



Inspection Report: Kensington Gold Mine

Tongass National Forest, Minerals Group
8510 Mendenhall Loop Road
Juneau, Alaska 99801
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Date of Inspection: Tuesday, September 17, 2013
Date of Report: Friday, October 18, 2013
USDA Forest Service Inspector: David Schmerge

Ranger District: Juneau Ranger District

Weather Conditions: Cloudy, light rain, temperature in the 50s.

Exploration in accordance with operating plan	Satisfactory
Timber removal following timber sale contract	Not Applicable
BMPs for erosion control	Satisfactory
Water Quality BMPs	Unsatisfactory
Public safety and fire	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	Not Checked
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 letter to the operator, outlining the necessary work.

NEW REMARKS AND SUGGESTIONS

Kevin Eppers (Environmental Manager, Coeur Alaska) accompanied David Schmerge (Hydrologist, U.S. Forest Service) and Dave Wilfong (Engineering Assistant I, ADNR) on this inspection. We first met to discuss the Reclamation Test Plot Plan. After the meeting, we visited the reclamation test plots at Snowside Gulch, the acid rock drainage (ARD) remediation at the Tailings Treatment Facility (TTF), the graphitic phyllite field test cells, the underground site for the temporary storage of the graphitic phyllite, Pit 7, and the TTF Water Treatment Plant.

RECLAMATION TEST PLOT PLAN

Kevin, Dave, and I were joined by Ellen Anderson (Botanist, U.S. Forest Service), Pete Strow (Environmental Coordinator, Coeur Alaska), and Raymond Ansotegui (Senior Reclamation Scientist, KC Harvey Environmental, LLC) to discuss monitoring and the selection of reference site(s) for the Reclamation Test Plot Plan (Plan). The Plan states, "The qualitative monitoring will be used to determine whether quantitative monitoring should be conducted. In conjunction with monitoring, reference sites would be selected that would be used to evaluate reclamation success. Coeur will consult with the Forest Service during reference site selection." It also states, "If qualitative monitoring estimates the test plot canopy cover [...] to be 50 percent of that in the reference area, then a quantitative assessment and surface stability evaluation would be conducted." After a discussion, it was agreed that we would modify the plan by not using a reference site, and conducting the qualitative monitoring until the test plots achieve 50 percent





coverage (absolute instead of relative). We also agreed that monthly qualitative monitoring would be sufficient, as stated in the Forest Service approval letter of the Plan.

RECLAMATION TEST PLOTS

Grass is germinating in each of the three reclamation test plots at Snowslide Gulch (photo 01). There is some apparent erosion in the biopolymer test plot where the subgrade has become exposed (photo 02). Kevin believes that this is not an accurate picture, and that there has been minimal erosion in this location. If Kevin is correct, then an insufficient amount of topsoil was used at this site. The approved Reclamation Test Plot Plan states, "a minimum of one-foot of stockpiled topsoil will be placed and distributed over each area," and the Forest Service approval letter states, "the topsoil should be evenly spread such that after settlement, it meets the required depth of at least one foot."

ARD REMEDIATION AT THE TAILINGS TREATMENT FACILITY

About 14,000 tons of the graphitic phyllite (GP) have been excavated at the Tailings Treatment Facility (TTF) this summer (photo 03), but ARD is still occurring at the site (photo 04). The pH at one of the seeps (photo 05) and at the sump (photo 06) was about 5. The pH at the north end of Lower Slate Lake (photo 07) was about 6, and at the northwest pond (photo 08) it was about 5.5.

Until recently, water quality at the site was improving, but on September 3 water quality noticeably deteriorated (table 1). The Tailings Treatment Facility ARD Remediation Plan (ARD Plan) contains a list of required corrective actions and a timeline for their completion. The ARD Plan requires the GP to be excavated by July 16, and DEC approved an extension of this deadline to August 7. Kevin stated that Coeur believes that all the GP at the site has been excavated, and that the present ARD is a residual that has not yet been flushed out of the system. However, Coeur has not presented evidence that supports this conclusion. Kevin stated that he believes the ARD remediation is satisfactory because the ARD seepage is contained and is being treated in the ARD treatment plant, and that the current BMP's are adequate to prevent impact to surface waters and the TTF. However, due to the continued poor water quality, there is reason to doubt that all the graphitic phyllite has been completely removed. Until the water quality meets the Alaska water quality standards, the ARD remediation plan is in effect and all GP needs to be removed. Alternatively, the ARD remediation plan needs to be revised and approved.

On September 3, Coeur requested approval from the Forest Service to utilize a dye tracer at the ARD remediation area located at the north end of the TTF to evaluate where the existing seepage is originating. After consulting with experts from ADEC, ADF&G, and the Forest Service, I sent Kevin several documents that the Forest Service uses for protocols in dye tracer studies, and told him that we wanted more information to make certain that we understand the problem that Coeur is trying to solve, and be certain that a dye tracer study can provide the answers. We have not yet received a written proposal that contains this information. Until we receive such a proposal, we cannot approve the action.

GRAPHITIC PHYLLITE FIELD TEST CELLS

The GP field test cells have not yet been secured with a fence (photo 09) as required by the approved Scope of Work for Construction and Operation of Field Test Cells. Kevin questions the authority of the Forest Service to require Coeur to install a fence. The Forest Service has the authority to enforce the Plan of Operations and supplemental plans under 36 CFR 228.4(d). For large mines such as Kensington, the Forest Service recognizes that supplemental plans may be necessary to cover significant surface disturbances not covered by the initial Plan of Operations. The excavation of the graphitic phyllite has been a significant surface disturbance not covered by the initial Plan of Operations, and numerous supplemental plans have been needed to address the issue. The Scope of Work for Construction and Operations of Field Test Cells is a supplemental plan that was approved by the Forest Service on May 31, 2013. In section 3.2.1 of the approved scope of work, it states, "the selected site should be in a secure area with limited access that can be fenced off and left undisturbed for the life of mine, so that a long-term test





can be conducted without interference or relocation of test materials."

