

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

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| Personnel: Jeanette Alas (ADF&G) | Inspection Date: July 23, 2013 |
| Melissa Hill (ADNR/MLW, only present during DDH 09462 and aquifer pump test inspection) | Site Contact: Jeff Norberg, Manager, Site Compliance and Reclamation, PLP |
| | APMA #: A136118 |
| <ul style="list-style-type: none"> ■ Inspection Type: <ul style="list-style-type: none"> ○ Complete: One active rig site (GH 13-371) and four reclamation sites (DDH 12556, DDH 12554, GH 12-322S, and DDH 09462) ○ Partial: ○ Follow-up: Reclamation site DDH 09462 previously inspected by Melissa Hill. ○ Response to Public Complaint: | <ul style="list-style-type: none"> ■ Wildlife Observed: <ul style="list-style-type: none"> ○ Bear: Glimpse of one from helicopter, too far away to identify ○ Caribou: ○ Moose: ○ Waterfowl: ○ Fish: ○ Other: Ground squirrels |
| <ul style="list-style-type: none"> ○ Temperature: 62°F ○ Wind: 5-10 mph (west) ○ Precipitation: None ○ Visibility: Excellent ○ Sky Conditions: Clear ○ Ground Conditions: Dry | |
| <ul style="list-style-type: none"> ■ Comments: GH 13-371 - We could not walk to the water source due to standing water in the way, but we did walk to the fuel/generator location source (Photograph 7). There was a hole in the water supply hose between the rig location and the water supply fuel/generator location (see Photograph 8). J. Norberg said he would notify the crew to repair the hose to prevent wasting water. We flew over the water intake in the helicopter (Photograph 9). I could see a sign marking the intake source and that the pump was submerged (barely visible behind the sign in Photograph 9); the structure appeared clear of debris, but I could not be certain from this distance. ■ DDH 09462 – This site was originally reclaimed after artesian flow was stopped on June 11, 2012. A bear disturbed parts of this site sometime after snowmelt this year, and the site was reclaimed again on July 10, 2013. There is some iron (red) staining on the tundra adjacent to the revegetated sump pits. J. Norberg said he will bring the reclamation crew back to work on this site. | |
| <ul style="list-style-type: none"> ■ Recommendations: GH 13-371 - Repair hole in supply hose. ■ DDH 09462 – Remove/minimize the iron staining on tundra. | |
| <ul style="list-style-type: none"> ■ Actions Needed: See above recommendations. | |

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| Drill Hole/Site No.: GH 13-371 | Date: July 23, 2013 |
| Rig No.: 4 | Time: 11:24 AM |
| Activity: Geotechnical drilling (mud-rotary rig) | |
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| <ul style="list-style-type: none"> ■ Condition of Drilling Site: Orderly (Photographs 1 and 2) <ul style="list-style-type: none"> ○ Distance from waterbody: ~ 1,500+ ft ○ Location of fuel storage: Adjacent to rig ○ Sorbent pads present: Yes ○ Tundra mat: Yes ○ Pipe off tundra: Yes ○ Litter: None ○ Trash containment: Yes ○ Sanitary facilities: Yes, privy ○ Any spills or staining: No ○ General impression: Clean ■ Drilling Activity: Geo-tech mud rotary <ul style="list-style-type: none"> ○ Drill additives in use: None ○ Recirculation tank: Yes, in use. Water over flowing the top of tank (see Photograph 3). J. Norberg said if additives are used they will remove the hose to prevent overflow. ○ Water discharged: Yes, about 200 ft northeast of rig (see Photograph 4). ○ Artesian zone encountered: None ■ Sump Pit: Yes, one pit (see Photograph 5) <ul style="list-style-type: none"> ○ Location: Adjacent to rig and tundra mat. ○ Discharge trench: Yes ○ Dimensions of pit: about 5 ft by 7 ft ○ In use: Yes, but no current flow | <ul style="list-style-type: none"> ■ Sump Pit (continued): <ul style="list-style-type: none"> ○ Location and extent of discharged material: Discharge hose about 200 ft northeast of rig; some murky water pooled at discharge site (see Photograph 4). ○ Topsoil, muck, tundra stockpiled: Yes (see Photograph 6). ○ Hose color: White ■ Drill Water Supply: See Photographs 7 - 9 <ul style="list-style-type: none"> ○ Stream, lake/pond: Tributary to North Fork Koktuli River. ○ Location: About 1,500+ ft west and downhill of rig ○ Adequate water flow and depth for fish passage in streams: Yes ○ Evidence of significant impacts to riparian vegetation or stream banks: No ○ General impression of water body (i.e. clear, turbid, tannic): Clear ○ Intake description: ADF&G-approved screened intake ○ Structure clear of debris: Appeared to be, but not certain from distance observed ○ Mesh size: 1 mm X 12 mm slotted mesh (per J. Norberg); size is consistent with 0.04 inch mesh size for Group A fish ○ Submerged: Yes ○ Fuel/generator location to source: Greater than 100 ft ○ Catch basin for fuel supply: Yes ○ Sorbent pads: Yes ○ Hose color: Yellow ■ Other Comments: Rig will likely be moved in a few days but water source will remain the same. |



