I. Introduction

This 2009 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. It 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 Inspection

On June 21, 2009 a site inspection was conducted by a Hecla employee who attended the Alaska certified erosion and sediment control lead (AK-CESCL) storm water training program in 2008. 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, ADNR, ARRC, MOA and Alaska construction industry representatives. Items noted as deficiencies during the inspection, as well as the corrective actions taken, included:

- Leak in 6" underdrain pipe flowing into D Pond. The corrective action for this was in progress at the time of the inspection: Pond D berm removal and pumping system improvements were in progress, and due to be completed by the end of the summer.
- Pile of reclamation material at Pit 7 requires stabilization/cover (also noted in EPA inspection on June 8th.) The pile was covered the week of June 21st with jute mat.
- Build up of sediment behind rock check dams near the junction. Sediment was removed from this area by the end of June.

2. EPA Site Compliance Evaluation Inspection June 8, 2009

On June 8, 2009 the EPA conducted a compliance evaluation inspection of the Hecla Greens Creek Mine to determine compliance with the requirements of the Clean Water Act (CWA) and the site's NPDES Permit (AK-004320-6). A summary of the findings from the 2009 inspection were documented in a letter to HGCMC dated 21 December 2009. The inspectors noted four violations and one concern. These findings are noted below, referenced first by a summary of the finding stated in the letter (*in italics*), followed by a summary of the corrective and preventive actions taken. HGCMC provided the EPA with a response letter dated 5 January 2010 noting this information. Additional information on the findings and corrective actions are retained on-site and are available upon request.

EPA's Noted Violations

1) *Section 301(a) of the CWA states "Except as in compliance with this section...the discharge of any pollutant by any person shall be unlawful." On August 11, 2009, Hecla Greens Creek Mining Company's (Hecla's) surface exploration drillers observed drill mud entering Greens Creek. This discharge was not authorized under any permit and therefore is a violation of Section 301(a) of the CWA. We understand that Hecla took immediate measures to stop the drilling and implement corrective actions to minimize impacts to surface waters.* As it states in the EPA letter "We understand that Hecla took immediate measures to stop the drilling and implement corrective actions to minimize impacts to surface waters." Attachment #1 to this document is a copy of the emails sent to agency personnel regarding this spill, and includes details of the incident, as well as the corrective and preventive actions taken. The preventive actions noted for future activities will be implemented by the start of the 2010 drilling season in May.

2) *Part II.D.5.b of the Permit states that "A preventative maintenance program must be developed that includes inspection and maintenance of wastewater and storm water management devices, inspection, and testing of facility equipment and systems to uncover conditions that could cause breakdowns or failures resulting in discharges of pollutants to surface waters, and ensuring appropriate maintenance of such equipment systems. According to the inspection report, plastic sheeting was used as a Best Management Practice (BMP) to cover waste rock at Site E. However, it was observed that the covering was not maintained. This is a violation of Part II.D.5.b of the Permit. An email sent August 11, 2009, to Eva DeMaria of my staff, stated that Hecla has since removed 20,000 cubic yards of Site E material. If not all Site E material was removed, it is expected that Hecla will implement the appropriate BMPs to control storm water runoff from this area.* EPA's Violation #2 pertains to the temporary synthetic liner on Site E. A liner was placed over Site E in 2008. Even though the waste rock storage site had an existing layer of vegetation covering most of its surface, there appeared to be additional benefits to placing a synthetic cover on it, including reduction of the moisture content of the waste rock (to improve handling and codisposal properties for the pending removal activities in 2009) and reduction of the amount of seepage from the pile. However, the liner proved extremely difficult to maintain: the presence of small spruce trees, uneven ground, and high winds compromised the effectiveness of the cover, and led to its condition noted during the inspection. An additional issue with a liner is oxidation processes: while covers can limit the flushing of oxidation products, they do not stop oxidation from occurring. Oxidation processes result in evaporative salts that can build up underneath a liner. When a liner is removed and the material is exposed to runoff, these salts can increase the dissolved load of runoff waters, at least initially. Due to these two difficulties and concerns with the liner, its use as a BMP at Site E was discontinued.

   The HGCMC *Site E Removal: Waste Rock and Tailings Co-Disposal Plan* was submitted to ADEC and the Forest Service in early April 2009, and was approved on June 16, 2009. The plan outlined the removal activities and associated best management practices (BMPs) to be used during active removal (summer construction season) and inactive periods (fall rainy season and winter). The plan stated that during the fall/winter hiatus the active removal area of the site would be covered with a diversionary synthetic liner. However, due to the liner issues noted above, HGCMC began to investigate alternatives to a liner in late June. Between June and September, HGCMC removed approximately 40,000 cubic yards of waste rock and

reclamation material from Site E. Observations during removal operations showed ponding of water on the excavated surface, suggesting that the permeability of the disturbed waste rock is fairly low. This led to the alternative conclusion that grading and compacting the active portion of the site would be as effective, or potentially more effective, than covering the area with a liner. HGCMC discussed this alternative with ADEC staff during a site visit in August, and then submitted a letter to ADEC and the Forest Service in October to formally modify the removal plan to replace the use of a diversionary synthetic liner with grading and compacting at the area of removal. ADEC and the Forest Service have approved this modification. The HGCMC BMP Plan has been modified accordingly.

3) *Part IV.E of the Permit states that "The permittee must at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures." At the time of the inspection, it was found that there was no way to measure temperature within the composite sampler for Outfall 002. Samples typically need to be preserved at 6°C or less. This is a violation of Part IV.E. of the Permit.* EPA's Violation #3 notes that there was not a way to measure the temperature within the refrigerator that stores the composite sample for Outfall 002 to ensure that the sample is preserved at 6°C or less during the compositing timeframe. The make/model of the refrigerator unit was investigated on June 9th. The Sigma Refrigerated Sampler System is built to maintain the regulatory required preservation temperature, and the manufacturer recommends this unit for NPDES compliance purposes; however, as an additional protective measure, HGCMC installed a pressure transducer instrument with thermistor and datalogging capabilities inside the refrigerated sampling unit. The instrument was set to measure and record temperature every 15 minutes. Since installation, the average temperature within the refrigerated sampling unit has been 5.8 °C.

