INSPECTION REPORT: GREENS CREEK MINE

Tongass National Forest Minerals Group
8510 Mendenhall Loop Rd
Juneau, AK 99801
(907) 789-6275 – office
(907) 586-8808 – fax

Date of Inspection: Thursday May 19, 2016
Date of Report: Tuesday June 14, 2016
USDA Forest Service Inspector: Richard Dudek

Ranger District: Admiralty National Monument
Weather Conditions: Sunny. Temperature: Mid 60's ◦F.

Exploration in accordance with operating plan	Not Applicable
Timber removal following timber sale contract	Not Applicable
BMPs for erosion control	Satisfactory
Water Quality BMPs	Satisfactory
Public safety & fire prevention	Satisfactory
Reclamation work adequate and timely	Satisfactory
Roads maintenance adequate and current	Satisfactory
Tails placement in accordance with plan	Satisfactory
Waste Rock placement in compliance	Satisfactory
Company supervision of operation	Satisfactory
Operating in a clean and orderly manner	Satisfactory

Any conditions noted as UNSATISFACTORY will require follow up action by the Mine Inspector and a written memorandum to the operator, outlining the necessary work.

NEW REMARKS

Ward Air provided a Cessna floatplane for transportation to and from the site.

Mitch Brooks (Environmental Engineer, Hecla Greens Creek Mining Company (HGCMC)) accompanied Curtis Caton (Geologist, US Forest Service), Edward Gazzetti (Hydrogeologist, US Forest Service), and Richard Dudek (Geologist, US Forest Service).

This inspection included B access road, 1350 area, 920 area, Pond D, Falls Creek Bridge, Pond 23, and the Tailings Disposal Facility (TDF).

ACTION ITEMS

- 920 area: A rock check dam and sump across from DB-01 needs mucking.
- 1350 access road water bars are in need of maintenance
- Falls Creek Bridge: Immediate removal of sediments from underneath Bridge.
- Falls Creek Bridge: A liner needs to be installed underneath the wood planks.
- Falls Creek Bridge: Culvert needs mucking.
- Back-up pumps need to be in place as a mitigation at all site locations in the event any of the main water pumps fail during operation.
- Water Pumps: Develop a mitigation strategy to assess workload capacity for water pumps.

B-ROAD
The access road referred to as B-road was in fair condition and complies with Hecla Greens Creek's BMP plan for road maintenance (Appendix 8 (Table 8.1).

1350 ADIT
The 1350 adit (Photo 1) is the original adit at Greens Creek and is approximately 430 feet higher in elevation from the 920 portal. The 1350 adit is inactive and HGCMC has reclaimed the area by hydroseeding and contoured the surface adjacent to the adit. The 1350 adit now serves as an exhaust ventilation system and as a secondary escape way for miners. HGCMC has a groundwater monitoring well (Photo 2) across from the 1350 adit. A sump near the 1350 adit fence, covered by a screen appears to have sediment build up. HGCMC's Environmental Manager Chris Wallace stated that HGCMC's surface department inspects the 1350 area (when accessible) and cleans the sump when deemed necessary. HGCMC also stated they would eventually re-hydroseed exposed rock near the 1350 adit (Photo 3). The 1350 access road's water bars are in need of repair (Photo 4). The six water bars located on the access road are not effectively diverting water and need to be reconstructed.

920 AREA
The 920 warehouse storage area was clean and in order. All liquid chemicals and petroleum products were properly stored in storage containers with appropriate secondary containment (Photo 5). The sump and rock check dam across from DB-01 needs mucking (Photo 6). Sediments have accumulated and may affect functional operations of the rock check dam and sump.

The 920 bridge splashguards appear to be working, and are preventing sediments from entering Greens Creek (Photo 7). The storage area for underground road base material (Photo 8) is properly maintained by HGCMC personnel to prevent road base gravel was entering into Greens Creek.

In February 2016 HGCMC reported that a section of the 920 concrete overlay was damaged (Photos 9-10). The damaged concrete overlay may be from a broken potable waterline, HGCMC has plans to repair the damaged section of concrete in 2017. In addition to the damaged section, HGCMC will be sampling the underdrain at Pond A for lead signatures via the damaged road. HGCMC's Environmental Manager Chris Wallace stated that HGCMC personnel monitor for lead concentrations in Greens Creek upstream from Pond A and may conduct a tracer test. A tracer test would introduce a nontoxic organic dye to track the flow paths below the broken concrete to identify if water infiltrating the broken concrete is reporting to Greens Creek.

FALLS CREEK BRIDGE (3.4 mile B-road)
During the 4/4/16 inspection, it was documented that turbidity was observed at the confluence for Falls Creek and Zinc Creek. During this inspection, the USFS observed high amounts of sediments along the abutments of Falls Creek Bridge and underneath the bridge (Photos 11-12). The sediments deposited at this location may be from road grading or plowing along B-road. The sediments had accumulated onto the ground through the wood planks of the bridge (Photo 13). A nearby culvert is covered in sediments and needs to be mucked (Photo 14). Across the road from the culvert, a collapsible drainpipe was covered in sediments and possibly entering the forest (Photo 15).

POND 23/SITE 23 TEST COVER

Pond 23 was constructed to receive water from Site 23, Pond D, and stormwater pumps PP-09, and PP-10 at Pond A. Pond 23 has been recently re-lined, and is receiving water (Photo 16).

