

## Field Monitoring Report -- Pebble Copper/Gold Exploration Project --

Personnel: Kate Malloy (ADF&G)	Inspection Date: 5-24-2011
Ron Benkert (ADF&G)	Site Contact: Jeff Norberg (PLP)
	APMA #: A116118
<b>■ Inspection Type:</b> <input type="radio"/> Complete: x <input type="radio"/> Partial: <input type="radio"/> Follow-up: <input type="radio"/> Response to Public Complaint:	<b>■ Wildlife Observed:</b> <input type="radio"/> Bear: <input type="radio"/> Caribou: <input type="radio"/> Moose: <input type="radio"/> Waterfowl: <input type="radio"/> Fish: <input type="radio"/> Other: 2 ptarmigan
<b>■ Weather Conditions:</b> <input type="radio"/> Temperature: 36 degrees F <input type="radio"/> Wind: 28 mph, with gusts up to 37 mph <input type="radio"/> Precipitation: None <input type="radio"/> Visibility: Good, approx. 10 miles <input type="radio"/> Sky Conditions: Overcast but high ceiling <input type="radio"/> Ground Conditions: Some snow still present	
<b>■ Comments:</b> Pipes were observed laying on the tundra at DDH 11526/11527. The crew was instructed to move pipes onto the tundra pad and this was corrected during the inspection. DDH 11528 had areas on the tundra where drill water had overflowed trench.	
<b>■ Recommendations:</b> It was recommended that the crew move the pipes off the tundra and make sure that they do everything possible to avoid overflow of drill water onto tundra. In this case, the drillers encountered water and were trying to cement the hole to stop flow. Not sure if they could have really done anything differently.	
<b>■ Actions Needed:</b> See above recommendations.	

Drill Hole/Site No.: 2	Date: 5-24-2011
Rig No.: DDH 11526/11527	Time: 8:00 AM
Activity: Drilling to 3,000 ft (current depth 2,496 ft)	
<ul style="list-style-type: none"> <li>■ Condition of Drilling Site: Good</li> </ul>	<ul style="list-style-type: none"> <li>■ Sump Pit (continued):</li> </ul>
<ul style="list-style-type: none"> <li>○ Distance from waterbody: Approx. 1584' north to northwest of waterbody</li> </ul>	<ul style="list-style-type: none"> <li>○ Location and extent of discharged material: observable discharge was minimal; Approx. 528' north of drill rig, 2112' ne of water source</li> </ul>
<ul style="list-style-type: none"> <li>○ Location of fuel storage: Approx. 53 ' east of rig</li> </ul>	<ul style="list-style-type: none"> <li>○ Topsoil, muck, tundra stockpiled: Yes</li> </ul>
<ul style="list-style-type: none"> <li>○ Sorbent pads present: Yes</li> </ul>	<ul style="list-style-type: none"> <li>○ Hose color: White</li> </ul>
<ul style="list-style-type: none"> <li>○ Tundra mat: Yes</li> </ul>	
<ul style="list-style-type: none"> <li>○ Pipe off tundra: A few pipes were on tundra</li> </ul>	<ul style="list-style-type: none"> <li>■ Drill Water Supply:</li> </ul>