Photograph 1: Tundra mat and drill rig # 4 (GH 13-371).



Photograph 2: Drill rig # 4 site; rig on right just out of view (GH 13-371).



Photograph 3: Water over flowing the top of recirculation tank (GH 13-371).



Photograph 4: Discharge hose location and conditions (GH 13-371).



Photograph 5: Sump pit adjacent to rig and tundra mat (GH 13-371); topsoil pile on right.



Photograph 6: Topsoil and tundra stockpile; sump pit adjacent to rig behind topsoil (GH 13-371).



Photograph 7: Fuel and equipment for water intake; water source in background (GH 13-371).



Photograph 8: Hole in water supply hose (GH 13-371).



Photograph 9: Water source with signage and intake structure (GH 13-371).

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| Abandoned Drill Hole/Site No.: DDH 12556 | Date: July 23, 2013 |
| | Time: 12:40 PM |
| ■ Plugged: Not determined during flyover. | |
| ■ Cemented: Not determined during flyover. | |
| ■ Standing pipe: Not determined during flyover. | |
| ■ Sump pit filled in: In the process of being filled (see Photographs 10 and 11). | |
| ■ Water discharge trench filled in: Trench was in the process of being filled (see Photographs 10 and 11). | |
| ■ Site revegetated: Trench was in the process of being revegetated (see Photographs 10 and 11). | |
| ■ Date revegetated/reclaimed: July 23, 2013 | |
| ■ Artesian water present: None visible from the air. | |
| ■ Any spills or staining: None visible from the air. | |
| ■ Comments/General impression: We flew over reclamation site DDH 12556 while it was currently being reclaimed, but did not stop for an inspection due to time constraints and helicopter logistics. See Photographs 10 and 11 for documentation of reclamation activity. | |



Photograph 10: Reclamation work on DDH 12556 (aerial view).



Photograph 11: Overview of reclamation work on DDH 12556 (aerial view).

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| Abandoned Drill Hole/Site No.: DDH 12554 | Date: July 23, 2013 |
| | Time: 12:47 PM |
| ■ Plugged: Yes (per J. Norberg) | |
| ■ Cemented: Yes (per J. Norberg) | |
| ■ Standing pipe: Monument marker only (see Photograph 12). | |
| ■ Sump pit filled in: Yes | |
| ■ Water discharge trench filled in: Yes (see Photograph 13) | |
| ■ Site revegetated: Yes (Photographs 14 and 15) | |
| ■ Date revegetated/reclaimed: July 22, 2013 (one day prior to inspection) | |
| ■ Artesian water present: No | |
| ■ Any spills or staining: None | |
| ■ Comments/General impression: Reclamation work for this site was completed the previous day. Revegetation of the trench and sump pits looked fine; some of the tundra was green and looked to be doing well. The tundra adjacent to the sump pits was brown where the tarps and topsoil/tundra mats had been placed during drilling (see Photograph 15). The sump pits are mounded to allow for subsidence to occur. | |



Photograph 12: Monument marker for DDH 12554 with revegetated trench and sump pits in background.



