



February 4, 2005

Kennecott Greens Creek Mining Company
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Mr. Tom Zimmer
Surface Operations Manager

Dear Mr. Zimmer:

Stage 2 Tailings Facility Expansion
2005 Work Summary

1. INTRODUCTION

This letter provides an update to the Design Overview for Forest Service Submission (Klohn Crippen April 8, 2004). In particular, details of the proposed work to be completed in 2005 are outlined.

Greens Creek Mine is an underground polymetallic mine on northern Admiralty Island, Alaska (Drawing D-39001) that is jointly owned by Kennecott Minerals and Hecla Mining Company. The mine is operated by Kennecott Greens Creek Mining Company (KGCMC).

Mine tailings are dewatered at the mill site. About one-half of the tailings are utilized as backfill in the mine, and the remainder is transported to the Tailings Facility for surface storage. An incremental expansion of the Tailings Facility storage capacity, hereafter referred to as the Stage 2 Expansion, is planned between 2004 and 2007 to accommodate projected mine tailings storage requirements.

Regulatory approval for the expansion was granted after a tailings site review by the USDA Forest Service (USFS) and other Federal, State and Local Agencies. With the USFS as the lead agency, a Final Environmental Impact Statement (FEIS) was issued on October 24, 2003 with a Record of Decision supporting the tailings disposal expansion plan. The tailings area is operated under a Waste Management Permit issued by the Alaska Department of Environmental Conservation (ADEC) on November 7, 2003 (ADEC, 2003), and a General Plan of Operations (GPO) (KGCMC, 2004) submitted to the USFS.



2. CONSTRUCTION SCHEDULE

A summary of the proposed construction schedule for the overall Stage 2 Expansion, including estimated in-service dates for each expansion area and the new water retention ponds, was included in the Design Overview for Forest Service Submission (Klohn Crippen April 8, 2004). The schedule is a preliminary plan divided on a quarterly basis from 2004 to 2007. To allow additional assessment of the Northern expansion areas, construction of the Northwest and Northeast Expansion Areas have been rescheduled for 2006 while the Southeast Expansion (Area 2) will be completed in 2005. For compatibility with the tailings expansions, Pond Nos. 8 and 9 will also be delayed until 2006, and Pond No. 7 will be completed in 2005.

3. 2004 WORK COMPLETED

Work completed in 2004 included the following:

- Southeast Expansion (Area 1);
- Pond No. 7 - excavation started to provide rockfill;
- New Truck Wash Facility; and
- B-Road realignment adjacent to the new Truck Wash.

Details of the construction will be summarized in the 2004 Construction Summary Report.

4. 2005 WORK SUMMARY

4.1 General

This section provides a summary of the design and construction to be completed in 2005.

4.2 Pond 7

Proposed Stormwater Retention Pond No. 7 will be a component of the plan to replace Pond No. 6. Pond No. 7 excavation began in 2004 and will be completed in 2005. The excavated rock was used for construction in 2004, and additional rock from the Pond No. 7 Quarry is planned to be used for 2005 construction. Pond No. 6 will continue to operate until Pond No. 7 is commissioned, and may be used for additional operational storage until the Pond No. 6 area is required for tailings storage. Stormwater handling

capacity will be maintained during the incremental expansion periods. The capacity of the new stormwater systems will comply with the 25-year return period, 24-hour duration storm water design criteria set by ADEC.

4.3 Southeast Expansion (Area 2)

4.3.1 General

This expansion covers part of the area to the south of the Southeast Expansion (Area 1) and extends the existing foundation liner system to the south. Area 2 involves expansion over the Old Truck Wash, and to the south and east of Southeast Expansion (Area 1). The Old Truck Wash, Tank No. 6 and associated service lines will be removed and essential new service lines will be established.

The details of the assumed foundation conditions, recommendations for site investigations where the data is incomplete, excavation and grading plans, and liner requirements are outlined in the following sections.