<ul style="list-style-type: none"> <li>○ Litter: No</li> </ul>	<ul style="list-style-type: none"> <li>○ Stream, lake/pond: Pond behind beaver dam</li> </ul>
<ul style="list-style-type: none"> <li>○ Trash containment: New aluminum dumpster</li> </ul>	<ul style="list-style-type: none"> <li>○ Location: Approx. 1584' southwest of rig</li> </ul>
<ul style="list-style-type: none"> <li>○ Sanitary facilities: Yes, new outhouse</li> </ul>	<ul style="list-style-type: none"> <li>○ Adequate water flow and depth for fish passage in streams: Yes</li> </ul>
<ul style="list-style-type: none"> <li>○ Any spills or staining: No</li> </ul>	<ul style="list-style-type: none"> <li>○ Evidence of significant impacts to riparian vegetation or stream banks: No</li> </ul>
<ul style="list-style-type: none"> <li>○ General impression: Clean, orderly</li> </ul>	<ul style="list-style-type: none"> <li>○ General impression of water body (i.e. clear, turbid, tannic): Clear</li> </ul>
	<ul style="list-style-type: none"> <li>○ Intake description: Screened intake</li> </ul>
<ul style="list-style-type: none"> <li>■ Drilling Activity:</li> </ul>	<ul style="list-style-type: none"> <li>○ Structure clear of debris: Yes</li> </ul>
<ul style="list-style-type: none"> <li>○ Drill additives in use: Extreme #1 (onsite also had Quicktrol Gold and Penetrol)</li> </ul>	<ul style="list-style-type: none"> <li>○ Mesh size: 1 mm x 12 mm (consistent with 0.04 inch mesh size for Group A fish)</li> </ul>
<ul style="list-style-type: none"> <li>○ Recirculation tank: Yes</li> </ul>	<ul style="list-style-type: none"> <li>○ Submerged: Yes, with approx. 2 'of water above screened intake</li> </ul>
<ul style="list-style-type: none"> <li>○ Water discharged: No</li> </ul>	<ul style="list-style-type: none"> <li>○ Fuel/generator location to source: Approx. 312' northwest of water source</li> </ul>
<ul style="list-style-type: none"> <li>○ Artesian zone encountered: No</li> </ul>	<ul style="list-style-type: none"> <li>○ Catch basin for fuel supply: Yes</li> </ul>
	<ul style="list-style-type: none"> <li>○ Sorbent pads: Yes</li> </ul>
<ul style="list-style-type: none"> <li>■ Sump Pit: 5 pits (larger drill in use because of frozen ground, generating more cuttings = additional sump pits)</li> </ul>	<ul style="list-style-type: none"> <li>○ Hose color: Yellow</li> </ul>
<ul style="list-style-type: none"> <li>○ Location: Approx. 163' to west of rig</li> </ul>	
<ul style="list-style-type: none"> <li>○ Discharge trench: Yes</li> </ul>	<ul style="list-style-type: none"> <li>■ Other Comments: water withdrawal rate 23 gpm estimated during field check; drill crew was instructed to move all pipes off tundra onto tundra pad, done during inspection.</li> </ul>
<ul style="list-style-type: none"> <li>○ Dimensions of pit: 4' (w) x 4' (d) x 10' (l)</li> </ul>	
<ul style="list-style-type: none"> <li>○ In use: Yes</li> </ul>	



