



INSPECTION REPORT: GREENS CREEK MINE

Tongass National Forest Minerals Group
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Date of Inspection: Friday August 12, 2016
Date of Report: Friday August 26, 2016
USDA Forest Service Inspector: Richard Dudek

Ranger District: Admiralty National Monument
Weather Conditions: Partly cloudy. Temperature: Low 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 transportation to (Cessna 206) and from (Cessna 185) the site.

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

This inspection included A/B access roads, 1350 area, 920 area, 7.4 Mile B-road Bridge, Falls Creek Bridge, Zinc Creek Bridge, TDF area, Pit 7, and the Sand Pit.

ACTION ITEMS

- 7.4 Mile B-road Bridge: Sediment accumulation (downstream side) of the bridge.
- 7.4 Mile B-road Bridge: Sediment accumulation on the splashguard rails.
- Falls Creek Bridge: Sediments are accumulating underneath the bridge.
- Falls Creek Bridge: Sediment accumulation on the splashguard rails.
- 3.1 Mile B-road sediment screen: The removable screen is near capacity and needs to be cleaned out.
- Zinc Creek Bridge: South abutment settling sump is near capacity.
- 0.9 Mile B-road: Erosion was observed along the access road.

NOTE WORTHY ITEMS:

Construction for the 1.0 mile B-road re-alignment is ongoing.

During the site visit to the TDF, mine traffic was restricted to one-way traffic due to the high volume of traffic for the Pond-10 construction.





A/B ACCESS ROADS

Potholes and washboarding have formed along sections of A and B access roads. During the inspection, HGCMC Surface operations were in the process of grading B-road for road maintenance as stated in HGCMC's BMP plan for maintenance Appendix 8, Table 8.1.

1350 AREA

A trench and caisson (Photo 1) have been installed to capture stormwater runoff from a waste rock stockpile in an attempt to mitigate zinc exceedances detected down gradient at FWMP site 13. A pump and pipeline (Photo 2) have been installed to convey water from the caisson to the 1350 adit. Parts are still needed before the pump and pipeline can be fully functional. Once the pump and pipeline are completed, the water will be transferred from the caisson to the 1350 adit. From there, the water will be routed to the water treatment facility and discharged under the APDES permit. The 1350 adit (Photo 3) appeared in order and well maintained by HGCMC's Surface Operations.

920 AREA

The sump and rock check dam (Photo 4) across from DB-01 appeared to be in good working order. The 920 bridge's splashguards (Photo 5) are effectively working to prevent sediments from entering Greens Creek. At the 920-pump house, Surface Operations installed a steel walkway for safety so personnel can cross over waterlines (Photo 6) during operations. In the fall of 2016, HGCMC's Surface Operations has plans to reconstruct a water diversion ditch (Photo 7) to improve drainage behind the ore pad and warehouse. The construction of the diversion ditch will improve the drainage on the back slopes of the ore pad and warehouse. During the construction for the diversion ditch, a culvert that runs under the ore pad will also be replaced. This culvert diverts water to DB-01/Pond-A prior to water treatment. During this inspection, HGCMC personnel were unloading shipping containers and placing supplies into appropriate storage containers (Photo 8). The 920 warehouse storage containers were clean with all liquid and petroleum products properly stored within secondary containment (Photo 9).

7.4 MILE B-ROAD BRIDGE (KILLER CREEK BRIDGE)

Currently, stormwater is transporting sediments from the road to the banks at both ends of the bridge. This has potential to impact water quality. A protective liner was observed on the camp side of the bridge (Photo 10). However, the liner appears to be allowing sediment to flow freely into Killer Creek. The liner needs to be improved to capture sediments from stormwater runoff. Approximately 1 to 3 centimeters of sediments has accumulated along the splashguard rails (Photo 11). HGCMC personnel should continue to monitor sediment accumulation on the splashguard rails and clean the rails when deemed necessary.

On the Mill side of the bridge, a liner was in place and effectively preventing sediment from entering the creek (Photo 12).

FALLS CREEK BRIDGE

HGCMC's Surface operations have installed a temporary barrier (Photo 13) on the downstream side of the bridge to prevent sediment runoff from the road. A long-term BMP strategy is required to capture the stormwater runoff and to prevent sediment from flowing into the creek (Photo 14). The sumps and rock check dams need to be improved to capture stormwater runoff from the B-road (Photo 15).





ZINC CREEK BRIDGE

The 3.1 mile B-road removable sediment screen is near capacity and needs to be cleaned (Photo 16). A sediment sump (Photo 17) located on the south abutment needs to be mucked for better functional operations. The sumps and rock check dams need to be frequently monitored and maintained to prevent sediment from making its way through the BMP's and entering into the forest (Photos 18-19). The observed sediment buildup level for a dam or settling pond should not exceed one-third of its height (2015 General Plan of Operations Appendix 5 page BMP-7).