4) *Part I.F.3 of the Permit states that "The permittee must amend the [Quality Assurance Plan (QAP)] whenever there is a modification in sample collection, sample analysis, or other procedure addressed by the QAP." At the time of the inspection, it was found that Hecla was taking composite samples for fecal coliform at Outfall 002 but this was not described in the facility's Quality Assurance Plan. This is a violation of Part I.F.3 of the Permit. In addition, approved methods require that fecal coliform samples be analyzed within six hours of sampling. Please ensure this is noted in a revised QAP and implemented.* EPA's Violation #4 refers to the need to update the Quality Assurance Plan (QAP) to reflect the sampling methodology for fecal coliform. Greens Creek has been taking a composite sample for fecal coliform to meet the requirements of the permit as per Table 2, as well as a grab sample to meet the required six hour holding time for this analysis. This was not reflected in the August 2005 QAP. The QAP was revised in August 2009, and includes language to this effect, where necessary. It was revised again in December 2009 to reflect personnel changes that had occurred since August.

<u>EPA's Noted Concerns</u>

Storm Water Best Management Practices (BMPs). The inspectors noticed a few areas in which storm water BMPs could be improved or implemented without which there is an increased risk of pollutants entering surface waters via storm water. These areas include:

(a) *Sandpit Settling Pond. According to the inspector, Hecla plans to expand the sand pile from five to ten acres. While there were two settling ponds and other BMPs in place, the ponds apparently do not have an engineered design. Thus, it is not known if the ponds had adequate storage capacity for storm water runoff.* Concern 1(a) notes that the current BMPs at the Sandpit do not have an engineered design, and with the Sandpit planned for expansion in 2010, the adequacy of the storage capacity for the BMPs needs to be determined. HGCMC's Civil Engineer used the flow model SEDCAD (Sediment, Erosion, Discharge by Computer Aided Design) to evaluate the existing settling ponds at the Sandpit, and found that they are appropriately sized to allow sufficient settling for the five acres of disturbance in the existing climatological conditions. However, the fine particles (silts and clays) from this area are very difficult to completely settle with these sediment ponds/traps. Flocculent may be trialed at this location in 2010 in order to realize further improvements in the discharge from this area, which is to the forest duff. Additionally, Environmental Design Engineers (EDE), an environmental consulting company, has been retained to aid in the design of future BMPs at the Sandpit to ensure they are appropriate and adequately sized as the area of disturbance at the Sandpit expands.

(b) *Reclamation Material at Pit 7. According to the inspector, a pile of reclamation material located in the Pit 7 area was not in use and unstabilized. Good management practices recommend that piles be stabilized if there will be no further use. Storm water discharges from this pile may enter Pit 7 creek and then Hawk Inlet.* Concern 1(b) notes a pile of reclamation material located in the Pit 7 area was not stabilized. The pile was covered in mid June 2009 with jute mesh erosion control matting to stabilize it from storm water runoff. Additional material was added to the pile during the summer, and the pile was then re-covered with jute at the end of summer. If no additional material is added to the pile during the 2010 spring or summer, the jute mat on this pile will be hydroseeded for further stabilization.

Corrective and preventive actions continue on the items noted from two previous EPA site compliance inspections. Progress in 2009 on these actions includes work on the various storm water outfall sites, as well as improvements to BMPs. The list below summarizes the 2009 work and improvements, as well as plans for 2010:

- *Storm Water Outfall 003-Hawk Inlet*

Additional sampling of contributing flows to this outfall has found a number of small seeps with elevated metal concentrations from waste rock foundation areas. Methods are being investigated to capture these small seeps and reroute them to containment. This will likely occur in 2010 along with other improvements at the Hawk Inlet area.

- *Storm Water Outfall 005.2 Zinc Creek Bridge*

Routine maintenance of existing BMPs was performed in 2009. Lime will be added (spray application method) onto the waste rock buttresses of the bridge in 2010.

- *Storm Water Outfall 005.3 Site E*

Approximately 40,000 cubic yards of waste rock was removed from Site E in 2009. The HGCMC *Site E Removal: Waste Rock and Tailings Co-Disposal Plan* was approved by the agencies and implemented prior to the commencement of removal activities. The Plan outlined additional BMP activities that would be instituted during active removal, including capture and pumping of water to treatment from the work area. Additional removal of waste rock will be undertaken in 2010, and extend over the next 5 years, with activities scheduled to commence in the spring (April 1st), and

end prior to the fall rainy season (September 1st). Photo 1 shows Site E on August 11, 2009 during removal activities.

The Plan also summarized results from various studies that showed codisposal of tailings and waste rock together was more beneficial geochemically and geotechnically than either tailings or waste rock alone. Therefore, the waste rock from Site E was hauled to the tailings facility area, and codisposed of with tailings at this location.

- *Storm Water Outfall 005.5 culvert @ 7.8-mile B-Road*

Recent activities in this area, including the installation of an additional pipeline in the pipeline corridor underneath this site in 2008, along with the replacement of the corrugated metal pipe (CMP) with corrugated plastic pipe (CPP) have impacted the flow pattern in this area. Water no longer reports to this specific culvert during storm events: the same area appears to drain to a culvert less than 0.1 miles away at 7.7 mile on the B road. In 2009, a sample was taken at the 7.7 mile culvert to determine if this site could replace the old site as there is no longer flow to it. Results are listed in the table below – Additional Storm water Samples –results from the official 7.8 mile culvert site in 2007 are listed for comparison purposes.

- *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. Photo 2 shows Pond D activities in August 2009, including the active replacement of berm material, and the location of the new caisson.

