STATE OF ALASKA

DEPARTMENT OF ENVIRONMENATAL CONSERVATION

SOLID WASTE & WASTEWATER PROGRAMS

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FIELD INSPECTION REPORT
NIBLACK MINING COMPANY

Inspection Date:	May 7, 2008
Report Date:	May 19, 2008
Weather:	Mild, partly sunny with no rain
Inspection Objectives:	To conduct a routine inspection of the general project area and compliance with the ADEC Waste Management Permit.
Operator Contact:	Darwin Green, VP Niblack Mining Company, Geologist
State Personnel:	Ed Emswiler, ADEC; Kenwyn George, ADEC Steve McGroarty, ADNR
Other Personnel:	Greg Killinger, USFS – District Ranger Dennis Benson, USFS, Recreational Lands, Minerals & Heritage Jeff DeFreest, USFS, Tongass National Forest Mines Manager Laura Hudson, Project Manager / geologist Ken Danielson, Camp Manager Barry Hogarty, water quality sampling Redpath construction foreman
Documentation:	Photos were taken and are available for inspection at ADEC in Juneau

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Notes

Site Conditions: Mild, partly sunny with no rain. The exploration activities to date include an approximately 2080 foot long tunnel and about 500 feet to go before encountering the Lookout Unit where PAG rock will be excavated. This should take place around the end of June 2008. Most systems and facilities to capture and treat water, and store potentially acid generating and non-acid generating waste rock were in place. The camp and exploration activities were active with multiple employees.

Sampling Sites: Barry Hogarty provided a tour of the surface water and shallow well sampling sites. Wells were drilled to a depth of approximately 2.5 feet and the well casing was installed to approximately 2 feet with slotted PVC pipe. They were completed with silicone sand and bentonite was placed above the slots. Samples are taken after 3 well volumes are removed. Samples results are generally low in dissolved oxygen and pH with an odor of H_2S (which is an indication of surface water from the natural peat layer that surrounds the wells).

Sedimentation Ponds: The two sedimentation ponds for the mine dewatering water were full and operating. Water entering the first pond from the mine at a rate of ~ 40-45 gpm was extremely turbid and sediment laden. A gravity feed drip flocculent tank was located at the inlet to the ponds, however, the efficiency of the feed is poor because of variation of flow into the pond (mine sump pump is either operating or idle). Water was then allowed to flow into a second pond by gravity via surface outlet pipe work between the two ponds opposite the inlet to the first pond. Water from the "Potentially Acid Generating (PAG) Site" was allowed to drain by gravity into the second pond because the small flow and metals loading of the discharge from the PAG facility was low. The flexible pipe that delivered water at the ponds could be positioned at either pond. There was marked visual turbidity to the water of the first pond. The visual turbidity in the second pond was markedly less. It appeared as though the sedimentation process via gravity between the two ponds was somewhat effective. Water quality from the ponds, for the two samples taken in 2007 was seen to be low in metals and not adversely impacting the quality of ground water.

There needs to be a system in place to clean the ponds without breaking the liner system. **SEE ACTION ITEMS.**

A water treatment plant constructed at the sedimentation ponds was complete but has not yet been used. The main purpose of this plant is to adjust pH (with lime), A secondary purpose is to increase sedimentation in the pond by the use of flocculants. The capacity of the plant is 140 gpm. It contained a tank where lime is added from a chemical feed pump and batch tank and then mixed for 15 minutes. After lime treatment, the water is then transferred into another tank where a flocculant is added from another chemical feed pump and batch tank and then mixed for 15 minutes. After treatment, the water is delivered by PVC pipe to the second pond for sedimentation.

Drip Emitter System: As mentioned above there is some turbidity observed in the second pond; some of this fine material clogs the fine drip orifices in the land application drip lines. The capacity of the drip lines is 150 gpm; to date the maximum flow has been 80 gpm. The average flow has been approximately 28 gpm and approximately 780,000 gallons has been delivered to wetlands through the system since April 24th. At the end of each drip line is a valve that is routinely opened to flush the line. Niblack is considering creating larger holes at less frequent intervals. Presently there are drip holes every 1-foot along the lines, which are on average 6-feet apart. Each hole in the emitter system was capable of dripping 1 gallon of effluent per hour. Because of the very slow and widespread drip irrigation, there is no surface runoff from the effluent. Also because of the low flow only a limited amount of the total infiltration area is in use. Safety equipment around the pond includes life rings and ladders, and there was a life jacket in the treatment building.

