

This report is an amended version of the original report submitted on 31 January 2014. The wrong methodology was used for the determination of total lead in the storm water samples collected in October 2013. These samples were re-processed using the correct methodology and those results have been amended in this report.

I. Introduction

This 2013 Best Management Practices (BMP) and Storm Water Report is submitted by Hecla Greens Creek Mining Company (HGCMC) pursuant to Sections II.F.1 and II.F.2 of NPDES Permit AK-004320-6, effective 1 July 2005. Authority over the federal permitting, compliance and enforcement NPDES program transferred to the State (ADEC) in November of 2010 for the mining industry. The Report summarizes the scope and dates of the comprehensive site compliance inspections/evaluations, major observations related to implementation of the BMP Plan, corrective actions taken as a result of the inspections/evaluations, identification of potential incidents of noncompliance as they pertain to the BMP Plan, description of the quantity and quality of the storm water discharged, and BMP Plan modifications made during the year. The final section of this report contains the required annual certification under Section II.F.2.

II. Comprehensive Site Compliance Inspections/Evaluations, Incidents of Potential Noncompliance and Associated Corrective Actions

1. AK-CESCL Site Compliance Inspections

In April 2010, both Technicians who worked in the Environmental department attended the Alaska Certified Erosion and Sediment Control Lead (AK-CESCL) storm water training program. One Technician renewed their certification this year and the other is no longer employed by HGCMC. In December 2011, two additional members of the Environmental department and two members of the Surface Operations department attended the AK-CESCL class. Of these four people one no longer works for HGCMC. New staff in the Environmental department will be encouraged to obtain their certification this year. The training program outlines the key elements of a storm water pollution prevention plan; provides detailed instructions on how to select, install and maintain storm water best management plans; and teaches how to conduct site inspections and monitoring. The class was developed with input from the USACE Alaska district, ADOT, ADEC, ADNOR, ARRC, MOA and Alaska construction industry representatives.

Monthly storm water and BMP inspections were completed by certified inspectors, and can be considered site compliance inspections. Ten of the twelve monthly inspections were fully completed in 2013. Inspections in September and November were only partially completed. The results of the inspections conducted in 2013 generally involved maintenance activities to existing BMPs. Records of these inspections are noted on various inspection sheets, are retained on-site, and are available upon request. Items noted as deficiencies during the 2013 inspections, as well as the corrective actions taken, included:

- Culverts at Pit 7 needed cleaning. This was accomplished in September.

- After the winter, spring clean-out of most of the settling ponds along the road should occur. This was accomplished in May and June.
- Sediment under the Zinc Creek Bridge was removed in July and the silt fencing was reestablished (damaged by bears). The reestablished silt fencing was installed to allow for bear crossing, while still preventing sediment runoff.
- In October, the caisson at Outfall 003 was over flowing, because of limited discharge capacity with the pump. This was rectified by increasing the size of the discharge line tripling the pumping capacity of the system.

2. Agency Site Compliance Evaluation Inspections

ADEC inspected the site once in 2013 on April 29. The findings from this inspection that pertain to storm water sites and BMPs are outlined below.

- It was pointed out in the inspection that there was an issue with drainage behind the mill. This was taken care of in the summer with the concrete repaving program.
- The inspection noted the need to include water quality data for the sump at the entrance to Site E in the annual report. This monitoring was originally required in the approval letter for haulage from the site and the monitoring was intended for only periods of active haulage. However, because this condition had previously been missed HGCMC made the decision to monitor the site monthly this year even though there was no haulage from the site. The results from this year's monitoring are included in the results table below.
- Action item number one from the report was to 'Install barrier to prevent contaminated snow placement in the drainage ditch at the mill backslope at the warehouse.' This snow potentially can be contaminated. During the winter of 2013 and 2014 a shipping container was placed across the access to the mill backslope preventing the plowing of snow into the ditch.
- During the inspection the silt fencing beneath Zinc Creek Bridge was found to be in need cleaning out and repaired. As previously mentioned this was taken care of in July.

Progress in 2013 included work on corrective and preventive actions from prior inspections, on continuous improvement projects on the various storm water outfall sites, as well as on improvements to BMPs. The list below summarizes the 2013 work and improvements, as well as plans for 2014:

- *Storm Water Outfall 003 Hawk Inlet*

Additional sampling of contributing flows to this outfall in 2009 had found a number of small seeps with elevated metal concentrations from waste rock foundation areas. Investigations into capturing these small seeps and rerouting them to containment led to a storm water containment improvement project at Hawk Inlet. It was determined that in order to capture the seeps and the water reporting to Outfall 003, the storm water collection capacity at Hawk Inlet needed to be expanded. In 2010, two 93,000 gallon water storage tanks were installed adjacent to the existing degritting basin (DB04) at Hawk Inlet. Tanks in this location are meant to disturb the least

amount of useable space (vertical tanks minimize footprint). The tanks will also provide storm surge storage capacity. Water will be pumped from these tanks to the water treatment plant.