Photograph 13: Refilled and revegetated trench (DDH 12554).



Photograph 14: Refilled and revegetated sump pit (DDH 12554).



Photograph 15: Refilled and revegetated sump pits for DDH 12554. Previous location of tarp and topsoil/tundra mat in foreground (brown tundra).

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| Abandoned Drill Hole/Site No.: GH 12-322S | Date: July 23, 2013 |
| | Time: 1:08 PM |
| <ul style="list-style-type: none"> ■ Plugged: no ■ Cemented: no ■ Standing pipe: Yes (Photograph 16) ■ Sump pit filled in: Yes (Photograph 17) ■ Water discharge trench filled in: Yes (Photograph 18) ■ Site revegetated: Yes ■ Date revegetated/reclaimed: Revegetated September 18, 2012 (per J. Norberg) ■ Artesian water present: No ■ Any spills or staining: None ■ Comments/General impression: This site was located near the pump test being conducted at GH 12-334S. A transducer was currently placed in this well for the pump test. The site looked good and there were no present concerns. Trench and sump pit locations still distinguishable due to brown color of tundra, but will likely continue to rejuvenate with time. | |



Photograph 16: Standing pipe with filled trench in background (GH 12-322S). Black wire is for transducer currently being used for pump test.

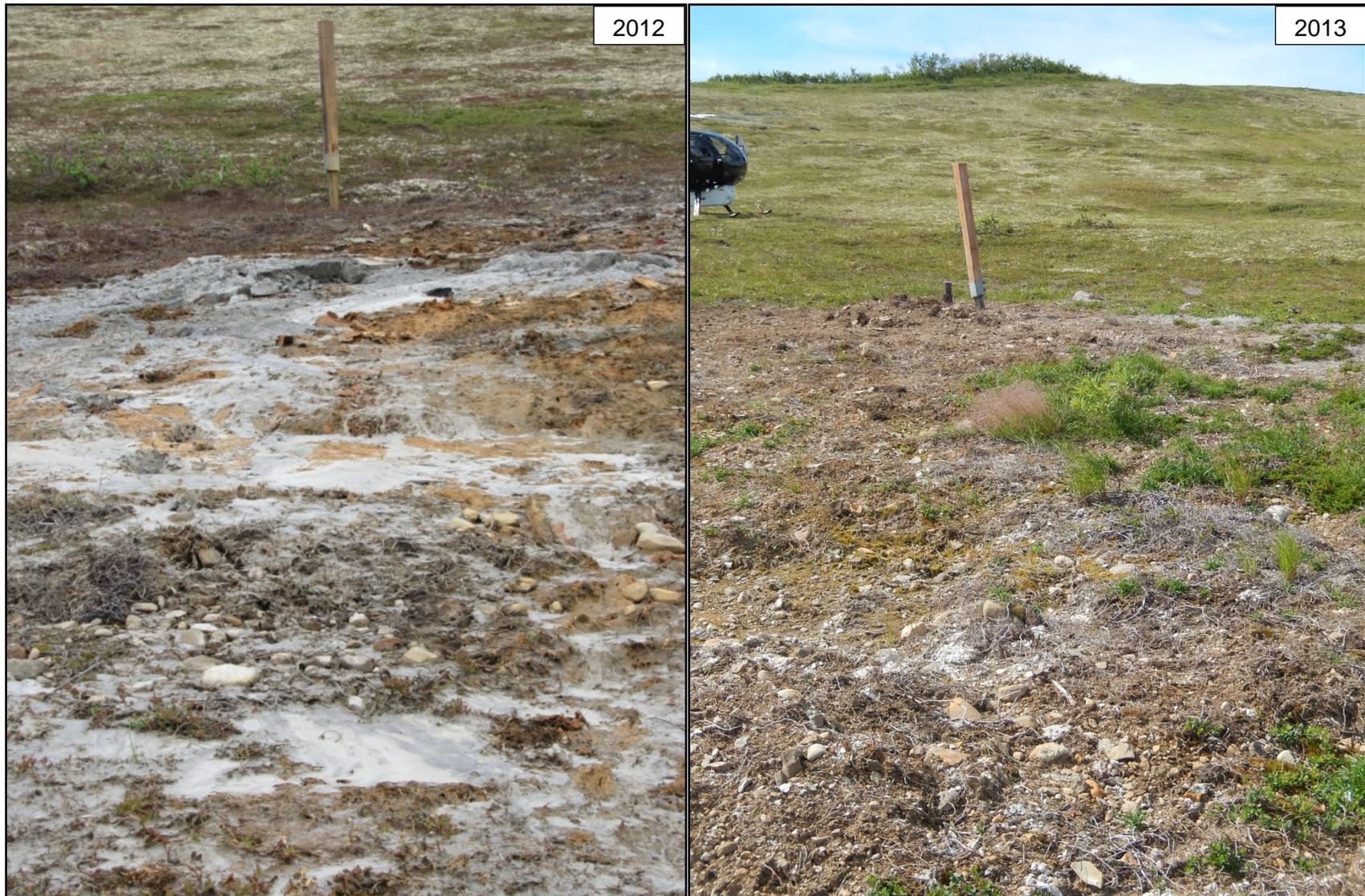


Photograph 17: Revegetated sump pit (GH 12-322S).



Photograph 18: Revegetated trench (GH 12-322S).

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| Abandoned Drill Hole/Site No.: DDH 09462 | Date: July 23, 2013 |
| | Time: 1:48 PM |
| ■ Plugged: yes | |
| ■ Cemented: yes | |
| ■ Standing pipe: yes with monument marker (see Photographs 19 and 20) | |
| ■ Sump pit filled in: yes | |
| ■ Water discharge trench filled in: yes | |