Figure 1. Drill rig # 2 on site of DDH 11526/11527.



Figure 2. Recirculation tank in use. Drill water from final sump pit is recirculated back to drill for reuse.



Figure 3. Series of sump pits (left) and stockpiled muck (on right) to be used later in site reclamation.





Figure 4. End of sump pit discharge line. Ground is temporarily discolored from drill water that was previously discharged. Water absorbed well in immediate area and with no run-off visible.



Figure 5. Fuel storage in catch basin on tundra pad, with spill kit and scrubbers (blue bin).



Figure 6. New aluminum dumpsters for trash containment.





Figure 7. Proper signage designating the water take location with the identification numbers.



Figure 8. Screened water intake submerged in beaver pond.



Figure 9. Totalizer connected to water intake line. Field estimate of water withdrawal rate was 23 gpm during the inspection.



Drill Hole/Site No.: 3	Date: 5-24-2011
Rig No.: DDH 11528	Time: 9:24 AM
Activity: Stopped drilling at 208' (going to 2,000') because encountered water. Currently cementing hole to stop flow.	
<ul style="list-style-type: none"> <li>■ Condition of Drilling Site: Ok</li> </ul>	<ul style="list-style-type: none"> <li>■ Sump Pit (continued):</li> </ul>
<ul style="list-style-type: none"> <li>○ Distance from waterbody: Approx. 422' northwest of water source</li> </ul>	<ul style="list-style-type: none"> <li>○ Location and extent of discharged material: Not discharging during inspection ; 528' nw of rig, 1056' nw of water source</li> </ul>
<ul style="list-style-type: none"> <li>○ Location of fuel storage: Approx. 58' west of rig</li> </ul>	<ul style="list-style-type: none"> <li>○ Topsoil, muck, tundra stockpiled: Yes, lots of muck and tundra</li> </ul>
<ul style="list-style-type: none"> <li>○ Sorbent pads present: Yes</li> </ul>	<ul style="list-style-type: none"> <li>○ Hose color: White</li> </ul>
<ul style="list-style-type: none"> <li>○ Tundra mat: Yes</li> </ul>	
<ul style="list-style-type: none"> <li>○ Pipe off tundra: Yes</li> </ul>	<ul style="list-style-type: none"> <li>■ Drill Water Supply:</li> </ul>
<ul style="list-style-type: none"> <li>○ Litter: No</li> </ul>	<ul style="list-style-type: none"> <li>○ Stream, lake/pond: Stream</li> </ul>
<ul style="list-style-type: none"> <li>○ Trash containment: New aluminum dumpster</li> </ul>	<ul style="list-style-type: none"> <li>○ Location: Approx. 422' southeast of rig</li> </ul>
<ul style="list-style-type: none"> <li>○ Sanitary facilities: Yes, new outhouse</li> </ul>	<ul style="list-style-type: none"> <li>○ Adequate water flow and depth for fish passage in streams: Yes, but suggested move to even deeper section of creek (that may have not been visible during initial sighting due to snow/ice).</li> </ul>
<ul style="list-style-type: none"> <li>○ Any spills or staining: Overflow of drill water between drill hole and trench that leads to sump pits.</li> </ul>	<ul style="list-style-type: none"> <li>○ Evidence of significant impacts to riparian vegetation or stream banks: No</li> </ul>
<ul style="list-style-type: none"> <li>○ General impression: Clean and orderly (other than overflow previously described).</li> </ul>	<ul style="list-style-type: none"> <li>○ General impression of water body (i.e. clear, turbid, tannic): Clear</li> </ul>
	<ul style="list-style-type: none"> <li>○ Intake description: Screened intake</li> </ul>
<ul style="list-style-type: none"> <li>■ Drilling Activity:</li> </ul>	<ul style="list-style-type: none"> <li>○ Structure clear of debris: Yes</li> </ul>
<ul style="list-style-type: none"> <li>○ Drill additives in use: Extreme #1, small amount of Quicktrol Gold. Penetrol on site but not in use.</li> </ul>	<ul style="list-style-type: none"> <li>○ Mesh size: 1 mm x 12 mm (consistent with 0.04 inch mesh size for Group A fish)</li> </ul>
<ul style="list-style-type: none"> <li>○ Recirculation tank: Yes</li> </ul>	<ul style="list-style-type: none"> <li>○ Submerged: Yes</li> </ul>
<ul style="list-style-type: none"> <li>○ Water discharged: No</li> </ul>	<ul style="list-style-type: none"> <li>○ Fuel/generator location to source: Approx. 133' west of water source</li> </ul>
<ul style="list-style-type: none"> <li>○ Artesian zone encountered: Possible (not sure if artesian or water from winter sub-surface melt).</li> </ul>	<ul style="list-style-type: none"> <li>○ Catch basin for fuel supply: Yes</li> </ul>
	<ul style="list-style-type: none"> <li>○ Sorbent pads: Yes</li> </ul>
<ul style="list-style-type: none"> <li>■ Sump Pit: Yes, 3 pits</li> </ul>	<ul style="list-style-type: none"> <li>○ Hose color: Yellow</li> </ul>
<ul style="list-style-type: none"> <li>○ Location: Approx. 60' east of rig</li> </ul>	

○ Discharge trench: Yes	■ Other Comments: Areas of overflow/seepage near drill hole and from trench.
○ Dimensions of pit: 5' (w) x 4-6' (d) x 20' (l)	
○ In use: Yes	



Figure 10. Drill rig # 3 on site of DDH 11528.



Figure 11. Trench transferring drill water from drill hole to the series of sump pits for settling out and recirculation.



Figure 12. View of the final sump pit in a series of 3 pits. Muck and soil are stock piled on both sides of the sump pit for use in reclamation of the site. Straw bales are in place down gradient as a preventative measure should there be any overflow from the sump pit.





Figure 13. Presence of drill water on tundra adjacent to storage location of additives. This appeared to be overflow from the trench between drill hole and sump pits.



Figure 14. End of sump pit discharge line. Because drilling was shut down, no discharge was occurring during the inspection.





Figure 15. Fuel and generator used for water pump.



Figure 16. Proper signage designating the water take location with the identification numbers.



Figure 17. Screened water intake submerged in creek.