Potentially Acid Generating (PAG) Rock Site: Approximately 6 blast rounds have been stored at the PAG site. This rock is approximately 4 feet thick and cover an area of ¼-acre The rock had been largely covered by a blue tarp to shed water and minimize contact with the waste rock. According to Kenwyn George, additional rock did not appear to have been added to the site since his site visit on February 14, 2008. Water in the holding pond associated with the site was probably mostly non-contact storm water with a smaller amount of contact water. Visual

classification, X-ray fluorescence and acid-base accounting analysis of the material indicated low pyritic mineralization and metals leaching capability.

According to Darwin Green, the liner system was constructed as follows:

1. 6-inches of sand bedding directly over the bedrock foundation.
2. Geotextile
3. 80-mil HDPE
4. Geotextile
5. 6-inches of sand as a service layer
6. PAG waste rock

According to the approved plan, there would be 1-foot of both sand service layer and bedding layer. The 6-inch sand layers represent a deviation to the approved plan and may have an effect on the integrity of the liner system. This should be verified for accuracy. An action item to this report would be that Niblack Mining Company submits as-built drawings of the facility with photos taken during construction showing the thickness of the various layers.

It was reported that within two months the exploration adit will encounter the "Lookout" drift (500 feet from the present location of development) where it is likely that a greater volume of higher acid generating and metals leaching waste rock will be encountered. Niblack Mining is preparing the PAG site for this. Placement of additional liner over the approximate 1.5(H):1(V) backslope to the site was discussed. Niblack has been given approval to line the backslope with a 36-mil liner. This can be done either by fusing the liner or having a shingle style overlapping layering effect as vertical expansion proceeds. Using a shingle type of system may facilitate an easier placement over that of seam welding. Typically, shallower slopes and thicker liner material using fused seams are employed at permanent disposal sites. The approval for the steeper slope and thinner liner was based largely on the material being placed back underground at closure of exploration activities (assumed to be approximately 2 years in duration).

The leak detection culvert beneath the PAG site was observed. No water was detected leaving the culvert. The perforated PVC culvert was placed at the lower aspect of the facility and surrounded by rock prior to placement of the liner system mentioned above. Mr. Green reported that blasting of the rock pit in preparation of the foundation may have created small cracks or fissures in the foundation rock and that the leak detection system may not fully be able to collect all of the water passing a ruptured liner because of these cracks. This means that the leak detection system will not be 100% effective at detecting leaks in the liner system.

Because of this, Niblack is advised to ensure that operators work to maintain the integrity of the liner during disposal operations and diligently conduct visual inspections of the leak detection system. At closure attention will be given to ensuring that all of the stored PAG/ML waste will be picked up from the PAG facility and placed back into the exploration adit. **SEE ACTION ITEMS.**

<u>Ore Storage Area:</u> At this inspection, it was reported that an ore storage area will be needed within 2 months as exploration activities encounter the "Lookout" unit. According to Mr. Green, approximately 2 blast rounds or approximately 400 cubic yards would need storage. A plan

should be submitted and approval given prior to placement in a storage site. The plan should include detailed drawings and description of the site, liner system, run-on and run-off diversion and development of an operation plan that details how waste is placed and stored to minimize erosion, ponding, and leachate which has the potential to be acidic and contain metals. The storage site should be sized to accommodate not only the quantity expected plus any additional ore anticipated. Ore may not be stored until the plan is approved. **SEE ACTION ITEMS.**

Storm water. Because it had not been raining and was not raining when we were at the site, the efficacy of the storm water ponds could not be judged. However, there did not appear to be sediment downstream of the ponds. A pond that collected storm water from the portal and adjacent landing area had an oil absorbent boom in it.

Underground tunnel: The tunnel was walked to the far end (approximately 2080 feet) where drilling for advancement of the adit was under way. They have about 500 feet to go before getting into the Lookout Unit where PAG rock will be encountered. This will be around the end of June. There were 5 people working under ground. A walkway to aid access to the sump pumps had been constructed. Approximately 40-45 gpm of sediment-laden water was being pumped from the underground sump to the settling ponds. In order to reduce the amount of sediment exiting the adit it was suggested that rather than have drainage water run in the wheel-troughs, as it did for portions of the adit, the side ditches be better constructed and maintained in these sections.

Monitoring: Barry Hogarty was at the site to collect water samples.

We left the site at 4:00 PM.

Conclusion:

1. Niblack Mining Company has given much attention to the construction of the facilities and the safety of their operation.
2. Because of irregularities in the construction of the PAG facility having to do with leak detection, the fractured foundation, possible issues regarding the thickness of the service and bedding layers of the liner system, the steep back slope, the thickness of the liner on this backslope and construction of the liner on this slope, it will be important to ensure all of the stored PAG/ML waste will be moved from the PAG facility to the far end of the exploration adit at closure.