| ■ Site revegetated: yes | |
| ■ Date revegetated/reclaimed: Artesian flow stopped on June 11, 2012; original reclamation was completed thereafter, follow-up reclamation work was completed on July 10, 2013 in response to disturbance by bear. Additional reclamation is planned. | |
| ■ Artesian water present: Not during site inspection | |
| ■ Any spills or staining: Yes. Iron red staining has been documented in previous site visits conducted on October 20, 2011 and June 19, 2012. Photograph 19 shows a comparison between site visits conducted on June 19, 2012 and July 23, 2013. Artesian flow stopped on June 11, 2012 with the assistance of a grout specialist from Bandimere Grout Consulting Services. No artesian flow was observed during the July 23, 2013 site visit. According to J. Norberg, additional work was completed at this site on July 10, 2013 after a bear had disturbed areas following snowmelt this year (Photograph 20). Iron (red) staining on the tundra was visible near the refilled sump pits during the July 23, 2013 site visit (see Photographs 21 through 23). The sump pits are mounded and revegetated. Although some of the tundra was alive, most of it was not doing well (see Photographs 21 and 22). J. Norberg stated that he will bring the reclamation crew back to work on this site. | |
| ■ Comments/General impression: Continue to monitor. | |



Photograph 19. Photographs taken on June 19, 2012 (left) and July 23, 2013 (right) showing remnants of discharged fluids and iron staining from previous artesian upwelling (DDH 09462).



Photograph 20: Monument marker in foreground with refilled sump pits in background (DDH 09462). Recent work after bear activity in foreground near monument marker.