- *Storm Water Outfall 007 Pond C*

HGCMC plans to construct a diversion ditch that would divert clean, 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 permit for this work was pursued with the US Army Corp of Engineers, and approval was obtained in early 2009 from this agency. Forest Service approval was received in July, and City and Borough of Juneau (CBJ) issued their permit in August 2009. Minor work in this area such as tree felling began in late summer/early fall. This project will be completed during the 2010 construction season.

- *Greens Creek Bridge Water Lines Replaced*

The pipelines that carry process water from the mine to the mill and fresh water to the mine were replaced in 2009. The process water pipeline has dual containment. Photo 3 (attached) shows the pipeline replacement work in progress.

- *Summary of Plans for 2010*
    - Finish construction of Pond C upslope diversion
    - Apply lime to waste rock buttresses at Zinc Creek bridge
    - Continue with waste rock removal and co-disposal activities at Site E, and other sites

C. HGCMC Monthly Evaluations and Site Inspections

HGCMC environmental staff members conduct weekly, monthly and quarterly visual inspections of a variety of areas within the mine site to identify any potential breaches that may lead to pollutants entering the permitted outfalls, storm water drainage system, or surface waters. The results of the inspections conducted in 2009 generally involve maintenance activities to existing BMPs. Records of these inspections are noted on various inspection sheets (i.e., SPCC inspection forms, General Plan of Operations inspection forms, etc), are retained on-site, and are available upon request. Any corrective actions needed to address findings from the inspections are conducted with coordination between the environmental department staff, the maintenance department staff, or the surface operations department staff.

Under the BMP Plan, monthly inspection sheets are completed for each outfall. A BMP Inspection Record Form is then completed for each month. This form compiles the dates of the inspections, as well as any noted deficiencies onto one page for all the outfalls, for easier tracking of corrective actions. Copies of these forms are attached for 2009, and all inspections were conducted as outlined in the BMP Plan.

III. BMP Plan Modifications in 2009

Modifications were made to the BMP Plan in August 2009 regarding changes at Site E (see discussion above in Section II.2.2.). Also, the Plan was updated in December of 2009 to reflect changes in personnel in the environmental department.

A copy of the HGCMC BMP Plan is available upon request.

IV. HGCMC 2009 Annual Storm Water Monitoring Report

Storm water monitoring samples for 2009 were collected in the fall in August and September. Receiving water sampling, which was initiated in 2005 under the reissued permit, was continued during 2009.

It was an unusually dry, cool spring and dry, warm summer, and there were very few significant spring storms or snow melt events to sample adequately, and therefore no samples were collected in the spring. The Juneau annual climate summary stated that for 2009:

> "Total precipitation....came out more than three quarters of an inch below normal in the spring. The dry trend continued and by mid August Juneau precipitation was 2 inches below normal for the year to date."

The fall storm water samples were sampled over three days: August 27th, August 29th and September 10th. On both the 27th and 29th, the weather appeared to be conducive to storm water sampling, but the precipitation tapered off prior to the collection of all samples. Therefore the sampling was conducted over three days.

The table below summarizes the required precipitation and duration data associated with the sampling events that occurred in 2009.

2009 Storm Event Details

	Hawk Inlet Camp Site			Mine/Mill Site (920)		
	9/10/2009	8/27/2009	8/29/2009	9/10/2009	8/27/2009	8/29/2009
SAMPLED EVENT						
Duration	30 hrs	4.75 hrs	11.75 hrs	30 hrs	7 hrs	12.25 hrs
Started	9/09/09 11:45	8/27/09 19:15	8/29/09 1:30	9/09/09 11:45	8/27/09 17:00	8/29/09 01:00
Precipitation	0.69"	0.21"	0.66"	1.15"	0.43"	0.69"
Same Day precipitation	0.56"	0.43"	0.66"	0.96"	0.72"	0.80"
PRIOR EVENT						
Days Before Sampled Event	7.1 Days	0.34 Days	1.1 Days	6.2 Days	0.24 Days	1.04 Days
Duration	8.75 hrs	4.5 hrs	4.75 hrs	3.75 hrs	4.75 hrs	7 hrs
Started	9/03/09 6:30	8/27/09 06:30	8/27/09 19:15	9/03/09 6:00	8/27/09 6:30	8/27/09 17:00
Precipitation	0.12"	0.22"	0.21"	0.13"	0.25"	0.43"

The table below, 2009 Storm Water and Receiving Water Results, presents the required monitoring parameters for each outfall and any associated receiving water sites. For outfalls that are paired with specific receiving water sites, the data are presented together in the table. 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.

2009 HGCMC Storm Water and Receiving Water Results

Outfall	S=Storm R=Receiving	Site	Date	Time	Flow (gpm)	Hardness (mg/l)	Oil & Gr (mg/l)	Pb-TR (ug/l)	pH Fld (su)	TSS (mg/l)	Zn-TR (ug/l)
003	S	527	9/10/09	8:30	12.0	116	<5.4	66.3	7.6	29	155
	R	529	9/10/09	8:20	na	4990	<5.8	<1	8.0	<4.0	<2.5
004	S	520	9/10/09	9:05	0.5	128	<5.2	7	6.2	29	122
	R	524	9/10/09	9:13	50	44	<5.2	2.4	6.5	<8	12.6
005.2	S	539	8/29/09	10:31	8.0	86	<5.1	19.1	3.73	30	272
	R	368	8/29/09	10:16	1000	32	<5.2	<1	7.2	6	21.6
005.3	S	545	8/29/09	11:38	100	320	<5.1	124	7.3	471	1080
	R	591	*not sampled due to unsafe access to sample site*								
005.4	S	547	8/29/09	11:50	13	148	<5.2	32.2	7.2	112	72.2
	R	591	*not sampled due to unsafe access to sample site*								
005.5	S	560	9/10/09	10:00	*no flow*						
006	S	562	9/10/09	11:00	*no flow*						
007	S	565	8/29/09	13:39	10	98	na	864	7.4	164	974
008	S	570	8/27/09	13:26	5	310	na	0.105	7.5	<4	54.4
009	S	580	8/27/09	12:25	8	530	na	1.55	7.7	13	56.2
	R	585	8/27/09	12:39	55	84	na	2.09	7.7	14	42.8
Greens Creek below Pond D	R	54	8/29/09	14:17	na	44	<5.2	3.98	7.4	10	21.3

