



THE STATE
of **ALASKA**
GOVERNOR SEAN PARNELL

Department of Environmental
Conservation

DIVISION OF SPILL PREVENTION & RESPONSE
Contaminated Sites Program

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File No: 1513.38.013

June 12, 2014

Mr. William Corbus
AJT Mining Properties, Inc.
5601 Tonsgard Court
Juneau, Alaska 99801

Re: Decision Document: Alaska Gastineau Mine Tailings (Thane Mine Dump)
Cleanup Complete Determination
CS HazID 404; CERCLIS ID AKD981767320

Dear Mr. Corbus:

The Alaska Department of Environmental Conservation (ADEC) has reviewed the environmental records for the Alaska Gastineau Mine Tailings site. This decision letter memorializes the site history, sampling and cleanup actions, and standard conditions for long-term site management. No further remedial action is required.

This decision is based on the administrative record, located at ADEC's office in Juneau, Alaska. This letter summarizes the decision process used to determine the environmental status of the site and provides a summary of the regulatory issues considered in this Cleanup Complete Determination.

Site Name and Location:
Alaska Gastineau Mine Tailings
4404 Thane Road
Juneau, AK 99801

Name and Mailing Address of Contact Party:
William Corbus
AJT Mining Properties, Inc.
5601 Tonsgard Court
Juneau, Alaska 99801