Action Items:

1. Inform the Department of how you will clean the ponds without breaking the liner system, what depth of sediment that will trigger cleaning of the ponds, and when you think you will first need to clean the ponds, if at all
2. Submit as-built drawings of the PAG site with photos of the construction showing the thickness of the various layers of the liner materials including the sand bedding and service layers. Verify the thickness of the sand bedding and service layers.
3. Because of irregularities in the construction of the PAG facility having to do with leak detection, the fractured foundation, possible issues regarding the thickness of the service

and bedding layers of the liner system, the steep back slope, the thickness of the liner on this backslope and construction of the liner on this slope, Niblack is advised to ensure that operators work to maintain the integrity of the liner during disposal operations and diligently conduct visual inspections of the leak detection system.

4. For the 400 cu yd ore sample, a plan should be submitted and approval given prior to placement in the temporary storage site that is planned for this material. The plan should include detailed drawings and a description of the site, liner system, run-on and run-off diversion and an operation plan that details how waste is placed and stored to minimize erosion, ponding, and leachate. Ore may not be stored until the plan is approved.
5. Drainage within the adit should be a channeled to a ditch adjacent to the adit wall with all flows directed to this drainage channel.
6. Niblack Mining Company should submit a final version of their 2007-2008 annual report.

Final Note.

The Alaska Department of Environmental Conservation appreciates the cooperation of the Niblack Mining Company with the Solid Waste and Wastewater Programs.

Photos from the site inspection:

Barry Hogarty at a ground water monitoring well. Cone installed around the pipe to shed surface water so that a better ground water sample can be obtained.

PAG site with PAG waste covered with a blue tarp to shed rainwater. Some seeps through, so future rock will be laid with a surface slope to shed the water.

Liner system showing sand, geotextile and geomembrane. Right photo shows how the liner is anchored.

PAG site lined pond and backslope

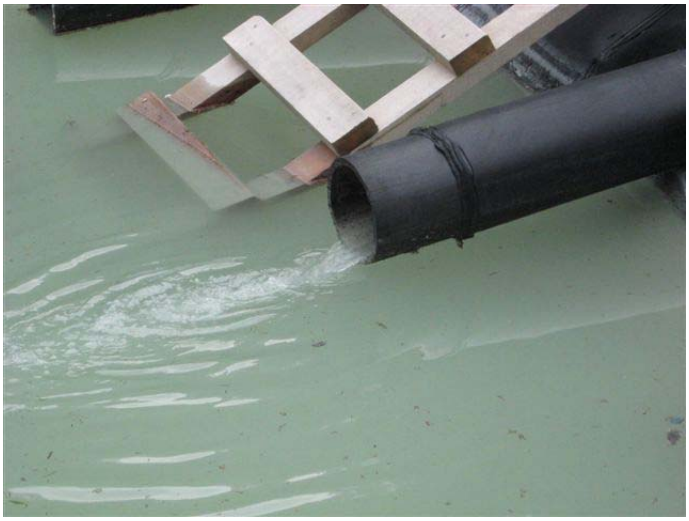
PAG site lined pond that flows by gravity to the sedimentation ponds

PAG site underdrain

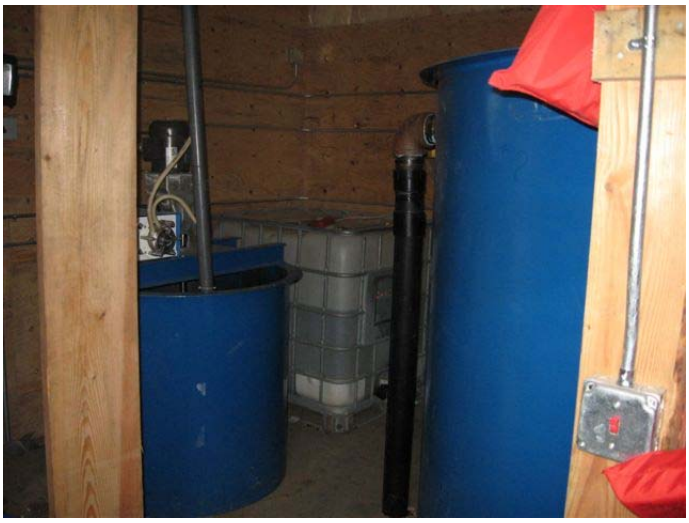
Repaired joint of mine dewatering pipeline – this joint came apart in January 2008.

Storm water sediment pond with oil collection boom to capture residual hydraulic fluid from a spill at the mine portal.

Mine dewatering water entering the first water treatment pond.



Water partially treated – sediments reduced by the use of flocculants – this water is passing from the first to second treatment ponds.



Water treatment plant with lime mixing tank, lime contact tank and flocculant tank.

Land application drip line.