* Note Site 54 is receiving water site for Outfall 007 and 008

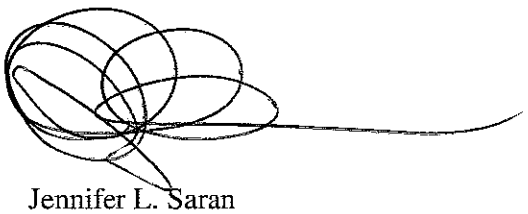
2009 Additional Storm Water Sample Results – Outfall 005.5 Area (culvert at 7.8 mile)

Description	S=Storm R=Receiving	Site	Date	Time	Flow (gpm)	Hardness (mg/l)	Oil & Gr (mg/l)	Pb-TR (ug/l)	pH Fld (su)	TSS (mg/l)	Zn-TR (ug/l)
Culvert at 7.7 mile	S		9/10/09	9:54	8.0	148	<5.7	307	7.9	143	349
005.5 - Culvert at 7.8 mile	S	560	10/10/07	12:57	10.0	900	<5.2	546	7.6	348	813
Greens Creek	R	590	9/10/09	15:35	na	51	<5.4	1.72	7.7	10	27.4

V. Certification

Based on the above report, the inspections and evaluations have been completed for 2009 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.



Jennifer L. Saran
Environmental Affairs Manager
Hecla Greens Creek Mining Company

Photos

PHOTO 1. Site E Waste Rock Removal Activities - August 11, 2009

PHOTO 2. Pond D Activities August 2009, showing replacement of berm material, and new caisson

PHOTO 3. Pipeline replacement project – Greens Creek Bridge 2009

Monthly BMP Inspection Record Forms for Storm Water Outfalls 2009

Monthly BMP Inspection Record Form for ***Jan-09***

(Month/Year)

			If corrective Action is Required:	
NPDES Permitted Stormwater Outfall	**Date Monthly Inspection Completed**	**Initials of Qualified Inspector**	**Personnel Deficiency Reported To:**	**Date Deficiency Corrected:**
001 - Hawk Inlet Sewer	not currently in use			
002 - Treated Ocean Water Outfall	**(see weekly inspection sheets)**			
003 - Hawk Inlet Cannery Building Culvert	**1/6/2009**	**HRF**		
004 - Pit 7	**1/6/2009**	**HRF**		
005.2 - Zinc Creek Bridge	**1/6/2009**	**HRF**		
005.3 - Waste Rock Area E	**1/6/2009**	**HRF**		
005.4 - Pit 6	**1/6/2009**	**HRF**		
005.5 - 7.8 Mile Culvert	**1/6/2009**	**HRF**		
006 - Pond D Overflow	**1/6/2009**	**HRF**		
007 - Pond C Overflow	**1/6/2009**	**HRF**		
008 - 960 Area	**1/6/2009**	**HRF**		
009 - 1350 Area	**1/6/2009**	**HRF**		
Sandpit 1.4 mile A Road	**1/6/2009**	**HRF**		

Notes:

1. Per NPDES Permit No. AK-004320-6, the BMP Plan must include provisions for qualified personnel to inspect BMPs and designated equipment and facility areas on a monthly basis, excepting when weather conditions would preclude safe access to a site. Inspections must include at a minimum, all material handling and storage areas, wastewater and storm water control and containment structures, and erosion control systems. The record of inspection (this form) must be incorporated into the BMP document on an annual basis.

Monthly BMP Inspection Record Form for *Feb-09*

(Month/Year)

			If corrective Action is Required:	
NPDES Permitted Stormwater Outfall	**Date Monthly Inspection Completed**	**Initials of Qualified Inspector**	**Personnel Deficiency Reported To:**	**Date Deficiency Corrected:**
001 - Hawk Inlet Sewer	not currently in use			
002 - Treated Ocean Water Outfall	**(see weekly inspection sheets)**			
003 - Hawk Inlet Cannery Building Culvert	**2/21/2009**	**HRF**		
004 - Pit 7	**2/21/2009**	**HRF**		
005.2 - Zinc Creek Bridge	**2/21/2009**	**HRF**		
005.3 - Waste Rock Area E	**2/21/2009**	**HRF**		
005.4 - Pit 6	**2/21/2009**	**HRF**		
005.5 - 7.8 Mile Culvert	**2/21/2009**	**HRF**		
006 - Pond D Overflow	**2/21/2009**	**HRF**		
007 - Pond C Overflow	**2/21/2009**	**HRF**		
008 - 960 Area	**2/21/2009**	**HRF**		
009 - 1350 Area	**2/21/2009**	**HRF**		
Sandpit 1.4 mile A Road	**2/21/2009**	**HRF**		

Notes:

1. Per NPDES Permit No. AK-004320-6, the BMP Plan must include provisions for qualified personnel to inspect BMPs and designated equipment and facility areas on a monthly basis, excepting when weather conditions would preclude safe access to a site. Inspections must include at a minimum, all material handling and storage areas, wastewater and storm water control and containment structures, and erosion control systems. The record of inspection (this form) must be incorporated into the BMP document on an annual basis.