DEC Site Identifiers:
File No: 1513.38.013
Hazard ID: 404

Regulatory Authority for Determination:
18 AAC 75

Figure 1
Aerial View of the Alaska Gastineau Mine Tailings Site

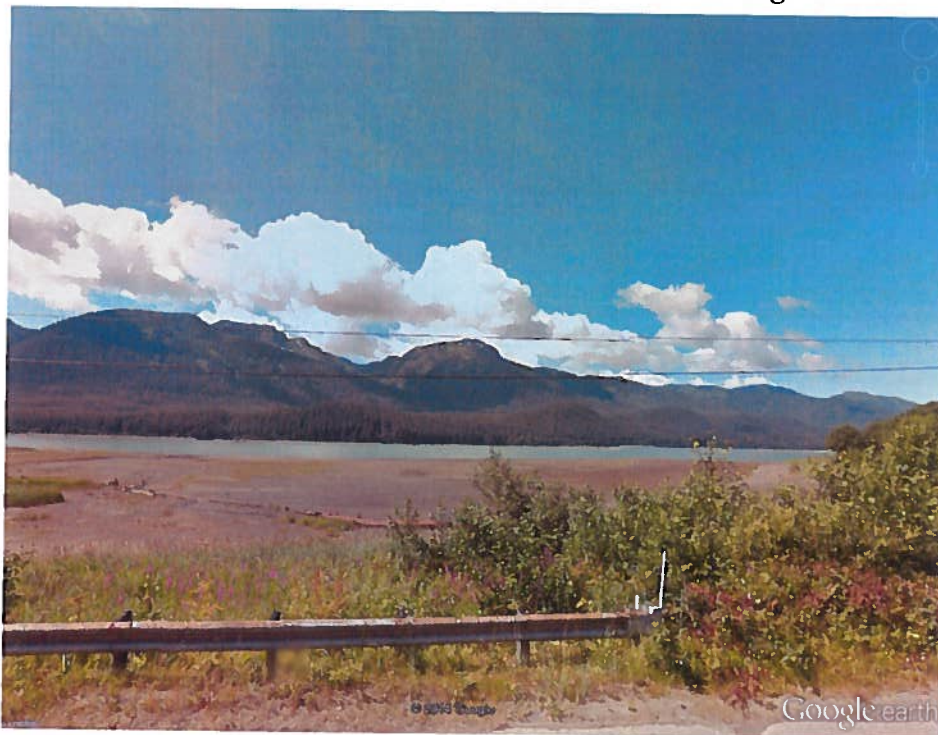


Visual courtesy of Google Earth 2013

Site Description and Background

The Gastineau Mine Tailings, located four miles southeast of Juneau on Thane Road, is a former disposal site that received mine tailings from mill sites operating in the Sheep Creek watershed from 1912 to 1920. The tailings disposal area encompasses about 50 acres of fine sediments deposited near and at the mouth of Sheep Creek where it empties into Gastineau Channel. In 1987, Echo Bay Mines, with plans to re-open the A-J Mine, conducted sampling of the tailings and found elevated levels of arsenic and lead. The initial data collected by Echo Bay Mines prompted the U.S. Environmental Protection Agency to seek a comprehensive investigation of the area. Mercury in the tailings was also suspected due to use of mercury amalgamation in the area in the past. The additional environmental work ultimately included both a Preliminary Assessment and a Site Investigation by the consulting firm, Ecology and Environment (E & E) that evaluated areas up gradient of the tailings site. EPA identified the site as the Thane Mine Dump and added it to CERCLIS with the identification number AKD981767320. The site was listed on the DEC Contaminated Sites Database in 1987.

Figure 2
View across the Tailings area from Thane Road, looking southwest



Contaminants of Concern

The following contaminants of concern, those above approved cleanup levels, were identified during the course of multiple site investigations.

- Arsenic
- Cadmium
- Chromium
- Lead
- Mercury

Cleanup Levels

Although the tailings in the intertidal area qualify as marine sediments when submerged, Alaska has no applicable criteria for sediment. For the purposes of this site, cleanup levels approved were Method 2, soil Migration to Groundwater Pathway. In addition, because the sensitive receptors for sediment contaminants are ecological, additional screening was performed on biota in conjunction with sediment samples in the intertidal area to evaluate potential uptake.

Contaminant	Soil Migration to Groundwater Pathway (mg/kg)
Arsenic	3.9
Cadmium	5.0
Total Chromium	25
Chromium III	>106
Chromium VI	25
Lead	400
Mercury (total)	1.4

Characterization Activities

Following the submittal of a site investigation report by E & E for the EPA in 1988, no further evaluation work occurred at the tailing site until 2013. In March 2013, the current site owner, AJT properties, contracted with NORTECH environmental consultants to develop a work plan to carry out an updated characterization of the tailings area to assess current conditions. With input from DEC, NORTECH proposed a statistical sampling plan using multi-increment sampling technique (M-I) and included biota tissue sampling alongside a companion effort by DEC. The objective of this effort was to establish current levels of metals in the tailings and to determine whether levels in sediment were elevated or posed a substantial risk to ecological receptors.

NORTECH submitted a site characterization report on July 29, 2013 titled, *Soil Characterization for Alaska Gastineau Mine Tailings in Thane, Alaska*. In August, NORTECH and ADEC jointly carried out biota tissue sampling from one of the decision units in the tailings area. In November 2013, NORTECH issued an addendum to the July 29, 2013 report, presenting the results of the biota tissue sampling, and in April 2014, DEC was provided with analytical results for the tissue samples it collected. This information was consolidated in a letter dated June 8, 2014 approving the results of the site characterization report. The discussion and conclusions from that letter are reiterated here for the record. Results of the M-I sampling effort are tabulated in Table 1. Results of the biota tissue sampling at the Gastineau Tailings site are tabulated in Table 2.

Table 1: M-I Soil Sampling Summary

	Results mg/kg						Site Cleanup Levels (MGW)
	Tailing Disposal between Thane Road and Sheep Creek Delta						
Sample ID	TDU-3	TDU-4	TDU-5 #1	TDU-5 #2	TDU-5 #3	TDU-6	
Analyte							
Arsenic	17.0	35.3	26.7	27.6	27.2	11.8	3.7
Barium	280	161	113	115	111	89.1	1,100
Cadmium	<1	2.18	1.36	1.16	1.29	<1	5
Chromium	64.3	30.5	17.0	21.6	18.3	16.1	25
Chromium+3							124,000
Chromium +6							250
Lead	29.3	88.1	41.1	37.9	42.6	8.14	400
Mercury	0.081	0.030	0.038	0.039	0.042	0.037	1.4
Selenium	<1	<1	<1	<1	<1	<1	3.4
Silver	<1	<1	<1	<1	<1	<1	11.2

