

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

Personnel: Rick Fredericksen (DNR/DMLW)	Inspection Date: 23 July 2008
Jim Vohden (DNR/DMLW)	Site Contact: Gernot Wober
Travis Gingerich (DNR/DMLW)	APMA #: A086118
■ Inspection Type: ○ Complete: Drill rigs 1, 2, 3, & 4 were visited, several abandoned drill sites, one piezometer installation, and the Westbay installation ○ Partial: ○ Follow-up: ○ Response to Public Complaint:	■ Wildlife Observed: ○ Bear: ○ Caribou: ○ Moose: ○ Waterfowl: ○ Fish: ○ Other: marmot, red fox, robin
■ Weather Conditions: ○ Temperature: 50-60 degrees F ○ Wind: light to moderate ○ Precipitation: some light drizzle ○ Visibility: 2-10 miles ○ Sky Conditions: cloudy, some sun ○ Ground Conditions: clear, damp	■ Water level at Frying Pan Lake: ○ Observed inflow: not observed ○ Observed outflow: not observed
<p>Comments: Overall the drill rigs were clean and orderly. Fuel spill containment measures were in place. Containment basins generally clean and dry. All drilling operations appeared to be in compliance with associated water use and withdrawal permits. Inspected long term geochemical barrel tests in place near medical camp, as well as piezometer GH08-112.</p>	
<p>Recommendations: Prior to site visits, provide staff with updated operations map and inform staff of any new developments or changes in operational plans</p>	
<p>Actions Needed: Still need to follow up on abandoned sites 7362 and 7389 to ensure the drill holes are cemented and capped and that the reclamation process is complete. Future site visits should include other abandoned sites as well.</p>	

Drill Hole/Site No.: 8414	Rig No.: 1
Activity: Operational, at ~4300' depth	Date: 23 July 2008
■ Condition of Drilling Site: <ul style="list-style-type: none"> ○ Distance from waterbody: >100' ○ Location of fuel storage: near pad ○ Sorbent pads present: yes ○ Tundra mat: in place, pallets also used ○ Pipe off tundra: yes ○ Litter: none ○ Trash containment: yes ○ Sanitary facilities: yes ○ Any spills or staining: none ○ General impression: clean and orderly, but spread out. Marmot seen near site. 	■ Sump Pit (continued): <ul style="list-style-type: none"> ○ Location and extent of discharged material: -- ○ Topsoil, muck, tundra stockpiled: yes ○ Location of secondary sump pit: adjacent ○ Hose color: white
	■ Drill Water Supply: <ul style="list-style-type: none"> ○ Stream, lake, kettle pond: stream, 3' wide, 6" deep ○ Location: +/- 500' from drill rig ○ Adequate water flow and depth for fish passage in streams: -- ○ Evidence of significant impacts to riparian vegetation or stream banks: none
	<ul style="list-style-type: none"> ○ Relative water level: normal ○ General impression of water body, i.e. clear, turbid, tannic: clean
■ Drilling Activity: <ul style="list-style-type: none"> ○ Drill additives in use: EZ Mud Plus ○ Water recirculation: yes ○ Water discharged: yes ○ Artesian zone encountered: "sometimes" 	<ul style="list-style-type: none"> ○ Intake structure: present ○ Structure clear of debris: yes ○ Mesh size: ~1/4", inner mesh ~1/8" ○ Submerged: yes, 5"
	<ul style="list-style-type: none"> ○ Pump location to source: >100'
■ Sump Pit: <ul style="list-style-type: none"> ○ Location: near rig ○ Discharge trench: yes ○ Dimensions of pit: 5'x7' and 3'x8' ○ In use: yes 	<ul style="list-style-type: none"> ○ Catch basin for fuel supply: yes, clean and dry ○ Sorbent pads: present ○ Hose color: yellow w/black insulation

