on the fill also. The hoses must also be anchored inside the 18" HDPE pipe so they can't pull out.
- The toe drain conveyance pipe locations need to be finalized, with confirmation of design requirements (number of seepage cutoffs, total length, etc.) by Knight Piesold.
- NA requested confirmation that anchors blocks are required at the change from plastic to steel pipe. They are required as per the drawings.
- The piezometer cables should be carefully relocated on the embankment crest. They will be moved to the instrumentation monitoring hut after the final footprint is prepared during Stage II construction.

7) Millsite Sump

Photo No.

- The fill slopes look very good, with no signs of instability.
- No seepage was observed. Pre-existing springs exit past the final downstream toe.
- A notch was cut for the pipe to the tailings line. The notch is lower than the overflow culvert. The final configuration needs to be determined and the notch needs to be backfilled and properly compacted.

8) Miscellaneous

Photo No.

- Sharp rocks in the pipe containment channel should be removed.
- The culvert at the west intersection of the old and new Bootjack-Morehead Connector Roads is causing some erosion to the fill and should be repaired.



Photo No. 1 - Waste Dump Ditch just before entering Southeast Sediment Pond (SESP); looking upstream.



Photo No. 2 - Waste Dump Ditch entering SESP, with over-flow culvert in foreground; looking downstream.



Photo No. 3 - Overflow culvert for SESP. Riprap stockpiled for placement at culvert outlet. Roadway cracking and slumping.



Photo No. 4 - SESP looking upstream from manhole decant. 3 of 4 pipes in operation. 1 joint between manhole sections is leaking.



Photo No. 5 - Saturated topsoil/stripping waste past final D/S toe has slumped. Note spring at base.



Photo No. 6 - Cracking on groomed areas below final D/S toe caused by saturated topsoil/stripping waste below.



Photo No. 7 - Fill above seep/spring at corner of SESP. Fill does not appear adversely affected. Note small investigation hole above filter fabric.



Photo No. 8 –

(Panorama No. 1)

Spring at corner of SESP. Filter fabric brought over by MMC needs rock fill cover to be effective. Spring water clear until disturbed while investigating. Note water flowing down west (LHS) side at base of fill.



Photo. No. 9 — Discharge pipe from SESP to Reclaim Sump / T2 Dropbox. Bypass Tee could be installed somewhere here. Currently flows are either to T2 Dropbox or Reclaim Sump (could be turned off). Pipe approx. DR21.



Photo NO. 10 — Reclaim Booster Pumpstation. Reclaim pipeline needs to be anchored where it exits the building. Note that overflow pipes from sump to T2 are not installed yet. Also some repairs are needed to concrete inside T2 dropbox (patching).



Photo. No. 11 — Anchor blocks on reclaim line. Two more blocks are required as per design drawings. Note that tailings line goes up before pipeline crossing.



Photo No. 12 — Overflow pond for T2 dropbox. Overflow culvert is higher than inlet pipe.



Photo No. 13 - Bootjack Creek Crossing; looking towards TSF. CSP sleeves around HDPE pipelines. Fillslopes look stable.



Photo No. 14 - Dirty water from road construction entering Bootjack Creek just upstream of crossing.



Photo No. 15 - Mark 1 on dump valve at top of TSF.



Photo No. 16 - Outflow from Mark 1 dump valve (SESP, Millsite flows). Channel needs work to avoid sanding. MMC planning to extend pipe.



Photo No. 17 – Crossing of Reclaim Line (top) over tailings line (bottom) at top of TSF.



Photo No. 18 – Crossing of tailings line below road surface at top of TSF. Runoff flows are from direct catchment above TSF.



Photo No. 19 – Tailings line looking towards Perimeter Embankment. High spot is above cross-drain culvert. Runoff flows are from direct catchment above TSF.



Photo No. 20 – Outflow from Polley Lake Pumping System (5400 USGPM.)



Photo No. 21 (Panorama No. 2) - Perimeter Embankment seepage collection Pond.
Power poles to seepage Recycle sump on RHS.



Photo No. 22 —

Outflow from Perimeter Embankment Seepage Recycle Sump.



Photo No. 23 – Main Embankment Seepage Collection Pond (MESCP). Power poles to seepage recycle sump on KMS. Additional catchment O/S of embankment diverted to MESCP.



Photo No. 24 – Erosion at NE corner of MESCP (may have been caused during pumping in October).



Photo No. 25 – Two HDPE lines from seepage recycle sump. Note dump spot approx. halfway up the pipes. Also, note wet (darker) material at bottom.



Photo. No. 26 – Outflow from MESCP.



Photo. No. 27 (Panorama No. 3)
View looking u/s from Main Embankment.
Pond El approx El. 925m. Note spigots
set up on LHS (ch. 16+00 to ch. 19+00).



Photo No.28 (Panorama No.4) - View from Borrow Area (Original) to Main Embankment. Note movable discharge section being assembled at the right abutment



Photo No.29 - Zoom of movable discharge section.



Photo No. 30 - Cracks along downstream toe due to presence of wet or unsuitable material.



Photo No. 31 - Cracking at downstream toe, towards right abutment.



Photo No. 32 - Water from site of wet or unsuitable material. Note snow and ice.



Photo No. 33 - Spring from base of unsuitable fill.

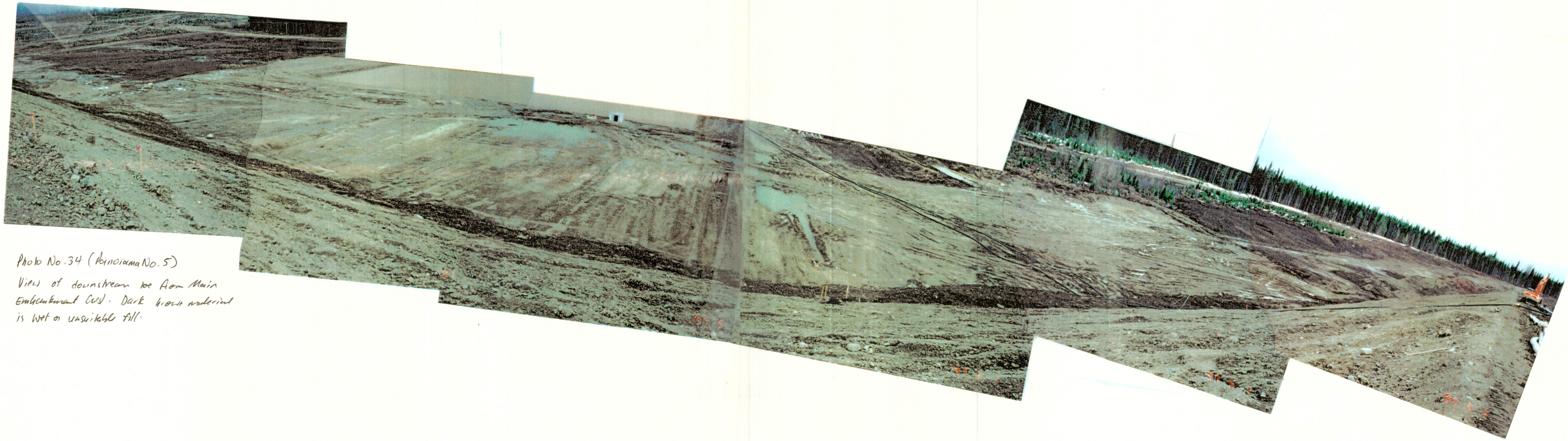

Photo No. 34 (Panorama No. 5)
View of downstream toe from Main Embankment (US). Dark brown material is wet or unsuitable fill.