Arsenic was detected above the DEC cleanup level of 3.9 mg/kg in all 8 samples. According to a U.S. Fish and Wildlife Service technical report *Metal Concentrations in Sediments and Selected Biota in Gastineau Channel, Juneau Alaska*, arsenic concentrations around the Juneau area can range between 6.69 mg/kg to 51.0 mg/kg. Detections of arsenic concentrations in DU-3, 4, 5, and 6 range from 11.8 mg/kg to 35.3 mg/kg and fall within the levels considered to be naturally occurring around the Juneau area.

Total chromium was detected above the DEC Table B1, Method Two Migration to Groundwater level (25 mg/kg) at DU- 3, and 4. Although NORTECH did not re-submit the samples from DU-3 and 4 for speciation (Cr III and Cr VI), speciation results for other samples collected at sites nearby showed Cr VI, the toxic form of chromium, to be well below DEC cleanup criteria of 25 mg/kg. The levels of chromium detected in TDU-3 and 4 are indicative of background concentrations for the area and no industrial source related to past mining activity is present.

Table 2
Biota Tissue Sampling Results

Date collected 8/6/13

Location of Samples: Thane Mine Tailings Decision Unit 6
collected by ADEC- Contaminated Sites Program and Nortech where shown
Results in parts per million, wet weight (DEC) or dry weight as shown

Sample	Length (cm)	Weight (g)	Client ID	As	Ba	Cd	Cr	Cu	Pb	Se	THg	TissueType
Pile Worm	13.12	0.0077	GM1-01	3.8	NA	0.38	NA	5.2	0.71	3.1	0.009	Whole body Tissue
worm			GM1	6.6464	127.97	0.55056	8.68	9.052	8.1344	0.7936	0.01344	24.8% solids
Orange Ribbon Worm	9.78	0.0006	GM2-02	NA	NA	NA	NA	NA	NA	NA	0.036	Whole body Tissue Composite
worm			GM2	3.4692	11.525	0.5292	1.176	3.072	1.1922	0.9261	0.0269	14.7% solids
Blue Mussel	5.05	0.0056	GM3-03	1.8	NA	0.49	NA	1.4	0.78	0.85	0.012	Whole body Tissue
Blue Mussel			GM3	2.9892	119.14	0.57664	30.528	3.858	5.83	0.4452	0.00799	21.2% solids
Pile Worm		0.0008	GM3-09	NA	NA	NA	NA	NA	NA	NA	< 0.01	Whole body Tissue Composite
isopod		0.0002	GM3-10	NA	NA	NA	NA	NA	NA	NA	< 0.01	Whole body Tissue
mphipid		0.0002	GM3-11	NA	NA	NA	NA	NA	NA	NA	< 0.01	Whole body Tissue
Macoma b. clam	1.95	0.0010	GM4-04	NA	NA	NA	NA	NA	NA	NA	0.014	Whole body Tissue
Blue Mussel	1.56	0.0008	GM4-07	NA	NA	NA	NA	NA	NA	NA	0.0093	Whole body Tissue
3 small clams			GM4	3.5616	57.24	0.7102	4.9396	4.537	7.102	0.7208	0.01128	21.2% solids
Blue Mussel	5.40	0.0039	GM5-05	1.1	NA	0.24	NA	0.84	0.12	0.66	0.014	Whole body Tissue
Orange Ribbon Worm	14.10	0.0015	GM5-08	NA	NA	NA	NA	NA	NA	NA	0.018	Whole body Tissue
Blue Mussel			GM5	1.4874	4.422	0.41406	2.1708	1.38	0.3739	0.4154	0.01635	13.4% solids
Blue Mussel	4.39	0.0180	GM6-06	1.2	NA	0.26	NA	1.1	0.17	0.71	0.014	Whole body Tissue
Blue Mussel			GM6	1.6779	4.8222	0.38916	1.9599	1.17	0.4089	0.4935	0.0133	14.1% solids

Bold indicates elevated compared to statewide data

DEC Sample

Nortech sample

Note: The results of the DEC sampling effort are reported in wet weight; however, the NORTECH samples were analyzed on a dry-weight basis but converted using the percent solids data provided by the lab. Due to lack of sample volume in some of the DEC samples, not all metals could be run. Large discrepancies between the results are believed indicative of sediment contamination in the samples or during the sampling process, according to DEC -EH and ALS labs that analyzed the samples.