Photograph 21: Refilled and revegetated sump pits (DDH 09462). Some red staining noticeable left of sump pit.



Photograph 22: Tundra on sump pit rejuvenating slowly (DDH 09462).



Photograph 23: Iron (red) staining adjacent to filled sump pit (DDH 09462).

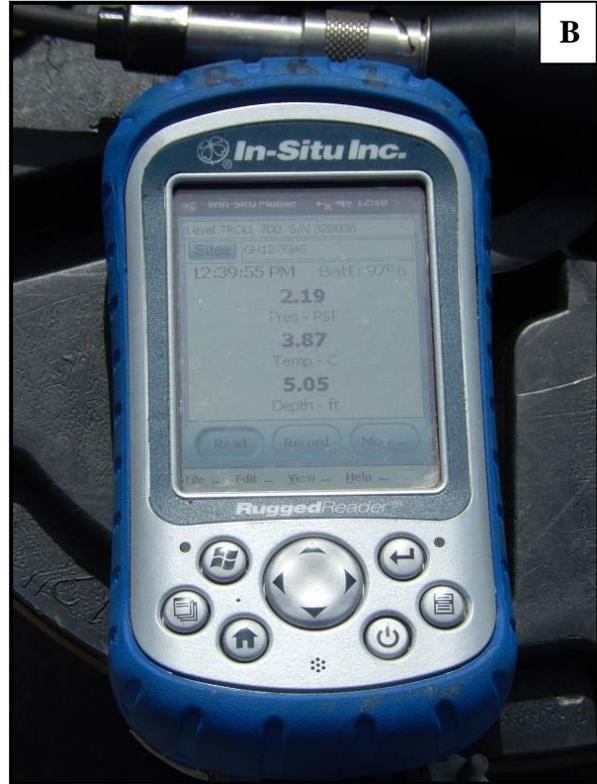
Site Inspection of Aquifer Pump Test

An aquifer pump test was started the day of the July 23, 2013 site inspection. SLR conducted the aquifer pump test which started at approximately 11:30 a.m. and consisted of a single pumping well (GH12-334S) and five observation wells GH12-322S, GH11-265S, P-05-36S, P-05-36M and P-05-36D as shown in Photographs 24 through 27.

The pumping well (GH12-334S) and observation wells GH12-322S, GH11-265S and P-05-36D were equipped with a vented pressure transducer. Observation well P-05-36S was instrumented with a non-vented vibrating wire and P05-36M was manually monitored using a water level meter. Water levels in the observation wells were verified manually and recorded on a scheduled basis (Photograph 25).

P-05-36D, P-05-36M and P-05-36S comprised the nested well site (Photograph 27). The pumping rate was set to approximately 16 gallons per minute and was monitored using a factory calibrated flowmeter (Photograph 29). Water quality sampling was periodically conducted on discharge by SLR staff (Photograph 30).