Drill Hole/Site No.: 8419	Rig No.: 2
Activity: operational, at ~260' depth	Date: 23 July 2008
■ Condition of Drilling Site: <ul style="list-style-type: none"> ○ Distance from waterbody: >100' ○ Location of fuel storage: on pad ○ Sorbent pads present: yes ○ Tundra mat: yes ○ Pipe off tundra: yes ○ Litter: none ○ Trash containment: yes ○ Sanitary facilities: yes ○ Any spills or staining: none ○ General impression: clean and orderly 	■ Sump Pit (continued): <ul style="list-style-type: none"> ○ Location and extent of discharged material: 6" line goes from Godwin pump several hundred feet to top of hill for dispersal ○ Topsoil, muck, tundra stockpiled: yes ○ Location of secondary sump pit: NA ○ Hose color: white
	■ Drill Water Supply: <ul style="list-style-type: none"> ○ Stream, lake, kettle pond: small surface water flow/seep ○ Location: nearby ○ Adequate water flow and depth for fish passage in streams: NA ○ Evidence of significant impacts to riparian vegetation or stream banks: none ○ Relative water level: normal ○ General impression of water body, i.e. clear, turbid, tannic: clear ○ Intake structure: present, purple lid ○ Structure clear of debris: yes ○ Mesh size: not measured ○ Submerged: partially
■ Drilling Activity: <ul style="list-style-type: none"> ○ Drill additives in use: yes ○ Water recirculation: yes ○ Water discharged: yes ○ Artesian zone encountered: NA 	
■ Sump Pit: <ul style="list-style-type: none"> ○ Location: near rig ○ Discharge trench: yes ○ Dimensions of pit: approx. 5'x8' ○ In use: yes 	<ul style="list-style-type: none"> ○ Pump location to source: >100' ○ Catch basin for fuel supply: yes ○ Sorbent pads: yes ○ Hose color: yellow

Drill Hole/Site No.: 8416	Rig No.: 3
Activity: just completed hole to 5007', rods on deck/demobilizing	Date: 23 July 2008
■ Condition of Drilling Site:	■ Sump Pit (continued):
○ Distance from waterbody: >100'	○ Location and extent of discharged material: NA
○ Location of fuel storage: on pad	○ Topsoil, muck, tundra stockpiled: yes
○ Sorbent pads present: yes, in shed	○ Location of secondary sump pit: NA
○ Tundra mat: yes	○ Hose color: black
○ Pipe off tundra: yes	
○ Litter: none	■ Drill Water Supply:
○ Trash containment: yes	○ Stream, lake, kettle pond: kettle pond, has beaver lodge in it
○ Sanitary facilities: yes	○ Location: >100'
○ Any spills or staining: none	○ Adequate water flow and depth for fish passage in streams: NA
○ General impression: neat and orderly	○ Evidence of significant impacts to riparian vegetation or stream banks: none
	○ Relative water level: normal
■ Drilling Activity:	○ General impression of water body, i.e. clear, turbid, tannic: clear
○ Drill additives in use: yes	○ Intake structure: yes
○ Water recirculation: yes	○ Structure clear of debris: yes
○ Water discharged: yes	○ Mesh size: NA
○ Artesian zone encountered: some artesian flow but it ceased on further drilling	○ Submerged: approx. 6"
	○ Pump location to source: >100'
■ Sump Pit:	○ Catch basin for fuel supply: clean and dry
○ Location: near pad	○ Sorbent pads: yes
○ Discharge trench: yes	○ Hose color: yellow with black insulation
○ Dimensions of pit: three pits, approx. 5'x5'	
○ In use: yes	

