

Field Monitoring Report

-- Pebble Copper/Gold Exploration Project --

Personnel: Bill Cole (DNR)

Chris Foley (DEC)

Nathan Patry (DEC)

Inspection Date: October 28 & 29, 2008

Site Contact: Gary Deschutter

APMA #: A086118

■ Inspection Type:

- Complete: Inspected drills 1-6, all that were on site. Overflew Big Wiggly fuel storage site and G Valley (possible tailings pond site) Landed at Frying Pan Lake.
- Partial:
- Follow-up:
- Response to Public Complaint:

■ Weather Conditions:

- Temperature: Around 22 degrees F, both days
- Wind: Light, 5-10 mph
- Precipitation: None
- Visibility: Greater than 10 miles, both days
- Sky Conditions: Clear on the 28th; partly cloudy to cloudy on the 29th
- Ground Conditions: Snow covered. Snow was very drifted, but averaged 7-8 inches.

■ Wildlife Observed:

- Bear: Noted probable tracks at south end of Frying Pan Lake.
- Caribou: None
- Moose: None
- Waterfowl: None
- Fish: None, but Pebble environmental personnel told us that there were still a few coho salmon in Newhalen River.
- Other: Large fox at Big Wiggly, bald eagle along Upper Talarik Creek, foxes at drills 1 & 6, raven at drill 5, several beaver ponds

■ Water level at Frying Pan Lake:

- Observed inflow: Partially frozen, but full to vegetation level
- Observed outflow: Full to vegetation level

Comments: Drill rigs were largely clean and in good order. All fuel containments were in good order as well. The Big Wiggly fuel storage facility was not in use at the time of our inspection because the lake is freezing over. Currently there are 12" of ice, and PLP will begin flying the Beaver on skis for fuel transfer soon. Most water intake points were not visible due to snow and ice cover. Geotechnical drilling has been stopped for this year. Planned winter shut down of drilling will be December 13.

We spoke with Drew Takahashi, Pebble expeditor, about handling of drilling fluids. The PLP is changing to recirculation of drilling fluids for the winter, and may continue to use recirculation next year. Drill returns are being passed through a series of settling sump pits first, where most of the cuttings settle out. The fluids are then passed through baffled recirculation tanks before being re-used in drilling. The cuttings are buried in the pits when the hole is abandoned. This largely stops discharge to the ground, but there is some degree of spillage from the tanks, and drilling mud has to be replaced periodically. In cold weather the drills have to pump water constantly in order to prevent water lines from freezing. The drilling crews discharge the excess onto the ground.

There were bales of straw placed to stop flow of discharged fluids from going into a nearby pond at drill #2. We asked PLP personnel if the straw was weed/invasive free. Gary Deschutter has since informed me that the straw is not weed/invasive free, but the Partnership will look into using weed free straw next season.

Recommendations:

- State regulatory agencies and the PLP should further discuss the relative merits of handling drill fluids by discharge onto the ground, discharge into dry depressions, or recirculation.
- If sorbent pads are in use, they should be picked up before helicopters enter the rig area.
- The discharge of excess water directly onto the ground in a concentrated stream could cause erosion. The effects of direct discharge should be evaluated, and possibly some sort of diffuser should be placed to reduce damage. Something as simple as a sheet of plywood, possibly with a rough surface, might be effective.
- Request information from PLP on whether seed mix used for rehabilitation of drill sites is consistent with native vegetation.

Actions Needed: None



Photo #1. Big Wiggly fuel storage. Not in use at time of inspection.