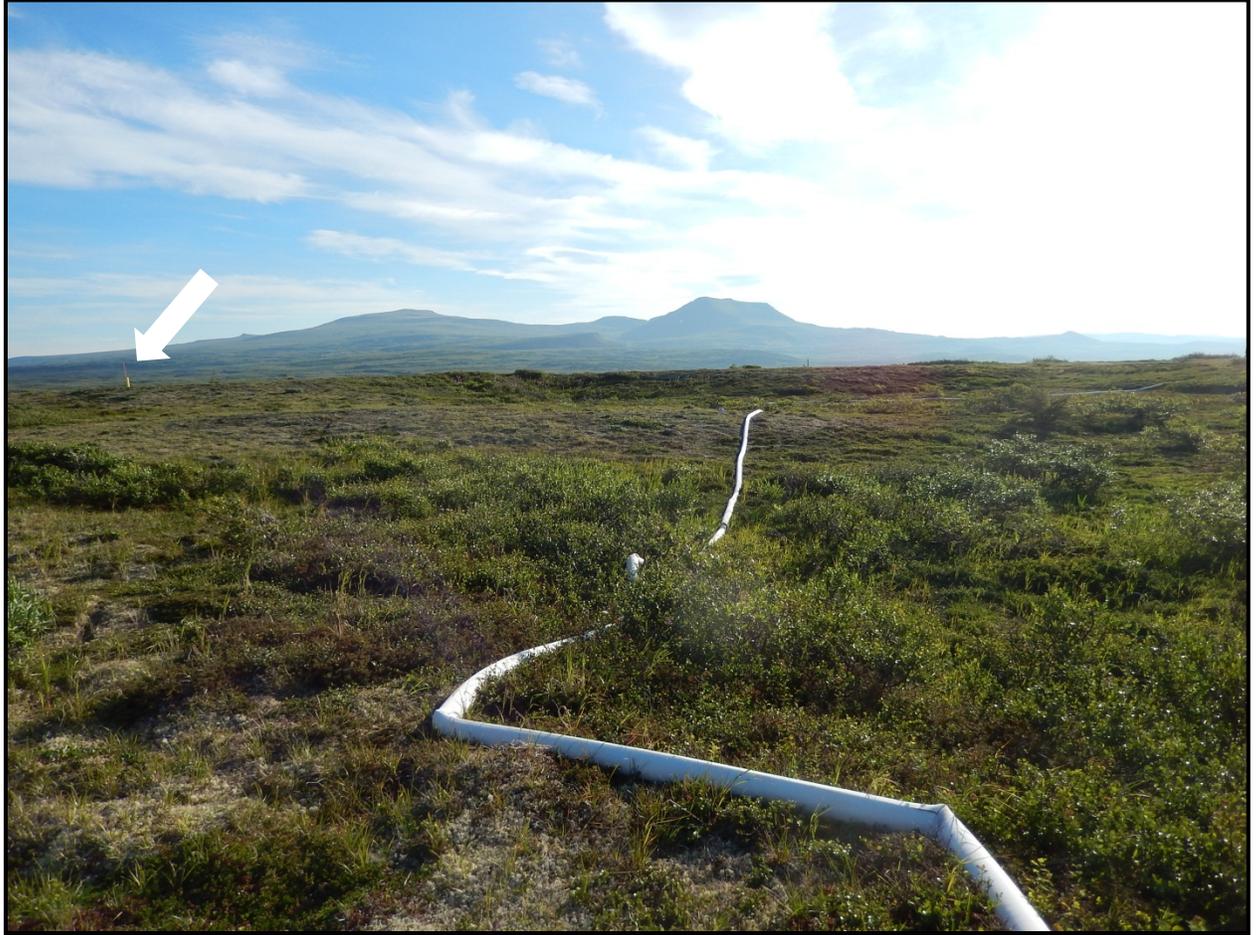
Groundwater pumped from the well was temporarily stored in a tank (Photograph 28) that was periodically purged to an upland area several hundred feet from the pumping well (Photograph 31). The length of the line was walked and no leaks were observed. A junction was used to assist with dispersion of discharge (Photograph 31). However, the majority of flow preferentially flowed through a single discharge point from the junction as it possessed the largest hydraulic head relative to the other discharge point. Tarps were used to mitigate erosion and disperse discharge (Photograph 32).



Photograph 24. Pumping well GH12-334S (A). A data reader was used to continuously monitor water levels in the pumping well to avoid drawing air in the pump (B).