Drill Hole/Site No.: 8417	Rig No.: 4
Activity: operational, at ~1470' depth	Date: 23 July 2008
<ul style="list-style-type: none"> ■ Condition of Drilling Site: 	<ul style="list-style-type: none"> ■ Sump Pit (continued):
<ul style="list-style-type: none"> ○ Distance from waterbody: >100' 	<ul style="list-style-type: none"> ○ Location and extent of discharged material: hilltop several hundred feet away
<ul style="list-style-type: none"> ○ Location of fuel storage: on pad 	<ul style="list-style-type: none"> ○ Topsoil, muck, tundra stockpiled: yes
<ul style="list-style-type: none"> ○ Sorbent pads present: yes 	<ul style="list-style-type: none"> ○ Location of secondary sump pit: adjacent, some minor overflow residue
<ul style="list-style-type: none"> ○ Tundra mat: yes 	<ul style="list-style-type: none"> ○ Hose color: white; small hole in hose with leak approx. 100' from rig
<ul style="list-style-type: none"> ○ Pipe off tundra: yes 	
<ul style="list-style-type: none"> ○ Litter: none 	<ul style="list-style-type: none"> ■ Drill Water Supply:
<ul style="list-style-type: none"> ○ Trash containment: yes 	<ul style="list-style-type: none"> ○ Stream, lake, kettle pond: well
<ul style="list-style-type: none"> ○ Sanitary facilities: yes 	<ul style="list-style-type: none"> ○ Location: downhill in valley
<ul style="list-style-type: none"> ○ Any spills or staining: none 	<ul style="list-style-type: none"> ○ Adequate water flow and depth for fish passage in streams: NA
<ul style="list-style-type: none"> ○ General impression: clean and orderly 	<ul style="list-style-type: none"> ○ Evidence of significant impacts to riparian vegetation or stream banks: NA
	<ul style="list-style-type: none"> ○ Relative water level: NA
<ul style="list-style-type: none"> ■ Drilling Activity: 	<ul style="list-style-type: none"> ○ General impression of water body, i.e. clear, turbid, tannic: NA
<ul style="list-style-type: none"> ○ Drill additives in use: EZ Mud Plus 	<ul style="list-style-type: none"> ○ Intake structure: NA
<ul style="list-style-type: none"> ○ Water recirculation: yes 	<ul style="list-style-type: none"> ○ Structure clear of debris: NA
<ul style="list-style-type: none"> ○ Water discharged: yes 	<ul style="list-style-type: none"> ○ Mesh size: NA
<ul style="list-style-type: none"> ○ Artesian zone encountered: none 	<ul style="list-style-type: none"> ○ Submerged: NA
	<ul style="list-style-type: none"> ○ Pump location to source: NA
<ul style="list-style-type: none"> ■ Sump Pit: 	<ul style="list-style-type: none"> ○ Catch basin for fuel supply: yes
<ul style="list-style-type: none"> ○ Location: near rig 	<ul style="list-style-type: none"> ○ Sorbent pads: yes
<ul style="list-style-type: none"> ○ Discharge trench: yes 	<ul style="list-style-type: none"> ○ Hose color: black
<ul style="list-style-type: none"> ○ Dimensions of pit: two pits, approx. 7'x7' 	
<ul style="list-style-type: none"> ○ In use: yes 	

Abandoned Drill Hole/Site No.: 5316

Date: 23 July 2008

■ Plugged: yes

■ Cemented: NA

■ Standing pipe: none

■ Sump pit filled in: yes

■ Water discharge trench filled in: yes

■ Site revegetated: yes

■ Artesian water present: no

■ Any spills or staining: no

■ Comments/General impression: reclaimed nicely, dry, no pipe visible.



Abandoned Drill Hole/Site No.: 7388

Date: 23 July 2008

■ Plugged: yes

■ Cemented: NA

■ Standing pipe: none

■ Sump pit filled in: yes

■ Water discharge trench filled in: yes

■ Site revegetated: yes, fresh straw on site

■ Artesian water present: no

■ Any spills or staining: none

■ Comments/General impression: appears to have been reseeded recently; no pipe visible.



Abandoned Drill Hole/Site No.: 6338

Date: 23 July 2008

■ Plugged: yes

■ Cemented: yes

■ Standing pipe: yes, sticks up 8"

■ Sump pit filled in: yes

■ Water discharge trench filled in: yes

■ Site revegetated: yes, good growth around a very clean site, no sign of disturbance

■ Artesian water present: no

■ Any spills or staining: none

■ Comments/General impression: nicely reclaimed.



Abandoned Drill Hole/Site No.: 5324

Date: 23 July 2008

■ Plugged: yes

■ Cemented: NA

■ Standing pipe: none

■ Sump pit filled in: yes

■ Water discharge trench filled in: yes

■ Site revegetated: yes

■ Artesian water present: no

■ Any spills or staining: none

■ Comments/General impression: reclaimed nicely

(no photo)



Figure 1. Drill Rig 1.



Figure 2. Drill rig 2.



Figure 3. Fuel storage at drill rig 2.



Figure 4. Water intake for drill rig 2.



Figure 5. Drill discharge line from drill rig 2.



Figure 6. Drill rig 3.



Figure 7. Godwin pump for drilling fluids at drill rig 3.



Figure 8. Water supply for drill rig 3.



Figure 9. Long-term geochemical barrel tests.



Figure 10. Westbay multi-level sampling well installation.