TDF AREA

HGCMC has started depositing tailings within the new TDF expansion area (Photo 20). Additional Class 1 waste rock (Photo 21) and organic material has been placed on the outer slopes of the TDF.

The majority of the organic layer has been excavated from the Pond-10 construction. Currently a blue/gray clay material (Photo 22) is being excavated and deposited at the Sand Pit. HGCMC is currently blasting the bedrock to ensure the planned capacity is met. The blasted bedrock will be tested to determine if the rock can be used for construction material.

0.9 Mile B-road

Material stockpiled at this location is the excavated material from the 1.4 mile A-road Sand Pit. The stockpiled material will be used for the TDF expansion project (Photo 23). Rock check dams and straw wattles are in place (Photos 24-25). Due to recent heavy rains, a flow path was observed along the access road that leads to the stockpile pad. The TDF Expansion contractors have been informed and will address the issue.

PIT 7

The hydroseeded slope is showing grass is growing well (Photo 26). HGCMC has installed prism monitors to observe any soil slumping along the slope (Photo 27).

SAND PIT

The gray/blue clay material is currently being stockpiled around the perimeter of the pit (Photo 28). Approximately one-fifth of the pit is filled from top to bottom (Photo 29). The slopes and berms that were hydroseeded have established grass (Photo 30) to help reduce stormwater erosion (HGCMC's BMP plan Appendix 5 page 13).

Photos (Additional photos available upon request)





Photo 1. 1350 area trench and caisson for stormwater runoff from an old waste rock stockpile.



Photo 2. Pipeline for the 1350 caisson to the 1350 adit.



Photo 3. 1350 Adit.



Photo 4. 920 sump across from DB-01.



Photo 5. 920 bridge.



Photo 6. 920 Pump house safety improvement.



Photo 7. Water diversion ditch behind the 920 ore pad and warehouse.



Photo 8. Shipping containers staged for unloading supplies at the 920 warehouse.



Photo 9. 920 warehouse storage container with secondary containment.



Photo 10. A liner (camp side of bridge) is not effectively preventing sediments from entering Killer Creek.



Photo 11. Sediment accumulation on the Killer Creek bridge's rails.

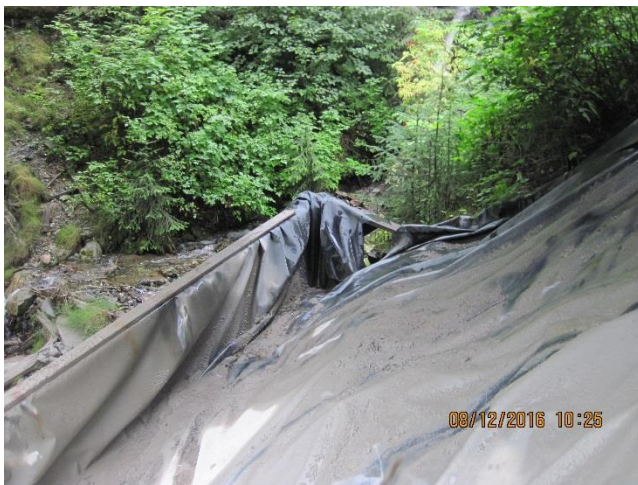


Photo 12. A liner underneath the Killer Creek Bridge (Mill side).



Photo 13. One temporary barrier was installed to monitor sediments accumulating on the downstream (camp side) of the Killer Creek bridge.



Photo 14. A barrier is needed to prevent sediment deposition on the downstream (Mill side) of the Falls Creek bridge.



Photo 15. Rock check dams and sumps need improvements.



Photo 16. 3.1 mile B-road removable sediment screen.



Photo 17. Settling sump near capacity.



Photo 18. Some sediment is working its way through the sumps and rock check dams.



Photo 19. Standpipe drain.



Photo 20. Highlighted within the dashed lines, tailings are now being deposited at the TDF expansion.



Photo 21. Class-1 waste rock deposited on the outer slopes.



Photo 22. Gray/blue clay excavated from Pond 10 is stockpiled at the Sand Pit.



Photo 23. 0.9 mile sand stockpiles.



Photo 24. Rock check dam.



Photo 25. Straw wattles.



Photo 26. Pit 7 slope.



Photo 27. A prism monitoring system for monitoring slope movement.



Photo 28. Blue/gray clay deposited on the perimeter of the pit.



Photo 29. Organic material stockpiled. Approximately 1/5 of the pit is full of organics.



Photo 30. Grass has established on the berms and slopes.



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