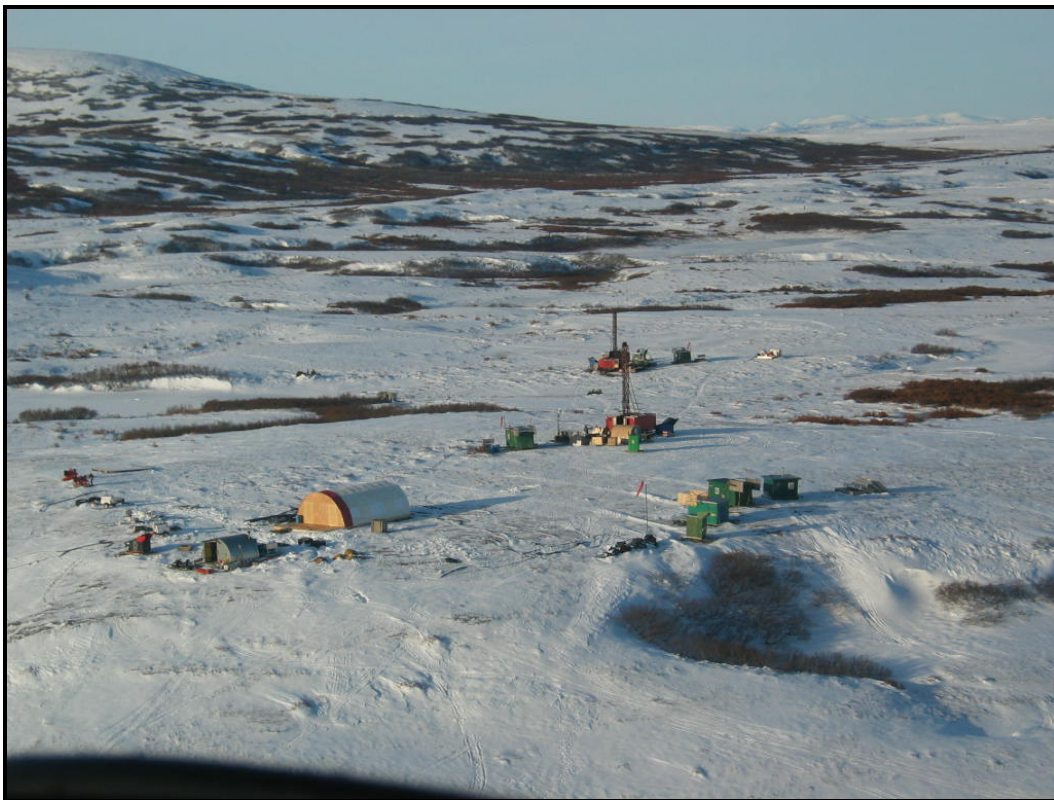


Photo #2. Drills and water line storage area at Pebble Project.



Photo #3. South Fork Kaktuli River immediately below Frying Pan Lake.



Photo #4. Beaver pond and lodge in uppermost South Fork Kaktuli drainage, above Frying Pan Lake.

Drill Hole/Site No.: 8438

Activity: Drilling at 844'.

Drill has been on hole for about 2 weeks.

Rig No.: 1

Date: 10/29/08

■ **Condition of Drilling Site:**

- Distance from waterbody: >500'; wetland approx. 300' away.
- Location of fuel storage: Next to drill, on tundra pad.
- Sorbent pads present: Yes
- Tundra mat: Yes
- Pipe off tundra: Yes
- Litter: Picked up 2 or 3 pieces of plastic.
- Trash containment: Yes
- Sanitary facilities: Yes
- Any spills or staining: No
- General impression: Clean and orderly, except for minor trash

■ **Drilling Activity:**

- Drill additives in use: Extreme #1, a deflocculant and viscosity agent.
- Water recirculation: Yes
- Water discharged: None
- Artesian zone encountered: A 25 gpm artesian flow was encountered in overburden, and cemented off.

■ **Sump Pit:**

- Location: 50' north of drill
- Discharge trench: Yes
- Dimensions of pit: Three pits; 6'X6', 6'X8', and 8'X16'
- In use: Yes

■ **Sump Pit (continued):**

- Location and extent of discharged material: None
- Topsoil, muck, tundra stockpiled: Yes
- Location of secondary sump pit: Adjacent to pad
- Hose color: n/a

■ **Drill Water Supply:**

- Stream, lake, kettle pond: Previously drilled artesian well
- Location: 6-800' to NW of drill
- Adequate water flow and depth for fish passage in streams: n/a
- Evidence of significant impacts to riparian vegetation or stream banks: n/a
- Relative water level: n/a
- General impression of water body, i.e. clear, turbid, tannic: n/a
- Intake structure: n/a
- Structure clear of debris: n/a
- Mesh size: n/a
- Submerged: n/a
- Pump location to source: At source
- Catch basin for fuel supply: Yes
- Sorbent pads: Yes
- Hose color: Black



Photo #5. Drill rig #1 on hole #8438.



Photo #6. Recirculation mud tank on drill #1.