In 2010, primary construction elements for this project included subgrade excavation, grading, concrete forming and pour, placing the tanks onto the pad, and mechanical connections for filling and draining the tanks. In 2011, minor piping and mechanical work on the tanks was completed, a new boot wash was commissioned, and a network of small seepage collection sumps with pumps was installed to collect the seepage and the Outfall 003 waters, and these flows were captured and sent to the water treatment plant. The last of these seepage collection systems was installed in April 2013.

- Storm Water Outfall 005.2 Zinc Creek Bridge

Routine maintenance of existing BMPs was performed in 2013. This included the reestablishment of the small spur road adjacent to the abutment for gaining equipment access for under the bridge. Sediment accumulation was cleared from underneath the bridge and the silt fencing was reinstalled in a way to allow for bear crossing (Photo 1). It is a yearly occurrence to have the sediment fencing damaged by the bears while they travel over it.

After the sediment was removed the northern abutment was limed. Due to a miscommunication, concerning the lime application, monitoring of Zinc Creek did not start until the fall, after which monitoring began on a weekly basis. An analysis of this monitoring data will occur before any additional lime applications are made.

- Storm Water Outfall 005.3 Site E

No haulage of waste rock materials from Site E to the tailings disposal facility was performed in 2013. Delays in the progress of the permitting for the proposed tailings disposal facility expansion led to a decision to suspend codisposal activities so that the lifetime of the remaining, permitted capacity at the tailings disposal facility could be maximized. Even though no removal activities took place in 2013, contact water from the site was captured during the spring, summer and fall months and sent to the water treatment plant. Plans for Site E for 2014 are contingent on the permitting progress for the proposed tailings disposal facility expansion, as well as operational constraints.

- Storm Water Outfall 006 Pond D

To significantly increase HGCMC's ability to manage large storm water flows from the 920 area, improvements have been made to the Pond D site. In 2009, these improvements included installation of a larger pump system to increase pumping capacity. Also, Pond D pyretic berm material was removed and replaced with clean, low permeability fill. The improvements at this site over the past few years will prevent Pond D from overflowing to Greens Creek during large storm events. The auxiliary entrance road to D-Pile was reshaped to redirect the water to Pond D in October 2012 to address an action item from an ADEC inspection. Visual monitoring of this site in 2013 showed that no Pond D overflows were noted during storm events in 2013.

- Storm Water Outfall 007 Pond C

In 2010, HGCMC constructed a diversion ditch to divert clean, upgradient noncontact water from entering Pond C. This will minimize the volume of water routed to treatment, as well as

decrease the chance for storm water discharge from this area during large storm events. A parking pad was constructed, with the installation of a lined diversion drainage channel on the upgradient side of the pad to convey the noncontact waters from the western portion of the backslope diversion directly into Bruin Creek while avoiding any mixing with contact waters from the 920 area.

An intermittent seep was observed on the exterior of the lower C Pond berm, indicating that the Pond C pumpback system in the lower pond was not operating effectively. To address this, work completed at Pond C in 2011 included lining the upper pond and installing a pump system. The upper Pond C area was excavated and an underdrain, lined collection pond, caisson, and duplex pump system were installed. The lower Pond C caisson now pumps to upper Pond C which is then pumped to the Site 23 ditch along the B Road which reports to treatment. The routed storm water flow from the B Road routes to the upper Pond C.

During 2012, arctic pipe and heat trace were installed on the upper Pond C discharge line that transmits water to the Site 23 ditch. The headwall for the discharge pipe that collects the noncontact water flows above the 860 Pad was also installed during 2012. Flows are being tracked from the upper Pond C discharge; however, due to the backflow valve release for freeze protection (which discharges the line back up to upper Pond C during the pump's off cycles), accurate tracking of total volume pumped does not exist.

Visual monitoring of this site in 2013 showed that no Pond C overflows were noted during storm events in 2013.