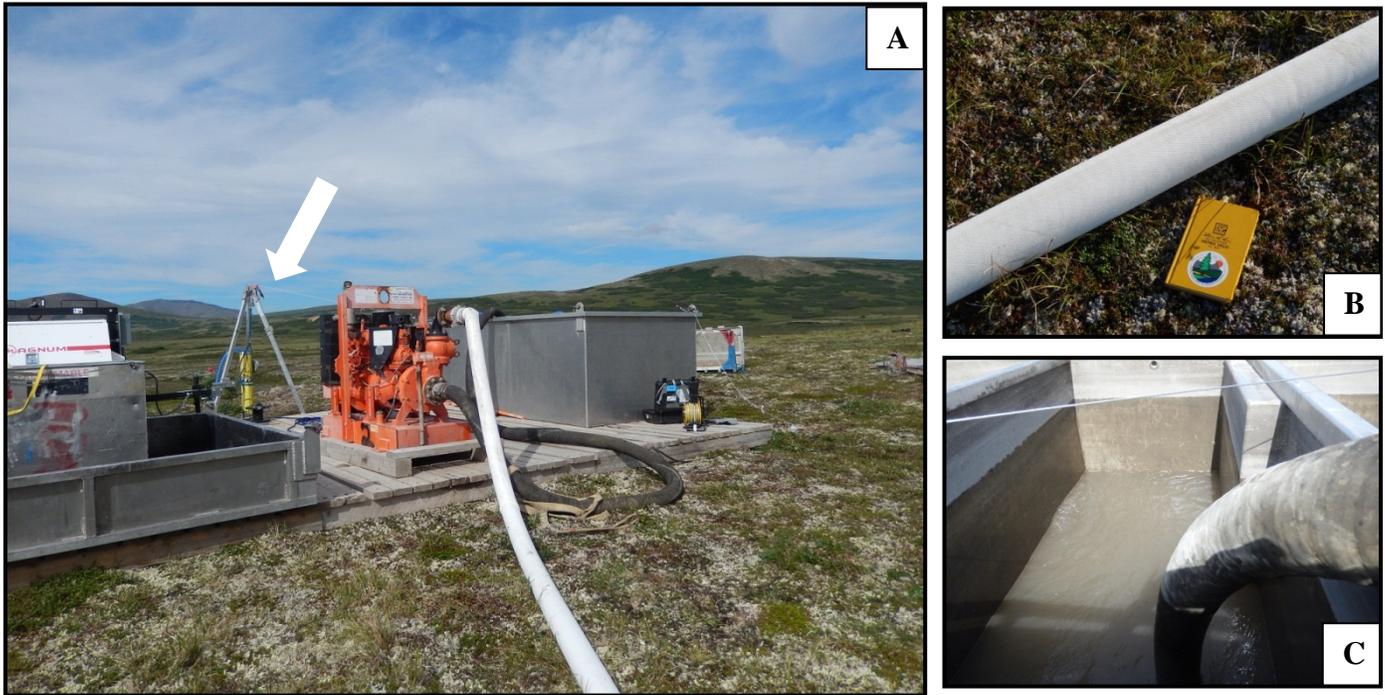
Photograph 25. SLR staff conducting manual verification of depth to water on monitoring well GH12-322S.