Photo #7. Fuel and containment for crew shed.



Photo #8. Crew member changing out spill kit at water pump for drill #1.

Drill Hole/Site No.: 8440M

Activity: Demobilizing. TD 1667'

Rig No.: 2

Date: 10/28/08

■ **Condition of Drilling Site:**

- Distance from waterbody: 200' NNE
- Location of fuel storage: Next to drill on tundra pad
- Sorbent pads present: Yes
- Tundra mat: Yes
- Pipe off tundra: Yes
- Litter: None
- Trash containment: Yes
- Sanitary facilities: Yes
- Any spills or staining: No
- General impression: Reasonably clean, but there has been mud discharge downhill toward the water supply, and continues to be a discharge next to be recirculation tank.

■ **Drilling Activity:**

- Drill additives in use: Penetrol and EZ MUD
- Water recirculation: Yes
- Water discharged: No
- Artesian zone encountered: None

■ **Sump Pit:**

- Location: 30-50' S
- Discharge trench: No
- Dimensions of pit: 2 pits; 6'X6' and 8'X8'
- In use: Yes

■ **Sump Pit (continued):**

- Location and extent of discharged material: Before mud tank was installed mud flowed downhill to NE, toward kettle pond. Straw bales placed to stop flow. Photo
- Topsoil, muck, tundra stockpiled: Yes
- Location of secondary sump pit: Adjacent to pad
- Hose color:

■ **Drill Water Supply:**

- Stream, lake, kettle pond: Kettle pond, frozen over
- Location: 200' NNE of drill
- Adequate water flow and depth for fish passage in streams: Not visible
- Evidence of significant impacts to riparian vegetation or stream banks: No

- Relative water level: Not visible
- General impression of water body, i.e. clear, turbid, tannic: Not visible
- Intake structure: Not visible
- Structure clear of debris: Not visible
- Mesh size: Not visible
- Submerged: Yes
- Pump location to source: 100' SW
- Catch basin for fuel supply: Yes
- Sorbent pads: Yes
- Hose color: Black

Mud was flowing out of the recirculation tank. Most flowed into sump, but some was flowing onto ground next to drill. Photos



Photo #9. Fuel and containment at drill #2. Spill kit and scrubber barrel are in place.



Photo #10. Water intake for drill #2, in kettle pond.



Photo #11. Ice where discharge has flowed toward pond.



Photo #12. Straw bales placed to block flow of discharge toward pond.



Photo #13. Drilling mud overflowing from recirculation tank at drill #2.



Photo #14. Fluid discharge from recirculation tank onto ground on west side of drill #2.

Drill Hole/Site No.: 8436

Rig No.: 3

Activity: Drilling at 2376'

Date: 10/29/08

■ Condition of Drilling Site:

- Distance from waterbody: 500' SE and SSE
- Location of fuel storage: Next to drill on tundra pad
- Sorbent pads present: Yes
- Tundra mat: Yes
- Pipe off tundra: Yes
- Litter: None
- Trash containment: Yes
- Sanitary facilities: Yes
- Any spills or staining: No
- General impression: Clean and orderly

■ Drilling Activity:

- Drill additives in use: EZ MUD and Penetrol
- Water recirculation: Yes, small recirculation tank in drill house
- Water discharged: No
- Artesian zone encountered: None

■ Sump Pit:

- Location: SW side of drill
- Discharge trench: Yes
- Dimensions of pit: 3 pits; 8'X12', 8'X10', 8'X8'
- In use: Yes

■ Sump Pit (continued):

- Location and extent of discharged material: SSE, 2-3 gpm discharge extends ~200' down slope.
- Topsoil, muck, tundra stockpiled: Yes
- Location of secondary sump pit: Adjacent to pad
- Hose color:

■ Drill Water Supply:

- Stream, lake, kettle pond: Small stream. Frozen and snow covered. Could not see intake.
- Location: 1,000' W of drill
- Adequate water flow and depth for fish passage in streams: Not visible
- Evidence of significant impacts to riparian vegetation or stream banks: No
- Relative water level: Not visible
- General impression of water body, i.e. clear, turbid, tannic: Not visible
- Intake structure: Not visible
- Structure clear of debris: Not visible
- Mesh size: Not visible
- Submerged: Not visible
- Pump location to source: 150'
- Catch basin for fuel supply: Yes
- Sorbent pads: Yes
- Hose color: Black



Photo #15. Drill #3, sump pits and drilling discharge.