- Storm Water Outfall 009 Site 1350

Approximately 5,645 cubic yards of waste rock was removed from the 1350 site in 2013. Start of 2013 removal was limited in part to the existing site 23 storage pad still containing materials from the 2011 haulage. Excavation and haul activities were performed from 27 August through 9 September 2013 by the HGCMC surface operations group. Removal activities were performed at Site 1350 with a Hitachi 160LC (HGCMC) and two to three 35-ton Volvo off-road haul trucks (1 rental). HGCMC also operated an excavator at the Site 23 ARD pad to allow blending of stockpiled materials with lime. Future removal activities from the 1350 site are dependent on the Site 23 temporary pad being cleared of existing stockpiled materials. The disturbed areas at the 1350 were hydro seeded after removal of material in 2013.

Proposed haulage for 2014 is 14,000 cubic yards. Along with removal activities, there will be continued grading efforts to ensure that contact water from this area is routed to collection at the 1350 portal. Material from this site is transported to the temporary holding pad at Site 23, mixed with lime, and taken underground for permanent disposal when void space becomes available.

- Overlay and Containment Improvements at the 920 Area

This is a multi-year project to make improvements to deteriorated roadways, concrete reinforcements, and add new concrete pavement in currently uncontained areas and to overlay stable roadway surfaces to improve drainage problems in and around the 920 area of the mine site. A summary of work on this project includes:

- In 2010, the roadway and drainage issues at the Batch Plant were repaired.

- In 2011, repaved the road from the bridge entrance to the tie-in area of the 2010 project, paved a previously unpaved freight pad, improved road drainage issues at Degrit Basin 01 (DB01), paved a previously unpaved tractor parking area and overlaid the road behind the 920 Administration building.
- In 2012, activities included paving both sides of the portal for capturing surface water and pumping it to the mine's main sump and providing containment at the edge of the Creek, which will direct drainage into the portal. Also installed higher splash guards on the Greens Creek Bridge. Continued paving at the 920 Admin building site in front of the new Light Vehicle Maintenance Shop and continued to the tie in with the 2011 920 Dry Addition project. Provided containment in the second freight laydown area below the warehouse.
- In 2013, activities included paving in front of the portal along with a repaving the Greens Creek bridge. Areas in behind the Mill and in front of the Surface Shop to the cons load-out entry were also repaved.
- Summary of Plans for 2014
 - Apply lime to waste rock buttresses at Zinc Creek Bridge, contingent upon the analysis from the 2013 application.
 - Continue waste rock removal and codisposal activities at Site E, contingent on the permitting progress for the proposed tailings disposal facility expansion and operational constraints
 - Continue waste rock removal at the 1350, contingent on space underground and the ability to clear off the Site 23 temporary pad
 - Continuation of the 920 overlay project will include the repaving of the road between the Powerhouse and the Surface Shop, along with the road behind the Powerhouse.

III. BMP Plan Modifications in 2013

A minor modification was made to BMP plan to reflect personnel changes. Also, the plan was modified to allow for storage of hydrocarbons and reagents in areas not concreted, by using containment systems to store these items in.

A copy of the HGCMC BMP Plan is available onsite and upon request. An electronic copy was provided to the ADEC Division of Water, Compliance and Enforcement in 2014 along with the submittal of this report.

IV. HGCMC 2013 Annual Storm Water Monitoring Report

Storm water monitoring samples for 2013 were collected in May and September. Receiving water sampling, which was initiated in 2005 under the reissued permit, continued during 2013.

The table below, 2013 Storm Event Details, summarizes the required precipitation and duration data associated with the sampling events that occurred in 2013.

2013 Storm Event Details

	Hawk Inlet Camp Site		Mine/Mill Site (920)	
	1/17/2013	10/15/2013	1/17/2013	10/14/2013
SAMPLE EVENT				
Duration	27.75 hr	52 hr	18.75 hr	48.5 hr
Started	1/16/2013 10:00	10/13/2013 13:45	1/17/2013 0:30	10/13/2013 13:30
Precipitation	1.16"	1.67"	1.13"	1.46"
Same Day precipitation	0.33"	0.06"	1.13"	0.92"
PRIOR EVENT				
Days Before Sampled Event	0.42 Days	2.02 Days	1.08 Days	2.01 Days
Duration	21.25 hr	17.25 hr	19.5 hr	20.5 hr
Started	1/15/2013 2:45	10/10/2013 20:00	1/15/2013 3:00	10/10/2013 16:45
Precipitation	1.11"	0.3"	0.88"	0.25"

The table below, 2013 Storm Water and Receiving Water Results, presents the required monitoring parameters for each outfall and any associated receiving water sites. The laboratory results for lead associated with the fall storm event had too high of an MDL (40µg/L instead of 0.5µg/L). This error was caught while preparing the data for the report. After consultation with the laboratory it was determined that the samples were run using ICP not ICPMS. The samples had not yet been disposed of and were processed again using the correct methodology. These results were received after the original report was submitted; the corrected lead values are presented in the following table. To prevent this from occurring again the contract number (contains the required MDL for the analysis) will be referenced on the chain of custody.