Monthly BMP Inspection Record Form for *Mar-09*

(Month/Year)

			If corrective Action is Required:	
NPDES Permitted Stormwater Outfall	**Date Monthly Inspection Completed**	**Initials of Qualified Inspector**	**Personnel Deficiency Reported To:**	**Date Deficiency Corrected:**
001 - Hawk Inlet Sewer	not currently in use			
002 - Treated Ocean Water Outfall	**(see weekly inspection sheets)**			
003 - Hawk Inlet Cannery Building Culvert	**3/16/2009**	**MTM**		
004 - Pit 7	**3/18/2009**	**MTM**		
005.2 - Zinc Creek Bridge	**3/18/2009**	**MTM**		
005.3 - Waste Rock Area E	**3/20/2009**	**HRF**		
005.4 - Pit 6	**3/20/2009**	**HRF**		
005.5 - 7.8 Mile Culvert	**3/18/2009**	**MTM**		
006 - Pond D Overflow	**3/10/2009**	**MTM**		
007 - Pond C Overflow	**3/20/2009**	**HRF**		
008 - 960 Area	**3/18/2009**	**MTM**		
009 - 1350 Area	**3/19/2009**	**MTM**		
Sandpit 1.4 mile A Road	**3/18/2009**	**MTM**		

Notes:

1. Per NPDES Permit No. AK-004320-6, the BMP Plan must include provisions for qualified personnel to inspect BMPs and designated equipment and facility areas on a monthly basis, excepting when weather conditions would preclude safe access to a site. Inspections must include at a minimum, all material handling and storage areas, wastewater and storm water control and containment structures, and erosion control systems. The record of inspection (this form) must be incorporated into the BMP document on an annual basis.

Monthly BMP Inspection Record Form for ***Apr-09***

(Month/Year)

			If corrective Action is Required:	
NPDES Permitted Stormwater Outfall	**Date Monthly Inspection Completed**	**Initials of Qualified Inspector**	**Personnel Deficiency Reported To:**	**Date Deficiency Corrected:**
001 - Hawk Inlet Sewer	not currently in use			
002 - Treated Ocean Water Outfall	**(see weekly inspection sheets)**			
003 - Hawk Inlet Cannery Building Culvert	**4/22/2009**	**HRF**	BMPs require regular spring maintenance-reported to SOPS	
004 - Pit 7	**4/22/2009**	**HRF**	BMPs require regular spring maintenance-reported to SOPS	May maintenance
005.2 - Zinc Creek Bridge	**4/22/2009**	**HRF**	BMPs require regular spring maintenance-reported to SOPS	May maintenance
005.3 - Waste Rock Area E	**4/22/2009**	**HRF**		
005.4 - Pit 6	**4/22/2009**	**HRF**	BMPs require regular spring maintenance-reported to SOPS	May maintenance
005.5 - 7.8 Mile Culvert	**4/22/2009**	**HRF**	BMPs require regular spring maintenance-reported to SOPS	May maintenance
006 - Pond D Overflow	**4/22/2009**	**HRF**		
007 - Pond C Overflow	**4/22/2009**	**HRF**	BMPs require regular spring maintenance-reported to SOPS	May maintenance
008 - 960 Area	**4/22/2009**	**HRF**		
009 - 1350 Area	**4/22/2009**	**HRF**		
Sandpit 1.4 mile A Road	**4/22/2009**	**HRF**	BMPs require regular spring maintenance-reported to SOPS	May maintenance

Notes:

1. Per NPDES Permit No. AK-004320-6, the BMP Plan must include provisions for qualified personnel to inspect BMPs and designated equipment and facility areas on a monthly basis, excepting when weather conditions would preclude safe access to a site. Inspections must include at a minimum, all material handling and storage areas, wastewater and storm water control and containment structures, and erosion control systems. The record of inspection (this form) must be incorporated into the BMP document on an annual basis.

NOTE: all areas where significant snow melt has occurred were noted to need maintenance in ditches, in settling ponds, etc. Surface Operations is aware of this and is working on these items as the ground thaws.

Monthly BMP Inspection Record Form for *May-09*

(Month/Year)

			If corrective Action is Required:	
NPDES Permitted Stormwater Outfall	**Date Monthly Inspection Completed**	**Initials of Qualified Inspector**	**Personnel Deficiency Reported To:**	**Date Deficiency Corrected:**
001 - Hawk Inlet Sewer	not currently in use			
002 - Treated Ocean Water Outfall	**(see weekly inspection sheets)**			
003 - Hawk Inlet Cannery Building Culvert	**5/17/2009**	**HRM**		
004 - Pit 7	**5/17/2009**	**HRM**		
005.2 - Zinc Creek Bridge	**5/17/2009**	**HRM**	some sediment behind silt fence; splash guard note-reported to SOPS	**5/31/2009**
005.3 - Waste Rock Area E	**5/17/2009**	**HRM**		
005.4 - Pit 6	**5/17/2009**	**HRM**		
005.5 - 7.8 Mile Culvert	**5/17/2009**	**HRM**	redefine ditches as part of spring cleanup - reported to SOPS	**6/6/2009**
006 - Pond D Overflow	**5/17/2009**	**HRM**	sediment behind check dams need cleanout-reported to SOPS	
007 - Pond C Overflow	**5/17/2009**	**HRM**	rock berms need work-reported to SOPS	**5/31/2009**
008 - 960 Area	**5/17/2009**	**HRM**		
009 - 1350 Area	**5/17/2009**	**HRM**		
Sandpit 1.4 mile A Road	**5/17/2009**	**HRM**		

Notes:

1. Per NPDES Permit No. AK-004320-6, the BMP Plan must include provisions for qualified personnel to inspect BMPs and designated equipment and facility areas on a monthly basis, excepting when weather conditions would preclude safe access to a site. Inspections must include at a minimum, all material handling and storage areas, wastewater and storm water control and containment structures, and erosion control systems. The record of inspection (this form) must be incorporated into the BMP document on an annual basis.

NOTE: all areas where significant snow melt has occurred were noted to need maintenance in ditches, in settling ponds, etc. Surface Operations is aware of this and is working on these items as the ground thaws.