UNDERGROUND SITE FOR TEMPORARY STORAGE OF GRAPHITIC PHYLLITE

ADEC has given approval to Coeur to temporarily store the GP underground until stopes are available to permanently dispose of it. Mine water is treated at the Comet Water Treatment Plant and discharged into Sherman Creek, and there is some concern that the GP could possibly affect the water quality of Sherman Creek. While Kenwyn George (P.E. Engineer, ADEC) is recovering from his illness, Pete McGee (ADEC) granted Dave Wilfong permission to inspect the underground GP on behalf of ADEC. Ken Kins (Mine Manager, Coeur Alaska) graciously provided us with a tour. Dave will provide an inspection report, but I observed nothing of concern that might affect the water quality at Sherman Creek.

PIT 7

The GP at Pit 7 is being hauled underground. A temporary containment cell that was full during my last visit on August 21, is now nearly empty (photo 10). There are 2 additional temporary containment cells at pit 7 that are full and temporarily covered. The ARD Plan requires the GP to be underground by the end of September. Coeur is behind schedule to achieve this, but Kevin and Ken both stated that they believe that they can get all the GP underground by the end of October. With a little luck, all the GP will be underground before the first snow fall. In the event that some of the GP has to be stored above ground during the winter, several drainage sumps have been constructed to capture any seepage (photo 11).

TTF WATER TREATMENT PLANT

The conex container that lacked secondary containment during my last site visit was empty of liquid chemicals. As a result, I found no secondary containment violations at the TTF.

ACTION ITEMS

1. The Forest Service will provide Coeur with a letter approving the agreed upon modifications of the Reclamation Test Plot Plan.
2. Coeur should provide the Forest Service with evidence that supports Coeur's opinion that all the graphitic phyllite has been excavated from the stockpile. If Coeur cannot provide this information, then a meeting with the Forest Service and DEC should be scheduled as soon as possible to discuss the necessary next steps to remediate the ARD.
3. If Coeur still wants to pursue a dye tracer study at the north end of the TTF, then Coeur should provide the Forest Service with a written proposal that follows the protocols in the 2 dye tracer documents that I provided.
4. Coeur should secure the field test cells with a fence as soon as possible.





Photo 01. Grass has germinated in each of the three reclamation test plots at Snowslide Gulch. The near plot was planted with fertilizer and mulch, the middle plot was just seed, and the far plot with biopolymer.



Photo 02. Some erosion is occurring in the biopolymer test plot where the subgrade has become exposed.



Photo 03. About 14,000 tons of graphitic phyllite have been excavated from the north end of the TTF this summer. Lower Slate Lake is in the background.



Photo 04. Acid rock drainage is still occurring at the base of the site where the graphitic phyllite was excavated.



Photo 05. The pH of this ARD seep was about 5.



Photo 06. The pH at the sump was about 5. Water in the sump is being pumped to an ARD containment pond, and then sent to the GP water treatment plant.



Photo 07. The pH at the north end of Lower Slate Lake was about 6.



Photo 08. The pH at the northwest pond was about 5.5. Water is being pumped from the pond to the ARD containment pond.



Photo 09. The field test cells have not been secured with a fence as required. It is important that this area not be disturbed for the life of the mine.



Photo 10. The GP from the cell in the foreground is being hauled underground. The two cells in the background are covered, but not sealed.



Photo 11. Drainage from the storage cells at pit 7 is directed to the sump in the foreground.

Parameter	Units	23-Jul	31-Jul	6-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep
Ammonia, Total, as N	mg/L	4.63	3.8	3.48	3.47	2.13	0.37	1.13	0.86
Arsenic	µg/L	13	9.3	ND	ND	ND	ND	ND	ND
Cadmium	µg/L	1100	1580	915	328	270	92	427	355
Chromium, Total	µg/L	28.5	33.3	ND	ND	ND	ND	ND	ND
Copper	µg/L	2600	5270	597	104	75.5	45	520	739
Iron, Total	µg/L	91500	146000	19900	497	2620	4100	12700	13300
Lead	µg/L	3.8	6.5	1.12	ND	ND	ND	ND	0.16
Manganese, Total	µg/L	53900	118000	110000	70900	57300	15800	56000	47900
Mercury	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	µg/L	8100	11200	5650	1990	1460	538	2350	2480
Selenium, Total	µg/L	23.8	18.8	16.1	9.9	ND	ND	ND	4
Silver	µg/L	ND	0.5	ND	ND	ND	ND	ND	ND
Zinc	µg/L	95400	137000	92400	28400	23200	8100	44200	33400
Nitrate, as N	mg/L	89.3	61.8	35.9	77.1	45	4.44	15.5	4.06
Sulfate	mg/L	3480	4120	2400	1870	1660	451	1870	1830
Chloride	mg/L	15.4	14.7	12.8	15.2	12.5	3.6	7.5	5.4
Turbidity	NTU	99	64.2	72.8	6.37	24.1	15.1	56.2	59.8
Total Dissolved Solids	mg/L	5030	6280	3770	3340	2620	706	2790	2520
pH	S.U.	3.1	3.02	4.51	5.47	6.3	6.96	4.71	4.73
Conductivity	µmho/cm	4370		3380	3290	2730	905		2480
Hardness, as CaCO ₃	mg/L	1120	2100	1680	1820	1520	430	1370	1290

Table 1. Water quality at the sump at the north end of the TTF was noticeably worse on September 3 compared to the previous 3 weeks.

U.S. Forest Service Officer: /s/ David Schmerge