4.3.2 Foundation Conditions

The natural foundation conditions in the Southeast Expansion are adequately known from the drilling and construction in this area. Fill thicknesses in some areas are uncertain and will be confirmed by test pits. Much of this area was covered by a thin layer of peat/surficial material over soil or bedrock before development. Portions of the foundation beneath Tank No. 6 were pressure grouted to provide the required bearing capacity.

4.3.3 Foundation Preparation

Foundation preparation will include removal of the Old Truck Wash and Tank No. 6. A graded surface to receive the liner system will be prepared by common and rock excavation as required. French drains will be installed, as required, to convey groundwater seepage out of the foundation area. In some areas, structural fill (6 in. minus rockfill) will be needed to achieve the grade. Excavated surfaces and other surfaces will be proof-rolled and soft spots will be over-excavated and backfilled before placing grading fill.

The grading surface for the liner system is designed to have a maximum slope of 3H:1V and a minimum slope of about 2% as recommended by the United States EPA guidelines (Koerner, 1994 and EPA, 2001).

A 0.5 ft layer of bedding sand will be placed on the graded surface, followed by a liner system comprising, from the bottom to top: non-woven geotextile, 80 mil textured HDPE geomembrane, and a geo-composite drain layer. This configuration is similar to the liner installations completed in 2002 for the Wide Corner Quarry Expansion and in 2004 for Southeast Expansion (Area 1). A minimum 1 ft thick sand service layer, increasing to 2 ft thick on slopes steeper than 10%, will be placed over the geo-composite. Where the sand service layer is 1 ft thick, a further 1 ft of tailings or granular fill will be placed and lightly compacted before unrestricted travel is allowed on the lined area.

The liner will be shaped to drain south and west, with seepage water collected by gravel and perforated pipe drains and delivered by gravity to either Wet Well No. 4 or to Pond No. 6. Perimeter ditches lined with 36 mil reinforced polypropylene will be extended along the nominal toe of the tailings pile and will discharge into Pond No. 6. To keep the surface water separated from the underflow, the ditch lining will not be connected to the 80 mil HDPE liner under the tailings pile. The ditches will generally follow the grading surface profile but with an invert level nominally 4.5 ft above the grading surface level. Velocity breaks and possibly gabion type drops will be placed in steep sections as needed. The ditch invert elevation will drop from about El. 210 ft at the northeast corner of the Southeast Expansion to about El. 150 ft at Pond No. 6.

The liner beneath the tailings pile will generally be anchored at the perimeter in a trench excavated in natural ground or in a constructed anchor berm. The liner will provide about 4 ft minimum height containment at the perimeter to reduce the likelihood of seepage exiting the perimeter over the liner.

Once Southeast Expansion (Area 2) construction is completed the perimeter ditch system will discharge directly to Pond No. 6, and eventually into Pond No. 7 by gravity flow when Pond No. 6 is decommissioned..

5. CONSTRUCTION INSPECTION AND MONITORING

5.1 Site Supervision

The site construction will likely proceed in a manner similar to the 2004 work with independent contractors undertaking most of the construction, technical supervision and Quality Assurance by Klohn Crippen, and Contract Management by KGCMC.

5.2 Instrumentation and Drilling

At several locations (to be decided after foundation preparation is complete), vibrating wire piezometers and lysimeters will be installed above and below the liner system to

permit long-term monitoring of pore pressure and water quality. The monitoring schedules for the instruments will be consistent with the GPO.

5.3 Site Investigation

KGCMC will continue appropriate site investigations to provide data for the design and construction past 2005, as has been the normal procedure for tailings impoundment development.

6. RECOMMENDATIONS AND CLOSING REMARKS

This letter report presents a summary of the construction plan and drawings for the 2005 construction year.

If you have any questions or wish to discuss the contents of this report, please do not hesitate to call.

Yours truly,

KLOHN CRIPPEN CONSULTANTS LTD.

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RWC:dl