Monthly BMP Inspection Record Form for ***Jun-09***

(Month/Year)

			If corrective Action is Required:	
NPDES Permitted Stormwater Outfall	**Date Monthly Inspection Completed**	**Initials of Qualified Inspector**	**Personnel Deficiency Reported To:**	**Date Deficiency Corrected:**
001 - Hawk Inlet Sewer	not currently in use			
002 - Treated Ocean Water Outfall	**(see weekly inspection sheets)**			
003 - Hawk Inlet Cannery Building Culvert	**6/8/2009**	**MTM**		
004 - Pit 7	**6/8/2009**	**MTM**		
005.2 - Zinc Creek Bridge	**6/8/2009**	**MTM**		
005.3 - Waste Rock Area E	**6/8/2009**	**MTM**	*poor condition of liner noted*	*
005.4 - Pit 6	**6/8/2009**	**MTM**		
005.5 - 7.8 Mile Culvert	**6/8/2009**	**MTM**		
006 - Pond D Overflow	**6/8/2009**	**MTM**		
007 - Pond C Overflow	**6/8/2009**	**MTM**		
008 - 960 Area	**6/8/2009**	**MTM**		
009 - 1350 Area	**6/8/2009**	**MTM**		
Sandpit 1.4 mile A Road	**6/8/2009**	**MTM**	*settling ponds do not have engineered design*	*

Notes:

1. Per NPDES Permit No. AK-004320-6, the BMP Plan must include provisions for qualified personnel to inspect BMPs and designated equipment and facility areas on a monthly basis, excepting when weather conditions would preclude safe access to a site. Inspections must include at a minimum, all material handling and storage areas, wastewater and storm water control and containment structures, and erosion control systems. The record of inspection (this form) must be incorporated into the BMP document on an annual basis.

Inspection was conducted by EPA inspectors and ADEC staff. Exceptionally dry weather noted. * See more details on inspection findings and corrective actions in BMP annual report 2009.

Monthly BMP Inspection Record Form for ***Jul-09***

(Month/Year)

			If corrective Action is Required:	
NPDES Permitted Stormwater Outfall	**Date Monthly Inspection Completed**	**Initials of Qualified Inspector**	**Personnel Deficiency Reported To:**	**Date Deficiency Corrected:**
001 - Hawk Inlet Sewer	not currently in use			
002 - Treated Ocean Water Outfall	**(see weekly inspection sheets)**			
003 - Hawk Inlet Cannery Building Culvert	**7/18/2009**	**HRM**		
004 - Pit 7	**7/6/2009**	**MTM**		
005.2 - Zinc Creek Bridge	**7/18/2009**	**HRM**	silt fence appears to be partial down due to bear-SOPs	**7/30/2009**
005.3 - Waste Rock Area E	**7/18/2009**	**HRM**		
005.4 - Pit 6	**7/18/2009**	**HRM**		
005.5 - 7.8 Mile Culvert	**7/15/2009**	**HRM**		
006 - Pond D Overflow	**7/15/2009**	**HRM**		
007 - Pond C Overflow	**7/15/2009**	**HRM**		
008 - 960 Area	**7/15/2009**	**HRM**		
009 - 1350 Area	**7/15/2009**	**HRM**		
Sandpit 1.4 mile A Road	**7/6/2009**	**MTM**		

Notes:

1. Per NPDES Permit No. AK-004320-6, the BMP Plan must include provisions for qualified personnel to inspect BMPs and designated equipment and facility areas on a monthly basis, excepting when weather conditions would preclude safe access to a site. Inspections must include at a minimum, all material handling and storage areas, wastewater and storm water control and containment structures, and erosion control systems. The record of inspection (this form) must be incorporated into the BMP document on an annual basis.

Monthly BMP Inspection Record Form for ***Aug-09***

(Month/Year)

			If corrective Action is Required:	
NPDES Permitted Stormwater Outfall	**Date Monthly Inspection Completed**	**Initials of Qualified Inspector**	**Personnel Deficiency Reported To:**	**Date Deficiency Corrected:**
001 - Hawk Inlet Sewer	not currently in use			
002 - Treated Ocean Water Outfall	**(see weekly inspection sheets)**			
003 - Hawk Inlet Cannery Building Culvert	**8/15/2009**	**HRM**		
004 - Pit 7	**8/15/2009**	**HRM**		
005.2 - Zinc Creek Bridge	**8/15/2009**	**HRM**		
005.3 - Waste Rock Area E	**8/15/2009**	**HRM**		
005.4 - Pit 6	**8/15/2009**	**HRM**		
005.5 - 7.8 Mile Culvert	**8/15/2009**	**HRM**		
006 - Pond D Overflow	**8/15/2009**	**HRM**		
007 - Pond C Overflow	**8/15/2009**	**HRM**		
008 - 960 Area	**8/15/2009**	**HRM**		
009 - 1350 Area	**8/15/2009**	**HRM**		
Sandpit 1.4 mile A Road	**8/15/2009**	**HRM**		

Notes:

1. Per NPDES Permit No. AK-004320-6, the BMP Plan must include provisions for qualified personnel to inspect BMPs and designated equipment and facility areas on a monthly basis, excepting when weather conditions would preclude safe access to a site. Inspections must include at a minimum, all material handling and storage areas, wastewater and storm water control and containment structures, and erosion control systems. The record of inspection (this form) must be incorporated into the BMP document on an annual basis.