Abandoned Drill Hole/Site No.: DDH10508 9473	Date: 5-24-2011
	Time: Not recorded
■ Plugged/Valve: No	
■ Cemented/Grouted: Yes, grouted	
■ Standing pipe: No	
■ Sump pit filled in: Yes	
■ Water discharge trench filled in: Yes	
■ Site revegetated: Yes	
■ Date revegetated/reclaimed: Fall 2010	
■ Artesian water present: No	
■ Any spills or staining: No	
■ Comments/General impression: Reclamation appears about 90% complete. Crew is supposed to be coming back to flatten the rock/gravel pile.	



Figure 18. Sign post for reclaimed drill hole 10508.

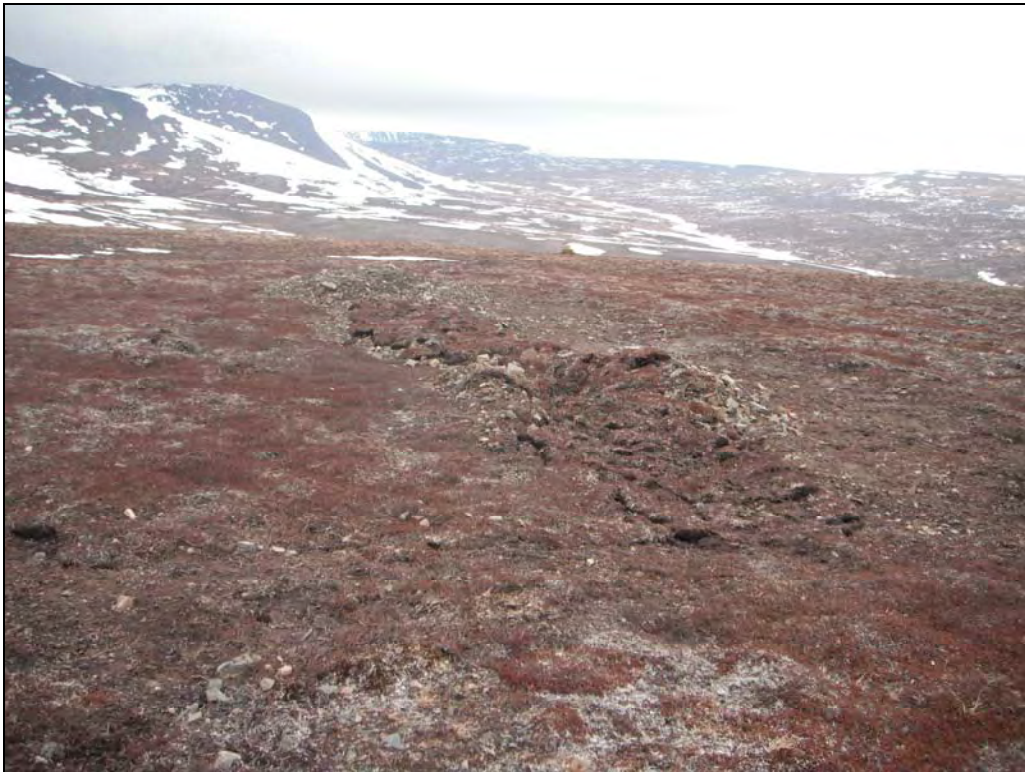


Figure 19. Reclaimed sump pit location. This site was completed in the Fall of 2010 and has not had a complete growing season.



Figure 20. Gravel/rock pile near reclaimed sump pit. This site is 90% complete and the crew will be revisiting this site to smooth out this pile and make more even with existing tundra.



Abandoned Drill Hole/Site No.: DDH 9473	Date: 5-24-2011
	Time: 10:35 AM
■ Plugged: No	
■ Cemented/Grouted: Yes	
■ Standing pipe: No	
■ Sump pit filled in: Yes	
■ Water discharge trench filled in: Yes	
■ Site revegetated: Yes	
■ Date revegetated/reclaimed: End of 2009.	
■ Artesian water present: No	
■ Any spills or staining: No	
■ Comments/General impression: Reclamation of site was good, sump pit and trench were barely detectable from surrounding tundra.	



Figure 21. Sign post for reclaimed drill hole 9473.



Figure 22. Reclaimed sump pit. This was a 2009 drill site and this has had a complete summer of regrowth/settlement.