For outfalls that are paired with specific receiving water sites, the data are presented together in the table. The location of storm water outfalls are shown in Figure 1. The relative metal loadings shown in the table continue the typical fluctuations, often approaching or exceeding an order of magnitude for all sites, reflecting the widely varying precipitation conditions at the HGCMC site. Storm frequency and intensity continues to exhibit high variability, resulting in the differing monitoring result, both within and between years, as well as between sites.

2013 HGCMC Storm Water Outfall and Receiving Water Results

Outfall	S=Storm R=Receiving	Site	Sample Date & Time	Reason for No Sample	Flow (gpm)	Hardness (mg/l)	Oil & Grease (mg/l)	Lead -TR (µg/l)	pH Field (su)	TSS (mg/l)	Zinc-TR (µg/l)
003	S	527	1/17/13 15:35		75	77	<2.00	8	6.76	<4	65
	S	527	10/15/13 14:31		6	86	<2.24	4.2	8.23	<1	160
	R	529	1/17/13 15:45			5750	<2.10	3.1	7.80 ^a	13	36
	R	529	10/15/13 14:48			427	<2.16	0.7	7.96	15	20
004	S	520	1/17/13 14:45	Not accessible							
005.2	S	539	1/17/13 11:30			19		3.2	4.30	<1	27
	S	539	10/15/13 12:31		0.5	25		6.6	4.32	<1	40
	R	368	1/17/13 11:50			32	<2.00	0.1	6.37	<1	9
	R	368	10/15/13 12:52			38	<2.06	<0.1	7.66	<1	<10
005.3	S	545	1/17/13 13:05		120	78	<2.10	14.2	6.81	14	283
	S	545	10/14/13 14:54		200	120	<2.06	33.6	7.46	69	540
005.4	S	547	1/17/13 13:30			51	<2.10	0.3	6.85	<1	4
	S	547	10/14/13 15:17		10	65	<2.04	<0.1	7.35	<1	<10
005.5	S	560	10/14/13 14:21	No flow							
006	S	562	10/14/13 14:01	No flow							
007	S	565	1/17/13 14:10	No flow							
	S	565	10/14/13 14:12	No flow							
008	S	570	10/14/13 13:14		10	184		0.4	7.61	<1	40
009	S	580	10/14/13 12:52		20	359		0.6	7.76	7	70
	R	585	10/14/13 12:38		600	45		1.3	7.60	12	40
Greens Creek	R	54 ^b	10/14/13 13:45			39	<2.20	3.8	7.76	13	20

1055 ^c	4/23/13 14:40		4	108	<2.10	60.6	7.76	17	884
1055 ^c	5/7/13 13:30			702	<2.10	7.3	7.00	<1	5010
1055 ^c	6/4/13 11:10		2.5	540	<2.20	28.9	7.52	<1	3670
1055 ^c	7/2/13 13:10		3	898	<2.10	16.1	7.24	<1	6270
1055 ^c	8/22/13 14:05			1240	<2.10	12.1	7.98	<1	5440

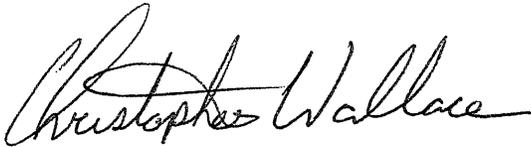
Notes:

- a. The pH value is the laboratory value the field pH was not taken.
- b. Site 54 is the receiving water site for Outfall 007 and 008
- c. Site 1055 is a caisson located at the entrance to Site E and was added as a sampling requirement in an approval letter for material haulage from the site.

V. Certification

Based on the above report, the inspections and evaluations have been completed for 2013 and the BMP Plan fulfills the requirements set forth in permit AK-004320-6.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A handwritten signature in black ink that reads "Christopher Wallace". The signature is written in a cursive style with a large initial "C" and "W".

Christopher Wallace
Environmental Affairs Manager
Hecla Greens Creek Mining Company

Photos



PHOTO 1. Reestablishment of silt fencing underneath the 3 mile bridge, designed to allow for the passage of bears.



PHOTO 2. Ditch work and hydro seeding along the B Road, uphill from the 3 mile bridge.