Monthly BMP Inspection Record Form for ***Sep-09***

(Month/Year)

			If corrective Action is Required:	
NPDES Permitted Stormwater Outfall	**Date Monthly Inspection Completed**	**Initials of Qualified Inspector**	**Personnel Deficiency Reported To:**	**Date Deficiency Corrected:**
001 - Hawk Inlet Sewer	not currently in use			
002 - Treated Ocean Water Outfall	**(see weekly inspection sheets)**			
003 - Hawk Inlet Cannery Building Culvert	**9/10/2009**	**HRM**		
004 - Pit 7	**9/10/2009**	**HRM**		
005.2 - Zinc Creek Bridge	**9/13/2009**	**HRM**	bear activity-silt fence bent - SOPs reported	**9/22/2009**
005.3 - Waste Rock Area E	**9/7/2009**	**HRM**		
005.4 - Pit 6	**9/7/2009**	**HRM**		
005.5 - 7.8 Mile Culvert	**9/10/2009**	**HRM**		
006 - Pond D Overflow	**9/10/2009**	**HRM**		
007 - Pond C Overflow	**9/7/2009**	**HRM**		
008 - 960 Area	**9/13/2009**	**HRM**		
009 - 1350 Area	**9/13/2009**	**HRM**		
Sandpit 1.4 mile A Road	**9/7/2009**	**HRM**		

Notes:

1. Per NPDES Permit No. AK-004320-6, the BMP Plan must include provisions for qualified personnel to inspect BMPs and designated equipment and facility areas on a monthly basis, excepting when weather conditions would preclude safe access to a site. Inspections must include at a minimum, all material handling and storage areas, wastewater and storm water control and containment structures, and erosion control systems. The record of inspection (this form) must be incorporated into the BMP document on an annual basis.

Monthly BMP Inspection Record Form for ***Oct-09***

(Month/Year)

			If corrective Action is Required:	
NPDES Permitted Stormwater Outfall	**Date Monthly Inspection Completed**	**Initials of Qualified Inspector**	**Personnel Deficiency Reported To:**	**Date Deficiency Corrected:**
001 - Hawk Inlet Sewer	not currently in use			
002 - Treated Ocean Water Outfall	**(see weekly inspection sheets)**			
003 - Hawk Inlet Cannery Building Culvert	**10/29/2009**	**MTM**		
004 - Pit 7	**10/28/2009**	**MTM**		
005.2 - Zinc Creek Bridge	**10/28/2009**	**MTM**		
005.3 - Waste Rock Area E	**10/28/2009**	**MTM**		
005.4 - Pit 6	**10/28/2009**	**MTM**		
005.5 - 7.8 Mile Culvert	**10/28/2009**	**MTM**		
006 - Pond D Overflow	**10/28/2009**	**MTM**		
007 - Pond C Overflow	**10/28/2009**	**MTM**		
008 - 960 Area	**10/28/2009**	**MTM**		
009 - 1350 Area	**10/28/2009**	**MTM**		
Sandpit 1.4 mile A Road	**10/28/2009**	**MTM**		

Notes:

1. Per NPDES Permit No. AK-004320-6, the BMP Plan must include provisions for qualified personnel to inspect BMPs and designated equipment and facility areas on a monthly basis, excepting when weather conditions would preclude safe access to a site. Inspections must include at a minimum, all material handling and storage areas, wastewater and storm water control and containment structures, and erosion control systems. The record of inspection (this form) must be incorporated into the BMP document on an annual basis.

Monthly BMP Inspection Record Form for ***Nov-09***

(Month/Year)

			If corrective Action is Required:	
NPDES Permitted Stormwater Outfall	**Date Monthly Inspection Completed**	**Initials of Qualified Inspector**	**Personnel Deficiency Reported To:**	**Date Deficiency Corrected:**
001 - Hawk Inlet Sewer	not currently in use			
002 - Treated Ocean Water Outfall	**(see weekly inspection sheets)**			
003 - Hawk Inlet Cannery Building Culvert	**11/28/2009**	**MTM**		
004 - Pit 7	**11/28/2009**	**MTM**		
005.2 - Zinc Creek Bridge	**11/28/2009**	**MTM**		
005.3 - Waste Rock Area E	**11/28/2009**	**MTM**		
005.4 - Pit 6	**11/28/2009**	**MTM**		
005.5 - 7.8 Mile Culvert	**11/28/2009**	**MTM**		
006 - Pond D Overflow	**11/28/2009**	**MTM**	items around heli pad need to be cleared in case of emergency; safety dept	**11/28/2009**
007 - Pond C Overflow	**11/23/2009**	**MTM**		
008 - 960 Area	**11/23/2009**	**MTM**		
009 - 1350 Area	**11/23/2009**	**MTM**		
Sandpit 1.4 mile A Road	**10/28/2009**	**MTM**		

Notes:

1. Per NPDES Permit No. AK-004320-6, the BMP Plan must include provisions for qualified personnel to inspect BMPs and designated equipment and facility areas on a monthly basis, excepting when weather conditions would preclude safe access to a site. Inspections must include at a minimum, all material handling and storage areas, wastewater and storm water control and containment structures, and erosion control systems. The record of inspection (this form) must be incorporated into the BMP document on an annual basis.

Monthly BMP Inspection Record Form for ***Dec-09***

(Month/Year)

			If corrective Action is Required:	
NPDES Permitted Stormwater Outfall	**Date Monthly Inspection Completed**	**Initials of Qualified Inspector**	**Personnel Deficiency Reported To:**	**Date Deficiency Corrected:**
001 - Hawk Inlet Sewer	not currently in use			
002 - Treated Ocean Water Outfall	**(see weekly inspection sheets)**			
003 - Hawk Inlet Cannery Building Culvert	**12/14/2009**	**MTM**		
004 - Pit 7	**12/14/2009**	**MTM**		
005.2 - Zinc Creek Bridge	**12/14/2009**	**MTM**		
005.3 - Waste Rock Area E	**12/14/2009**	**MTM**		
005.4 - Pit 6	**12/14/2009**	**MTM**		
005.5 - 7.8 Mile Culvert	**12/14/2009**	**MTM**		
006 - Pond D Overflow	**12/14/2009**	**MTM**		
007 - Pond C Overflow	**12/14/2009**	**MTM**		
008 - 960 Area	**12/14/2009**	**MTM**		
009 - 1350 Area	**12/14/2009**	**MTM**	**not accessible**	
Sandpit 1.4 mile A Road	**12/14/2009**	**MTM**		

Notes:

1. Per NPDES Permit No. AK-004320-6, the BMP Plan must include provisions for qualified personnel to inspect BMPs and designated equipment and facility areas on a monthly basis, excepting when weather conditions would preclude safe access to a site. Inspections must include at a minimum, all material handling and storage areas, wastewater and storm water control and containment structures, and erosion control systems. The record of inspection (this form) must be incorporated into the BMP document on an annual basis.