Biota Sampling Results

The tissue results for both the DEC and NORTECH sampling efforts are shown above in Table 2. The samples were collected by DEC/Nortech and then split in the field. DEC Environmental Health (EH) Lab ran the DEC samples and ALS ran the Nortech Samples. In some instances, large discrepancies are present in the results. Based on discussions with both ALS and the EH lab, this is believed to be due to a minute amount of sediment contamination in the Nortech splits, reportedly not uncommon, but unfortunately limiting comparability of the two data sets. Contaminant uptake can also vary by organism.

In comparing the results of the DEC data set to statewide data that have been collected over a number of years by the EH Lab, the highest detected concentration of arsenic (3.8 ppm) at the Gastineau Tailings

site was well within normal ranges. Concentrations of cadmium, like arsenic are commonly found in shellfish, were also well within normal ranges. Based on a comparison of more than 2,300 tissue sample results statewide for copper, the result of 5.2 ppm in the pile worm is considered higher than normal, and the results from two mussel samples were also elevated. Likewise, the selenium concentration of 3.1 ppm in the pile worm sample is also one of the highest values detected statewide; however, pile worms are not a target species for human consumption. Lead levels in the samples, (0.12 ppm -0.78 ppm) are considered slightly elevated by virtue of being detected. Out of 7,500 samples collected statewide, lead has been reported as non-detect in 80% of the results, yet it was detected at this site in all four samples analyzed (lead was also reported in all of the NORTECH samples on a dry-weight basis). Mercury in both the DEC and NORTECH samples was very low, with close to 70% of statewide results reporting higher levels than those for the Gastineau tailings site.

The tissue data results are deemed inconclusive due to inconsistencies between the two data sets; low sample volume; possible sediment contamination of the samples; and levels in species that are not targeted for human consumption. Although copper results in mussels were elevated and lead was detected in four samples, no strong indicators or trends of contamination in these eco-receptors warrant further sampling, particularly given current site uses.

Cumulative Risk Evaluation

Pursuant to 18 AAC 75.325(g), when detectable contamination remains on-site following a cleanup, a cumulative risk determination must be made that the risk from hazardous substances does not exceed a cumulative carcinogenic risk standard of 1 in 100,000 across all exposure pathways and does not exceed a cumulative noncarcinogenic risk standard at a hazard index of one across all exposure pathways.

Based on a review of the environmental record, ADEC has determined that residual contaminant concentrations do not pose a cumulative human health risk.

Exposure Pathway Evaluation

Following investigation and cleanup at the site, exposure to the remaining contaminants was evaluated using ADEC's Exposure Tracking Model (ETM). Exposure pathways are the conduits by which contamination may reach human or ecological receptors. ETM results show all pathways to be one of the following: De-Minimis Exposure, Exposure Controlled, or Pathway Incomplete. A summary of this pathway evaluation is included in Table 3.

