

## I. Introduction

This 2012 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 work in the Environmental department attended the Alaska certified erosion and sediment control lead (AK-CESCL) storm water training program. In December 2011, two additional members of the Environmental department and two members of the Surface Operations department attended the AK-CESCL class. 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. All monthly storm water and BMP inspections were completed by certified inspectors, and can be considered site compliance inspections. The results of the inspections conducted in 2012 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 2012 inspections, as well as the corrective actions taken, included:

- In February, the diversion ditch below the upper pad stairs at the Hawk Inlet working area had a buildup of material and needed to be trenched. This was accomplished in May.
- After the winter, spring clean-out of most of the settling ponds along the road should occur. This was accomplished in May.
- Build-up of sediment behind rock check dams near steep areas along the B road (i.e., 3 mile hill) was noted. Sediment was removed from these areas by the end of May.
- In April, it was noted that silt fence under the Zinc Creek bridge was in need of repair. Environmental staff attempted to fix it at the time of the inspection.
- Buildup of sediment in some areas was addressed in August including the settling pond at the top of Pit 7, the bridge surface at the 3 mile bridge, and the ditch along the D Pond road.

## 2. Agency Site Compliance Evaluation Inspections

ADEC inspected the site 4 times in 2012 on May 22, July 2, July 31 and October 9. The May 22<sup>nd</sup> and July 2<sup>nd</sup> audits were conducted by ADEC Division of Water, Compliance and Enforcement. The July 31<sup>st</sup> and October 9<sup>th</sup> inspections were conducted by ADEC Division of Solid Waste. The findings from these inspections that pertain to stormwater sites and BMPs are outlined below.

- The May 22<sup>nd</sup> inspection noted the A Road sand pit check dam was more than 50% full. This check dam was cleaned in May after the inspection.
- During the July 2<sup>nd</sup> inspection, the 1350 portal area was found to be overflowing. The overflow was caused by someone shutting off the valve on the pipe that sends water underground. An alarm has been installed in this area to prevent future overflows.
- The July 2<sup>nd</sup> inspection noted the need to remove sediment buildup and replace damaged silt fences under the 3 mile Bridge along the B Road. This was worked on in August, and alternative BMPs are being researched for use in this area.
- It was recommended during the October inspection that the road runoff water and sediments from the downhill end of Site D to Pond D be re-routed. The auxiliary entrance road to D-Pile was reshaped to redirect the water to Pond D on October 15<sup>th</sup> to address this action item.

Progress in 2012 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 2012 work and improvements, as well as plans for 2013:

- 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. In 2012 it was observed during heavy rainstorms that the pump that had been installed at this location could not keep up with high flows, and some of the storm water was overflowing to outfall 003. Work will be done to improve or upgrade this pump in 2013 by HGCMC.

- Storm Water Outfall 005.2 Zinc Creek Bridge

Routine maintenance of existing BMPs was performed in 2012. This included repair of silt fence and installation of additional straw wattles. The lime application onto the quarry rock buttresses of the bridge that was proposed was delayed. Instead, further baseline study of the local water quality was performed. Lime application to the waste rock buttress is proposed for 2013 as long as appropriate monitoring devices can be installed in the Creek to monitor the pH of the Creek when lime is added to the buttresses. An access road under the bridge may also be re-established in 2013.

- Storm Water Outfall 005.3 Site E

Due to a number of factors, no haulage of waste rock materials from Site E to the tailings disposal facility was performed in 2012. 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. Also, operational constraints for co-disposal were an issue in 2012, and these will likely continue into 2013. Recently, tailings placement areas have been too close to the liner system for acceptance of codisposal material. The standard operating procedure for codisposal is to place at least 3 lifts of tailings only on top of the liner system. After those three lifts, then codisposal can occur so that no rock will be placed near the liner system as it may have the potential to compromise the liner.

Even though no removal activities took place in 2012, 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 2013 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 2012 showed that no Pond D overflows were noted during storm events in 2012.

- 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. As of December 2011, the routed stormwater flow from the B Road routes to the lower 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 (see Photo 1). 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 2012 showed that no Pond C overflows were noted during storm events in 2012.

- Storm Water Outfall 009 Site 1350

No waste rock was removed from the 1350 site in 2012. The underground mine was not in a position to haul the 2011 stockpile material from the Site 23 temporary reclamation material storage pad to the underground. There was no place to haul 1350 material to during 2012. In spring 2012, the mill did attempt to batch a small quantity of the Site 23 temporary pad stockpile materials; however, this test was unsuccessful due to mill process control requirements for materials. Future removal activities from the 1350 site are dependent on the Site 23 temporary pad being cleared of existing 2011 stockpiled materials. The disturbed areas at the 1350 were hydroseeded after removal of material in 2011.