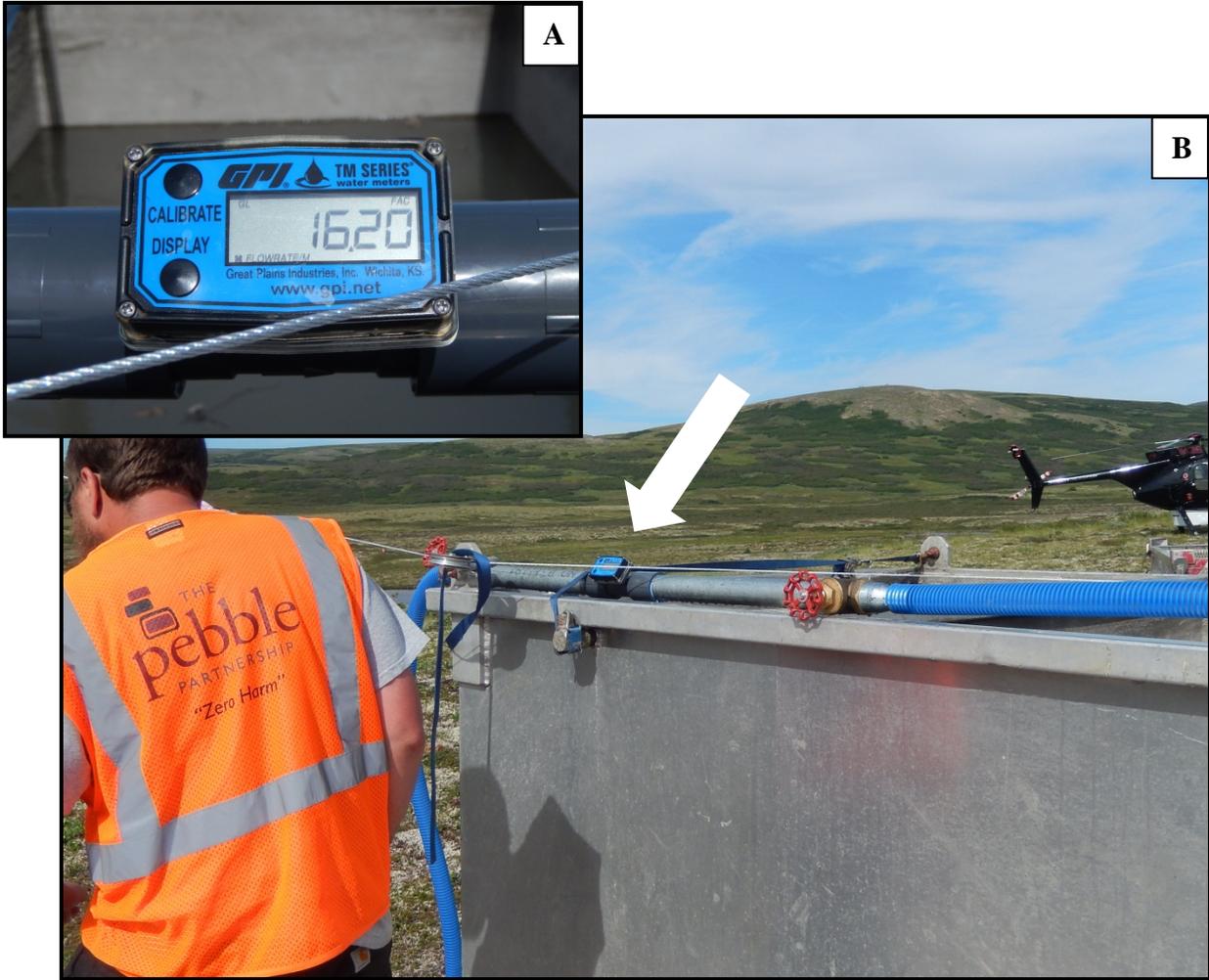
Photograph 26. Four-inch diameter discharge hose and monitoring well GH11-265S (arrow) shown in background.



Photograph 27. Nested observation wells P-05-36M, P-05-36D and P-05-36S. P-05-36D was instrumented with a vented pressure transducer. P-05-36S was instrumented with a non-vented vibrating wire and P05-36M was manually monitored using a water level meter.



Photograph 28. Storage tank for capturing discharge from pumping well and high capacity pump for discharging water to uplands through hose. Arrow points to pumping well in background (A). White hose (4-inch diameter) with book for scale (B). The entire length of the discharge hose was walked and no leaks were detected. Storage tank filling with groundwater from pumping well (C).



Photograph 29. Close-up of flowmeter (A). Arrow points to in-line flowmeter (B).



Photograph 30. Close-up of discharge from pumping well (A). SLR staff sampling discharge from pumping well (B). A YSI meter was used to measure water quality.



Photograph 31. Discharge hose (A) with junction (B).



Photograph 32. Discharge onto uplands. Note the presence of the tarps to mitigate erosion and disperse discharge. Tarps were used on both discharge points (A and C). The junction with the highest discharge is documented in photographs A and B.