INSPECTION REPORT: GREENS CREEK MINE

Tongass National Forest Minerals Group
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Date of Inspection: Thursday, February 25, 2016
Date of Report: Monday, March 7, 2016
USDA Forest Service Inspector: Edward Gazzetti

Ranger District: Admiralty National Monument, Juneau Ranger District
Weather Conditions: Overcast, intermittent rain. Temperature: Low 40's (◦F).

Exploration in accordance with operating plan	Not Applicable
Timber removal following timber sale contract	Not Applicable
BMP for erosion control	Satisfactory
Water Quality BMP	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 De Havilland Beaver provided transport.

Mitch Brooks (Environmental Engineer, Hecla Greens Creek Mining Company (HGCMC)) accompanied Edward Gazzetti (Hydrogeologist, US Forest Service), Curtis Caton (Geologist, US Forest Service), Richard Dudek (Geologist, US Forest Service), and Shane King (Natural Resource Specialist, US Forest Service) during the inspection of sites located on B-road. David Landes (Sr. Environmental Engineer, HGCMC) accompanied US Forest Service personnel during the inspection of A-road and Young Bay Terminal.

The site inspection included A/B-access roads, Zinc Creek Bridge, Zinc Creek, Tailings Disposal Facility (TDF), Waste Site E, Pit 7, 1.4 Mile A-road Sand Pit, and Young Bay Terminal.

ACTION ITEMS

- **No action items were documented during this inspection**

A/B-ROADS:

Ruts and potholes were present on B-road during the inspection. Maintenance in accordance with Section 3.1 of Appendix 8, including grading and road rock placement, regularly improve road conditions. Turbid stormwater in roadside ditches is proof of erosion taking place on B-road (Photos 1 and 2). The US Forest Service and Alaska Department of Environmental Conservation recently approved a dust suppressant field-test on three sections of B-road. Polymer dust suppressants could be useful in mitigating road erosion and, as a result, turbidity in stormwater runoff.

ZINC CREEK BRIDGE

Inspection Report 368 (January 22, 2016) incorrectly stated that a Zinc Creek offshoot entered Greens Creek. The February 25 inspection revealed that the offshoot merged with Falls Creek and eventually rejoined Zinc Creek downstream (Photo 3). During the inspection, multiple red areas of groundwater upwelling were observed along the banks of Zinc Creek, the Zinc Creek offshoot, and Falls Creek. Note that while Inspection Report 368 associated a ditch-water outfall with one of these red areas, there is no evidence to suggest the ditch-water actually caused the red water/staining.

HGCMC has implemented mitigation measures at Zinc Creek Bridge with the goal of reducing sediment discharge into the forest. A filtration bag screens turbid ditch-water as it exits a culvert that runs beneath B-road (Photo 4). HGCMC crews can replace the bag when it reaches capacity. Ditch-water then enters a series of silt fences, straw wattles, and rock check dams before entering a sump (Photos 5-7). A standpipe drains the sump and discharges water into the forest at a new location approximately 20 meters south of the previous discharge point shown in Photo 8. By diverting ditch-water into a new flow path, the forest duff can be more effective as a sediment filter and the old flow path will have time to revegetate. HGCMC hopes to supplement their current BMP strategy with dust suppressants on B-road in the future.

Hydroseeding applied to exposed surfaces complies with General Best Management Practices outlined in Appendix 5 and Section 5.1.2 of Appendix 14.

The ditch-water outfall mentioned in Inspection Report 368 was observed again during this inspection and turbid water was present. There is a fair amount of sediment stored along the old ditch-water flow path within the forest (Photo 9), so turbidity will continue to enter the Zinc Creek offshoot. However, the recently employed mitigation measures should reduce discharge along the old flow path and, as a result, reduce sediment loading to the stream.

Multiple red seeps are present on the south abutment of Zinc Creek Bridge (Photos 10-12).

WASTE SITE E

Site is inactive and tidy.

Turbid runoff from B-road enters the drainage that runs between Waste Site E and the road near Outfall 005.3, as shown in Appendix 5, Figure 8 (Photos 2 and 13). Approximately 6-8 inches of fine sediment has accumulated in a settling pond adjacent to a culvert that empties into the drainage. Settling pond/culvert may need mucking this spring to ensure its effectiveness (Section 3.4 of Appendix 8).

TAILINGS DISPOSAL FACILITY (TDF)

Site is active and tidy.

YOUNG BAY TERMINAL

Site is active and tidy.

PIT 7

Pit run from 1.4 Mile A-Road Sandpit and reclamation material excavated during the construction of Pond 10 will be stored temporarily at Pit 7.

A thick accumulation of sediment partially clogs a culvert that drains water from Pit 7 into an adjacent wetland near APDES Outfall 004 (Appendix 5, Figure 6) (Photo 14). Culvert needs mucking this spring to ensure effectiveness of BMP strategies shown in Appendix 5, Figure 6 (Section 3.4 of Appendix 8).

1.4 MILE A-ROAD SANDPIT

Site tidy. No new activity. Could start excavating again in April.

FOLLOW UP ITEMS

- **Spring maintenance - Muck culverts at Pit 7, Waste Site E**

PHOTOS
(More images available upon request)

Photo 1. Turbid stormwater along B-road near Waste Site E. Sumps and rock check dams do a good job of slowing and retaining turbid stormwater.

Photo 2. Turbid water enters the drainage that runs between B-road and Waste Site E. HGCMC monitors stormwater in this drainage at Outfall 005.3.

Photo 3. Confluence of Falls Creek (left side of image) and Zinc Creek (right side of image). The offshoot of Zinc Creek mentioned in Inspection Report 368 merges with Falls Creek before entering Zinc Creek at this location.

Photo 4. New sump below culvert near Zinc Creek Bridge. Sump has a replaceable filter bag to trap sediments.

Photo 5. New BMP strategies (downgradient of Photo 4). Turbid water is slowed and filtered by a series of silt fences and straw wattles.

Photo 6. Rock check dams (downgradient of Photo 5) slow turbid water and provide additional stormwater storage.

Photo 7. Sump with standpipe. Photo looking upgradient towards rock check dams, silt fences, and culvert with filter bag at its base.

Photo 8. Ditch-water previously discharged into forest at this location. Area is contoured and hydroseeding applied. Stormwater now exits the sump through a standpipe and enters the forest approximately 20 meters south (to the left) of this location.

Photo 9. Sediment buildup in forest duff along old ditch-water flow path. Runoff may mobilize sediment over time. However, the diversion of ditch-water by the standpipe, combined with other newly employed BMP strategies, should reduce sediment loading into the Zinc Creek offshoot.

Photo 10. Seep at the base of Zinc Creek Bridge's south abutment. Note the bridge in the top left corner of this image.

Photo 11. Close-up of seep from Photo 10.

Photo 12. Red seep about five meters downgradient of seep shown in Photos 10 and 11.

Photo 13. Fine sediment buildup from stormwater discharge. Culvert empties stormwater into drainage that runs between B-road and Waste Site E. Sediment accumulation approximately 6-8 inches.

Photo 14. Culvert near Pit 7 partially clogged by sediment. Only the top 1-2 inches of the culvert are open.

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