The Site 23 test cover is a one-acre test of a reclamation cover design. (Photo 17). The Site 23 test cover building is for monitoring pH, water chemistry, infiltration, and drainage from the test cover area (Photo 18). This site was clean and in order.

POND D

Pond D is the location for the APDES outfall 006.On May 6, 2016 during a large storm event, the main electric pump at Pond D failed. This failure may be a result of overloading the pumps workload capacity, which caused storm water to overwhelm Pond D (Photos 19-21). The discharge of water was approximately 300,000 gallons of storm water over a twelve-hour period. The discharge was reported to the Alaska Department of Environmental Conservation (ADEC) as a precautionary step, as water does not routinely discharge at this outfall location. When the results of subsequent water quality testing were completed, HGCMC reported the exceedance to ADEC as a non-compliant discharge. The concern was that the discharged storm water contained elevated lead concentrations. The lead concentration limit, according to the Alaska Water Quality Standards, is 6.44 µg/L (for chronic aquatic life). The sample result was 14.7 µg/L. HGCMC currently has a diesel powered pump in place at Pond D until the electric pump is repaired. The Forest Service recommends that HGCMC put in place a mitigation strategy to prevent electrical/mechanical failures for all water pumps at the mine.

A pH test for water was conducted down gradient from Pond D between FWMP sites 54 and 6 using litmus paper. The results indicate the pH was 6.5. A pH of 6.5-8.5 is the normal pH range for surface water.

TDF

The TDF expansion is currently underway with SECON installing HDPE liners for the base of the TDF (Photos 22-23). HGCMC also installed drainage systems for under liner flow, above liner flow and drainage systems for an inner ditch and outer ditch. The drainage systems will divert water to four caissons (Photo 24). From there, all contact water will be pumped to Pond 7. HGCMC also constructed a TDF perimeter ditch for non-contact water (Photo 25).

The excavated material from the TDF expansion was relocated to the northern section of the TDF (Photo 26). HGCMC eventually plans to use the excavated material as reclamation material for tailings disposal.

Near Pond 9, HGCMC personnel were removing tailings along an old road within the TDF to improve contact water drainage (Photo 27).

Photos (Additional photos available upon request)

Photo 1. 1350 adit.

Photo 2. 1350 monitoring well.

Photo 3. 1350 re-hydroseeding for exposed rock pile.

Photo *4*. 1350 access road water bar.

Photo 5. Storage containers at the 920 warehouse.

Photo 6. Rock check dam and sump across from DB-01 need mucking.

Photo 7. 920 Bridge.

Photo 8. Storage for road base material for the underground mine roads.

Photo 9. Zoomed in image of the cracks in the 920 concrete overlay.

Photo 10. Cracks in the 920 concrete overlay.

Photo 11. Sediment buildup at the edge of Falls Creek Bridge.

Photo 12. Sediments from B-road accumulating below the bridge.

Photo 13. Sediments from B-road permeating through the wood planks.

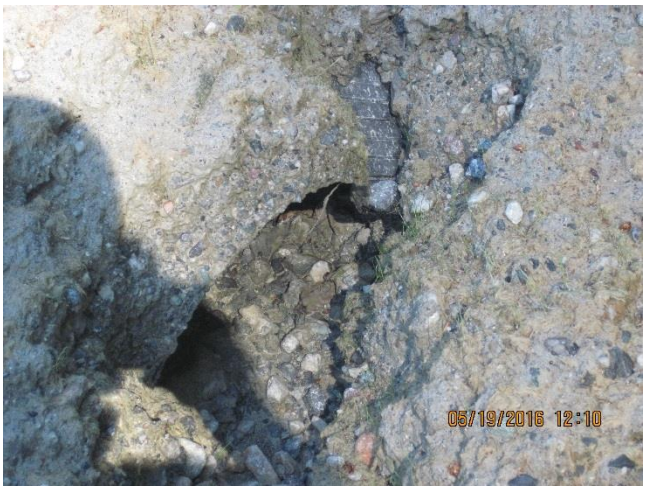

Photo 14. A culvert near Falls Creek Bridge needs mucking.

Photo 15. Collapsible drainpipe south of the Falls Creek Bridge.

Photo 16. Pond 23 has been relined and is currently active.

Photo 17. Site 23 reclamation test cover.

Photo 18. Site 23 test cover building.

Photo 19. Pond D

Photo 20. Pond D area.

Photo 21. Pond D Outfall 006 drainage pipe adjacent to a wetland.

Photo 22. HDPE liner installation at the TDF expansion site.

Photo 23. Zoomed in image of the HDPE liner installation.

Photo 24. Two of the four caissons used for water management in the TDF expansion.

Photo 25. Perimeter ditch system designed to collect non-contact storm water.

Photo 26. Excavated material stockpiled at the northern section of the TDF.

Photo 27. HGCMC personnel excavating tailings to improve contact water drainage into Pond 9.

NOTE WORTHY ITEMS

HGCMC has plans to conduct scaling at the 920 and 2-mile road locations in the next couple of months.
HGCMC is in the initial phase of beginning metal recycling at the mine site.
HGCMC has been conducting dust suppressants tests on sections of B-road, in accordance with the plan approved by the USFS and State agencies.
Surface Exploration operations were scheduled to begin within a week of the inspection.

Thanks to HGCMC for a safe visit.
U.S. Forest Service Officer: /s/ Richard Dudek