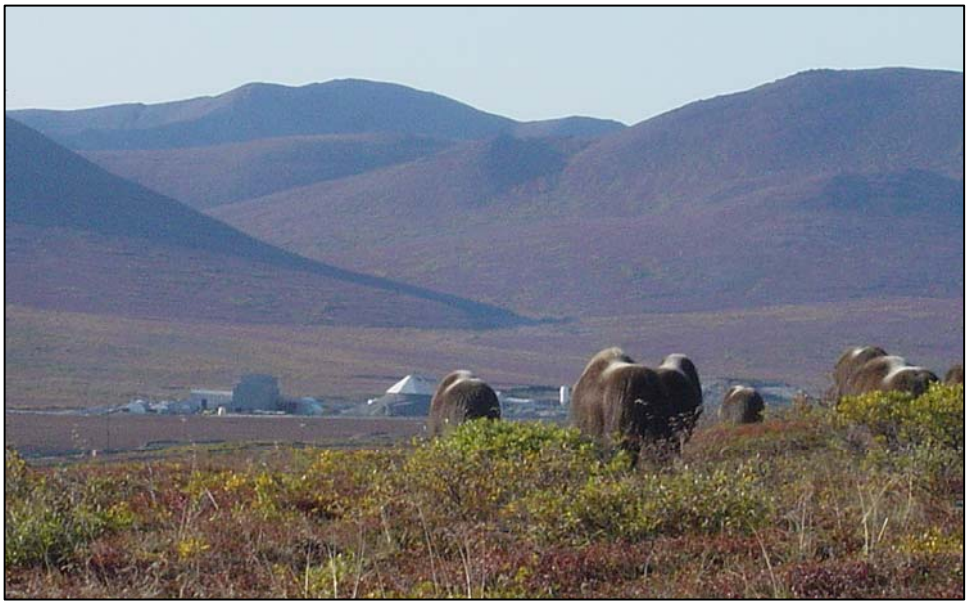
Alaska Gold Company
A subsidiary of NovaGold Resources Inc.

ROCK CREEK MINE & BIG HURRAH PROJECT

2009 ANNUAL REPORT



Submitted To:

Alaska Department of Environmental Conservation

&

Alaska Department of Natural Resources

Submitted By:

Alaska Gold Company
P.O. Box 640
Nome, Alaska 99762

March 5, 2010

NovaGold
NOME OPERATIONS

April 30, 2010

Mr Jack DiMarchi, Large Project Coordinator
LPP-Large Project Permitting FBK
Dept. of Natural Resources
3700 Airport Way
Fairbanks, AK 99709-4609

Dear Jack,

Please find attached the revised 2009 Rock Creek Mine & Big Hurrah Project Annual Report. If you should have any questions or concerns, do not hesitate to contact me. I appreciate your help and attention to this.

Regards,

John Odden

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Acronyms and Abbreviations

ADEC	Alaska Department of Environmental Conservation
ADNR	Alaska Department of Natural Resources
AGC	Alaska Gold Company
AK	Alaska
amsl	above mean sea level
As	Arsenic
BMP	Best Management Practice
CGP	Construction General Permit
COBC	Compliance Order by Consent No. 2009-0748-50-8078
COC	Constituent of Concern
CY	Cubic Yards
DC-1	Diversion Channel #1
DC-2	Diversion Channel #2
DC-2	Diversion Channel #3
EPA	US Environmental Protection Agency
ERC	Ecological Resource Consultants, Inc.
GCL	Geosynthetic Clay Liner
gpd	gallons per day
gpm	gallons per minute
HDPE	High Density Polyethylene
Hp	Horsepower
IWF	Injection Well Field
LCRS	Leak Collection and Recovery System
m	meter
mg/L	milligrams per liter
NPDES	National Pollutant Discharge Elimination System
NTU	Nephelometric Turbidity Units
PAG	Potentially Acid Generating
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RPA	Reclamation Plan Approval No. F20069578
RWP	Recycle Water Pond
Sb	Antimony
SPCC	Spill Prevention Control and Countermeasure
SWPPP	Storm Water Pollution Prevention Plan
TCP	Temporary Closure Plan
TDS	Total Dissolved Solids
TSF	Tailings Storage Facility
TWUP	Temporary Water Use Permit
ug/L	micrograms per liter
UIC	Underground Injection Control
WAD	Weak Acid Dissociable
WMP	Waste Management Permit No. 2003-DB0051
WQS	Alaska Water Quality Standards
WTP	Water Treatment Plant

1.0 Introduction

This annual report has been prepared by Alaska Gold Company (AGC), a wholly owned subsidiary of NovaGold Resources, Inc. (NovaGold), in accordance with Section 1.9 of Alaska Department of Environmental Conservation (ADEC) Waste Management Permit (WMP) No. 2003-DB0051 and Alaska Department of Natural Resources (ADNR) Reclamation Plan Approval (RPA) No. F20069578. In an effort to optimize the efficiency of site personnel, AGC has prepared one annual report to address the requirements of both the WMP and RPA. This report is based solely on information generated by AGC.