Along with future removal activities, there will be continued grading efforts to ensure that contact water from the 1350 site is routed to collection at the 1350 portal.

- 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 (see Photo 2). 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.

- Summary of Plans for 2013
- Upgrade pump for collection system near Outfall 003
- Apply lime to waste rock buttresses at Zinc Creek bridge, if appropriate real-time monitoring can be installed
- 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 Greens Creek bridge overlay and portal road repair, overlay 920 roadway in front of the Surface Shop to the cons load-out entry, improve drainage of Mill roadway, and new concrete for existing storage pad area.

### III. BMP Plan Modifications in 2012

No major modifications were made to the BMP Plan in 2012.

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 2012 when requested.

### IV. HGCMC 2012 Annual Storm Water Monitoring Report

Storm water monitoring samples for 2012 were collected in May and September. Receiving water sampling, which was initiated in 2005 under the reissued permit, continued during 2012.

The table below, 2012 Storm Event Details, summarizes the required precipitation and duration data associated with the sampling events that occurred in 2012.

2012 Storm Event Details

	Hawk Inlet Camp Site		Mine/Mill Site (920)	
	5/1/2012	9/13/2012	5/1/2012	9/13/2012
<b>SAMPLE EVENT</b>				
Duration	15.75 hrs	16 hrs	17.75 hrs	15.75 hrs
Started	4/30/2012 15:45	9/13/2012 06:45	4/30/2012 13:00	9/12/2012 02:15
Precipitation	0.29"	2.18"	0.30"	1.70"
Same Day precipitation	0.15"	2.18"	0.11"	1.70"
<b>PRIOR EVENT</b>				
Days Before Sampled Event	0.80 Days	0.85 Days	0.71 Days	0.85 Days
Duration	10.5 hrs	8 hrs	17.5 hrs	8 hrs
Started	4/29/2012 10:15	9/12/2012 02:15	4/29/2012 04:00	9/12/2012 02:15
Precipitation	0.25"	1.08"	0.40"	0.58"

The table below, 2012 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 location of stormwater 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. The flow at site 368 was very high and difficult to estimate in September 2012. Confusion among technicians resulted in receiving water Site 524 not being sampled during 2012. This confusion has been addressed and Site 524 will be monitored during 2013. Sampling results for receiving water at Site 524 in 2005 through 2011 showed that the upgradient storm water site was not impacting the quality of the receiving water for the analytes listed in the table below.

2012 HGCMC Storm Water and Receiving Water Results

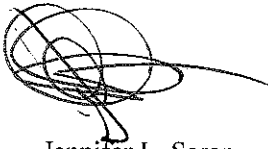
Outfall	S=Storm R=Receiving	Site	Date	Time	Flow (gpm)	Hardness (mg/l)	Oil & Gr (mg/l)	Pb-TR (ug/l)	pH Fld (su)	TSS (mg/l)	Zn-TR (ug/l)
003	S	527	5/1/12	14:25	1	249	<2.1	0.9	8.11	1	46
		527	9/13/12	15:50	90	73	<2.1	28.6	6.87	12	122
	R	529	9/13/12	16:00	na	1520	<2.1	2.8	7.82	18	13
004	S	520	5/1/12	09:55	2	182	<2.1	0.7	7.24	25	47
		520	9/13/12	15:25	4	102	<2.0	5.1	6.6	82	73
	R	524	confusion among technicians resulted in no sample at Site 524								
005.2	S	539	5/1/12	10:25	no flow						
		539	9/13/12	14:45	16	29	<2.1	35.1	4.65	14	89
	R	368	9/13/12	14:20	na	22	<2.0	0.9	7.63	18	28
005.3	S	545	5/1/12	11:00	30	147	<2.1	1	7.44	1	431
		545	9/13/12	13:45	120	123	<2.1	38.6	7.39	52	534
	R	591	not sampled due to unsafe access to sample site								
005.4	S	547	5/1/12	10:45	5	55	<2.1	<0.1	7.41	1	3
		547	9/13/12	13:30	5	67	<2.0	0.1	7.42	<4	3
	R	591	not sampled due to unsafe access to sample site								
005.5	S	560	5/1/12	13:34	no flow						
		560	9/13/12	13:15	no flow						
006	S	562	5/1/12	13:30	no flow						
		562	9/13/12	12:50	no flow						
007	S	565	5/1/12	13:13	no flow						
		565	9/13/12	12:40	no flow						
008	S	570	5/1/12	12:25	25	83	na	10.6	7.55	64	169
		570	9/13/12	12:00	12	146	na	3	7.24	14	86
009	S	580	5/1/12	12:40	site blocked						
		580	9/13/12	11:20	8	265	na	0.8	6.66	9	57
	R	585	9/13/12	11:28	75	62	na	2.8	7.33	12	55
Greens Creek	R	54	9/13/12	12:52	na	44	na	1.7	7.7	13	17

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

V. Certification

Based on the above report, the inspections and evaluations have been completed for 2012 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, consisting of several overlapping loops and a long horizontal stroke extending to the right.