Photo #16. Water pump for drill #3.



Photo #17. Shed and fuel containment at water pump for drill #3.



Photo #18. Water intake for drill #3.

Drill Hole/Site No.: 8441M

Activity: Drilling at 407'

Rig No.: 4

Date: 10/29/08

■ **Condition of Drilling Site:**

- Distance from waterbody: 600'
- Location of fuel storage: At drill on tundra pad
- Sorbent pads present: Yes
- Tundra mat: Yes
- Pipe off tundra: Yes
- Litter: None
- Trash containment: Yes
- Sanitary facilities: Yes
- Any spills or staining: Approx. 1 gal. hydraulic fluid was spilled this morning. Most was captured at the time of spill. Some got into the sump. There were a few places where a minor sheen could be seen on the sumps and discharge area. Drillers were placing sorbent pads to collect remaining fluid.
- General impression: Clean and orderly

■ **Drilling Activity:**

- Drill additives in use: EZ MUD and Extreme #1; Penetrol may be used soon.
- Water recirculation: No
- Water discharged: Yes
- Artesian zone encountered: No

■ **Sump Pit:**

- Location: NW side of drill
- Discharge trench: Yes
- Dimensions of pit: 3 pits; 6'X6', 6'X6', 8'X8'
- In use: Yes

■ **Sump Pit (continued):**

- Location and extent of discharged material: Approx. 23 gpm flowing down hill to NE about 250'. Collecting in a depression. Photo.
- Topsoil, muck, tundra stockpiled: Yes
- Location of secondary sump pit: Adjacent to pad
- Hose color:

■ **Drill Water Supply:**

- Stream, lake, kettle pond: Pond
- Location: 600' NW of drill, snow covered

- Adequate water flow and depth for fish passage in streams: Not visible

- Evidence of significant impacts to riparian vegetation or stream banks: No
- Relative water level: Not visible
- General impression of water body, i.e. clear, turbid, tannic: Not visible
- Intake structure: Not visible
- Structure clear of debris: Not visible
- Mesh size: Not visible
- Submerged: Not visible
- Pump location to source: 100' SE
- Catch basin for fuel supply: Yes
- Sorbent pads: Yes
- Hose color: Black



Photo #19. Sorbent pads on sump pits at drill #4.

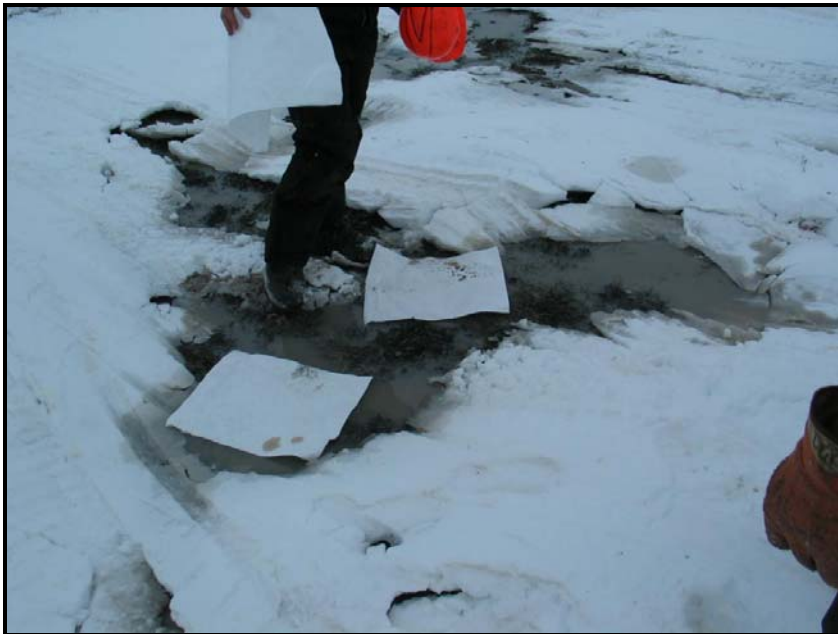


Photo #20. Sorbent pads being placed on discharge from drill #4.



Photo #21. Sheen from hydraulic fluid on discharge from drill #4.