Table 3 – Exposure Pathway Evaluation

Pathway	Result	Explanation
Surface Soil Contact	De Minimis Exposure	Arsenic and lead present. Used for recreational purposes only; Arsenic levels are above ingestion and direct contact thresholds, but not atypical for background concentrations in the Juneau area. Lead is below 400 mg/kg.
Sub-Surface Soil Contact	De-Minimis Exposure	Tailings have arsenic and total chromium levels above cleanup levels but based on area background studies and speciation, these levels are concluded to be naturally occurring. Composite, MI samples were collected at surface to 5 ft. below ground surface.
Inhalation – Outdoor Air	Pathway Incomplete	Contaminants are not volatile.
Inhalation – Indoor Air (vapor intrusion)	Pathway Incomplete	Contaminants are not volatile.
Groundwater Ingestion	Pathway Incomplete	Groundwater contamination is not present. Drinking water wells were and still may be in use, but these wells draw water at depth of 80-400 ft., all completed to bedrock. Sediment contamination is at the surface or near surface. Pathway to groundwater is not complete.
Surface Water Ingestion	Pathway Incomplete	Contaminants present are in sediment with direct exposure to marine waters only.
Wild and Farmed Foods Ingestion	De minimis exposure	Levels of metals are slightly elevated in limited tissue sampling, but data are inclusive and no harvesting of sampled species occurs at the site.
Exposure to Ecological Receptors	Pathway Incomplete	Limited shellfish and other biota sampling in the tailings area in 2013 revealed slightly elevated concentrations of lead and copper but not significant to warrant further investigation. Other metals, which are target COCs (mercury, chromium and arsenic) were within norms for the state.

Notes to Table 2: “De-Minimis Exposure” means that in ADEC’s judgment receptors are unlikely to be affected by the minimal volume or concentration of remaining contamination. “Pathway Incomplete” means that in ADEC’s judgment contamination has no potential to contact receptors.

ADEC Decision

Based on the data presented for the Gastineau Mine Tailings site, the DEC finds the sample results for metals in both sediment and biota tissue to be consistent with background metals concentrations in soil for the area and not significantly different for tissue results across the state. Although a chromium concentration of 64.3 mg/kg was detected in the DU-3 sample but not later speciated, total chromium is commonly detected in soils throughout Alaska and the speciation results for two other samples gave no indication of any elevated concentrations of hexavalent chromium. This concentration is therefore likely comprised mainly of the less toxic, trivalent form. As mentioned above, lead, copper and selenium were slightly elevated in mussels and a pile worm sample; however, the tissue data is clearly limited and there is no source or commensurate elevated levels for selenium, copper, or lead reported in the immediate tailings area. This site will receive a “Closed” designation on the Contaminated Sites Database, subject to the following standard conditions.

June 12, 2014

Standard Conditions

1. Any proposal to transport soil or groundwater off-site requires ADEC approval in accordance with 18 AAC 75.325. A "site" [as defined by 18 AAC 75.990 (115)] means an area that is contaminated, including areas contaminated by the migration of hazardous substances from a source area, regardless of property ownership. (See attached site figure.)
2. Movement or use of contaminated material in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited.

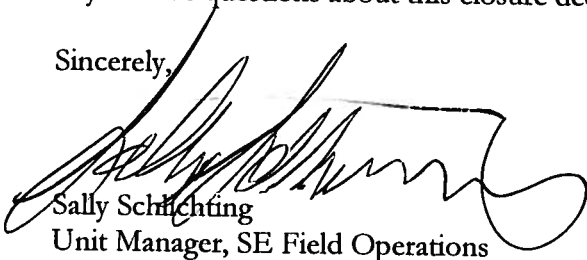
This determination is in accordance with 18 AAC 75.380 and does not preclude ADEC from requiring additional assessment and/or cleanup action if future information indicates that this site may pose an unacceptable risk to human health or the environment. EPA Region 10 staff will update the status of this site on CERCLIS.

Appeal

Any person who disagrees with this decision may request an adjudicatory hearing in accordance with 18 AAC 15.195 – 18 AAC 15.340 or an informal review by the Division Director in accordance with 18 AAC 15.185. Informal review requests must be delivered to the Division Director, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99811-1800, within 15 days after receiving the department's decision reviewable under this section. Adjudicatory hearing requests must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99811-1800, within 30 days after the date of issuance of this letter, or within 30 days after the department issues a final decision under 18 AAC 15.185. If a hearing is not requested within 30 days, the right to appeal is waived.

If you have questions about this closure decision, please feel free to contact me at (907) 465-5076.

Sincerely,



Sally Schlichting
Unit Manager, SE Field Operations

cc: Jason Ginter, NORTECH
Brandon Perkins, U.S. EPA, Region 10
Danielle Duncan, DEC Project Manager
DEC Cost Recovery Unit