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



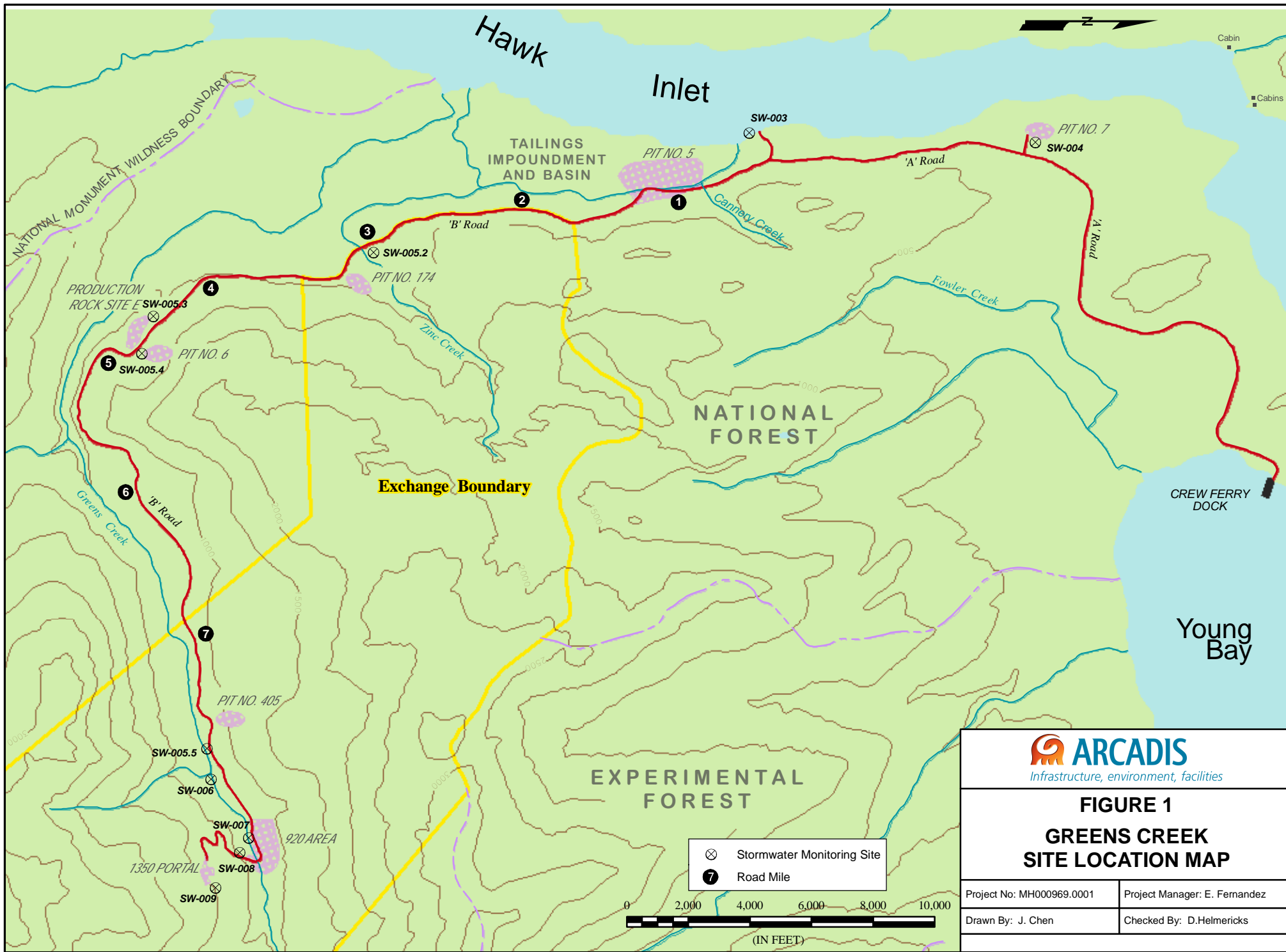
## Photos



PHOTO 1. Insulation for C Pond Pipeline above B Road, in progress, November 2012



PHOTO 2. New Splash Guards on Greens Creek Bridge, 2012



**FIGURE 1**  
**GREENS CREEK**  
**SITE LOCATION MAP**

Project No: MH000969.0001	Project Manager: E. Fernandez
Drawn By: J. Chen	Checked By: D. Helmericks

- ⊗ Stormwater Monitoring Site
- ⑦ Road Mile