Photo #22. Depression catching discharge from drill #4.

Drill Hole/Site No.: 8420

Rig No.: 5

Activity: Preparing to cement fault at 4950'-4978'

Date: 10/29/08

■ **Condition of Drilling Site:**

- Distance from waterbody: 400'
- Location of fuel storage: N side of drill on tundra pad
- Sorbent pads present: Yes
- Tundra mat: Yes
- Pipe off tundra: Yes
- Litter: None
- Trash containment: Yes
- Sanitary facilities: Yes
- Any spills or staining: No
- General impression: clean and orderly

■ **Drilling Activity:**

- Drill additives in use: EZ MUD, Extreme #1, PAC-R
- Water recirculation: No, but will begin soon
- Water discharged: Yes
- Artesian zone encountered: Unknown, new driller

■ **Sump Pit:**

- Location: NE side of drill
- Discharge trench: Yes
- Dimensions of pit: 2 pits; 8'X8', 8'X8'
- In use: Yes

■ **Sump Pit (continued):**

- Location and extent of discharged material: Extends ~200' downhill to NNE
- Topsoil, muck, tundra stockpiled: Yes
- Location of secondary sump pit: Adjacent to pad
- Hose color:

■ **Drill Water Supply:**

- Stream, lake, kettle pond: Stream
- Location: 400' NW of drill, covered in snow
- Adequate water flow and depth for fish passage in streams: Not visible
- Evidence of significant impacts to riparian vegetation or stream banks: No
- Relative water level: Not visible
- General impression of water body, i.e. clear, turbid, tannic: Not visible
- Intake structure: Not visible
- Structure clear of debris: Not visible
- Mesh size: Not visible
- Submerged: Not visible
- Pump location to source: 100' SE
- Catch basin for fuel supply: Yes
- Sorbent pads: Yes
- Hose color: Black



Photo #23. Drill #5.



Photo #24. Chris Foley, of DEC, inspecting fuel containment at Drill #5.



Photo #25. Drill rods at rig #5.



Photo #26. One of two sump pits at drill #5. Outflow is to bottom left of photo.



Photo #27. Fluid discharge extends approximately 200' downhill from drill #5.



Photo #28. Water pump at drill #5.

Drill Hole/Site No.: 8430

Activity: Drilling at 3996

Rig No.: 6

Date: 10/29/08

■ **Condition of Drilling Site:**

- Distance from waterbody: 400'
- Location of fuel storage: Next to drill on tundra pad
- Sorbent pads present: Yes
- Tundra mat: Yes
- Pipe off tundra: Yes
- Litter: Picked up a small wad of duct tape
- Trash containment: Yes
- Sanitary facilities: Yes
- Any spills or staining: No
- General impression: Clean and orderly

■ **Drilling Activity:**

- Drill additives in use: EZ MUD, Extreme #1
- Water recirculation: Yes
- Water discharged: Yes, excess water from water line being discharged from 1" hose.
- Artesian zone encountered: Unknown

■ **Sump Pit:**

- Location: W side of drill
- Discharge trench: No
- Dimensions of pit: 4 pits; 6'X6', 8'X8', 8'X10', 6'X6'
- In use: Yes

■ **Sump Pit (continued):**

- Location and extent of discharged material: None
- Topsoil, muck, tundra stockpiled: Yes
- Location of secondary sump pit: Adjacent to pad
- Hose color:

■ **Drill Water Supply:**

- Stream, lake, kettle pond: Stream
- Location: 300' SW of drill
- Adequate water flow and depth for fish passage in streams: Yes
- Evidence of significant impacts to riparian vegetation or stream banks: No
- Relative water level: Full
- General impression of water body, i.e. clear, turbid, tannic: Clear
- Intake structure: Yes
- Structure clear of debris: Yes
- Mesh size: Not visible
- Submerged: Yes
- Pump location to source: 150'
- Catch basin for fuel supply: Yes
- Sorbent pads: Yes
- Hose color: Black



Photo #29. Sump pits and recirculation tank at Drill #6. Mud was overflowing from the tank into the pits, but none was leaving the sumps.



Photo #30. Fuel containment at drill #6.



Photo #31. Water pump and intake stream for drill #6.



Photo #32. Water intake for drill #6.



Photo #32. Excess water being discharged onto the tundra at drill #6.