Attachment #1

ATTACHMENT #1
[NOTE: Attachments originally sent with the email are not included here]

From: Jennifer Saran
Sent: Wednesday, August 12, 2009 8:09 AM
To: 'Foley, Christopher (DEC)'; 'DeMaria.Eva@epamail.epa.gov'; 'Chad C Hood'
Cc: 'George, Kenwyn P (DEC)'; gcenv (KMC-GC); 'Sarah Shoemaker'
Subject: Drill mud spill to Greens Creek

This is a follow up to the brief phone messages that I left for you yesterday afternoon:

On August 11, 2009 at approximately 1:30pm, the surface exploration drillers noticed a grey colored plume entering Greens Creek downgradient from the drill site. (They noticed this during one of the inspections that they conduct of the Creek every time they change a drill rod.) They immediately stopped drilling and further inspection of the area found a number of small seeps emanating from the toe of the slope above the Creek (on the portal side). Approximately 5 seeps were flowing into the creek at a rate varying from 1 – 10 gpm. It appears that while drilling, permeable material was encountered that allowed the drill mud (bentonite drill mud, drill cutting fines and water) to flow away from the drill site and downgradient to the Creek. A formal investigation will be conducted on August 12th.

Corrective actions: Drilling was stopped immediately. Water from the seeps was diverted to contain it on one side of the creek, and channel it towards a natural low spot (pool). A pump was placed into the pool, and has been pumping water from the pool into our water treatment system since approximately 3:30pm yesterday. Booms were also deployed in a number of locations in the creek to catch any potential hydrocarbons that may be present. No visible sheen was observed on the water.

The pump ran throughout the night, and the drillers stayed at the site during night shift to ensure the pump continued to run and to be available if conditions changed. As of this morning at 7:30 am, flow from the seeps continues, but the water is clear (not grey colored as it was yesterday). pH of the water this morning was 7.81. The pump will be turned off this morning, and further remedial actions for the settled solids in the creek will be considered.

Analysis of water: a sample taken from the water being pumped from the pool was analyzed by HGCMC's in house lab last night. The results showed:

pH	7.87
TSS	408 mg/l
Zn	0.06 mg/l total
Cu	0.01 mg/l total
Pb	0.03 mg/l total

Also, a sample of the water has been taken and sent to an outside lab for analysis.

I will follow up with additional information from the formal investigation, as well as any further remedial actions and the analytical results from the outside lab, once received.

From: Jennifer Saran
Sent: Friday, August 21, 2009 6:46 PM
To: 'DeMaria.Eva@epamail.epa.gov'; 'George, Kenwyn P (DEC)'; 'Foley, Christopher (DEC)'; 'whittier.robert@epamail.epa.gov'; 'Deborah_Rudis@fws.gov'; 'Timothy, Jackie L (DFG)'; 'doug.sanvik@alaska.gov'; 'Chad C Hood'; Sarah Shoemaker; 'Moore, Sarah C (DEC)'; Steve_Brockmann@fws.gov
Cc: gcenv (KMC-GC)
Subject: FW: Drill mud spill to Greens Creek

[NOTE: Attachments sent with this email are not included here]

As a follow up to the email below, we have received the following analytical results back from the third party lab from this incident:

Analyte	Concentration ug/l Dissolved	Concentration ug/l Total TR	lbs Released (based on 5000 gal)
pH	7.73		
conductivity	123 umhos/cm		
TSS	400		
As	0.231	0.274	0.00001
Cd	<0.2	<0.2	
Cu	0.416	1.31	0.00004
Pb	<0.1	0.131	0.00001
Zn	4.21	6.11	0.00025

The volume of the spill is estimated at 5000 gallons. There were six seeps producing a total of 10 – 20 gpm from the time the spill was noted until the time when the seeps ran clear (approximately 3.5 hours, plus 0.5 hours as visual inspections were conducted every 0.5 hours).

The formal incident investigation was conducted on August 12th. The cause if the incident was determined to be that the drilling mud and water from the drilling operation found an alternate path of less resistance to surface other than the drill hole, and exited through this path and seeped into Greens Creek. It was also found that on this drill hole, the drillers had used 850 pounds of MI Gel bentonite and 15 gallons of Poly Plus 2000, which is a synthetic polymer. The MSDS for this product is attached (poly plus 2000 MSDS.pdf). Poly Plus 2000 and MI Gel are not considered harmful to aquatic organisms or the environment, as shown in the attachment 'certifications.pdf'.

In discussions with Fish and Wildlife and Fish and Game personnel on August 12th, it was determined that further remedial efforts to clean up the small amounts of residual settled solids in isolated spots in the Creek may have more impact on the Creek than allowing the solids to be naturally dispersed with the next storm event. A storm event occurred on August 17th, and visual observations on the 17th and 18th showed that natural dispersion had decreased the amount of settled solids in these areas. The attached file 'PHOTOS' contains pictures of the spill area which document the spill location as it appeared during the event (August 11th), some of the residual settled solids (August 12th), and the dispersion after the storm event (August 18th).

Immediate corrective actions were discussed in the previous email. Preventive actions to be addressed include:

- No other drilling will be conducted at this location
- Sealed the top 10 feet of the drill hole with hole-plug
- Create a more stringent risk assessment process for surface exploration activities
- New procedures may be appropriate for sites in close proximity to surface water, such as ensuring an acceptable buffer distance between drill site locations and surface water