Although the Rock Creek Mine and Big Hurrah site were permitted jointly, the two are located over 40 miles apart. In 2009 activities were focused on the Rock Creek Mine with only minor activities involving surface water sampling conducted at the Big Hurrah site over the same period. Accordingly, this annual report primarily summarizes activities at the Rock Creek Mine.

The Rock Creek Mine was placed into Care and Maintenance status in November 2008 continuing through 2009. The following activities took place at the Rock Creek Mine in 2009:

- All development rock generated was used for construction purposes; no development rock stockpiles were constructed.
- Upgraded components of the Storm Water Management System, including diversion channels.
- Updated the Storm Water Pollution Prevention Plan (SWPPP).
- Developed inert solid waste landfill on site in accordance with WMP.
- Expanded the existing Injection Well Field (IWF) by installing 15 additional wells for a total of 30 functioning injection wells.
- Initiated injection of treated mine wastewater from the Tailings Storage Facility (TSF).
- Constructed the TSF dam buttress and access ramp.
- Installed thermistors, inclinometers, and settlement monuments for monitoring the TSF dam.
- Initiated land application of sump water using Land Sharks.
- Upgraded the Water Treatment Plant (WTP) to provide more than 500 gallons per minute (gpm) treatment capacity and ensure long-term compliance with effluent limits for injected water.
- Drilled additional monitoring wells down gradient of the IWF.
- Constructed additional trunk pipeline and feeder lines to new injections wells.
- Continued surface and groundwater monitoring programs, including analytical sampling and visual inspections.

Table 1 summarizes WMP and RPA reporting requirements and the relevant sections of this report containing additional discussion of AGC's compliance with each.

Table 1: Reporting Requirements

Reference	Requirement	2009 Annual Report Section
Waste Management Permit (WMP) No. 2003-DB0051		
1.9.1	Submit an annual report summarizing the inspection and monitoring results set out in Section 1.8:	
1.8.1.1	**Weekly visual monitoring:** • Signs of damage at facilities; above-grade portions of groundwater monitoring devices; visible portions of liners; containment structures and retaining walls; erosion control/diversion structures; waste escaping or leachate; unauthorized waste disposal; violations of permit conditions. • As per Certificate of Reasonable Assurance (AK 0605-05AA), Item (8): Include monitoring of adequacy and effectiveness of Storm Water Management Best Management Practices in weekly visual monitoring required in the WMP.	Section 9.0
1.8.1.2	Surface water monitoring near the sites to ensure that water quality standards are not exceeded outside the waste management areas.	Section 8.2
1.8.1.3	Quarterly groundwater/seep sampling and analyses.	Section 8.3
1.8.1.4	Monitoring of treated pit dewatering wastewater prior to injection to ensure permit limits are met.	Section 8.4
1.8.1.5	Geochemical monitoring of development rock and tailings samples from Rock Creek Mine to ensure that there is low potential for production of leachate that is acidic and/or contains elevated levels of metals.	Section 8.7
1.8.1.6	Monitoring of paste tailings prior to placement in the TSF (and water recycled to the TSF or contained in the recycle water pond) to ensure that limitations in Sections 1.2.3 and 1.2.4 are met.[1]	Section 8.5
1.8.1.7	Geochemical monitoring of development rock produced at Big Hurrah designed to detect and segregate PAG development rock as per Section 1.7.1.2.	Section 8.7
1.8.1.8	Monitoring of seepage, leachate, runoff and downgradient groundwater of the PAG development rock storage area.	N/A[2]
1.8.1.9	Fluid management monitoring plan including a water accounting of the quantity of seepage through the TSF and treated pit dewatering wastewater discharged to the injection wells.	Section 3.5.2 Section 3.7 Section 3.6
1.8.1.10	Wildlife monitoring as required in Section 1.4.16.	Section 9.7
1.8.1.11	Water quality monitoring of the recycle water pond.	Section 9.2
1.8.2.2	Submit updated QAPP annually (or whenever changes to methods or labs used occur).	Section 8.0
1.8.2.4	Inspections of TSF in conformance with Operations, Maintenance and Emergency Action Manual approved by ADNR.	Section 9.1
1.8.4	Samples from any groundwater well or surface water monitoring location that had a positive result for cyanide (previously reported to ADEC).	Section 8.0

[1] The requirements outlined in WMP Section 1.8.1.6 have been modified in the above table to include water recycled to the TSF or contained in the RWP. Section 1.8.1.6 states to monitor paste tailings to ensure the limitations in Sections 1.2.3 and 1.2.4 are met. Section 1.2.4 refers to cyanide limitations on recycled water.

[2] Monitoring of seepage, leachate, runoff, and downgradient groundwater of the PAG development rock storage area will be implemented when this development rock storage area is constructed.

Reference	Requirement	2009 Annual Report Section
1.8.5	Summary of log of wastes disposed in TSF, inert solid waste landfill facilities, development rock dump at Rock Creek, PAG and non-PAG development rock dump at Big Hurrah, and any backfill of satellite pit at Big Hurrah.	Section 3.3 Section 3.5
1.8.9	Any additional monitoring of influent, effluent, receiving water, air or solid waste in addition to those in the permit or more frequently than required.	Section 8.0
1.9.4	Adequacy of financial responsibility, including, but not limited to, inflation, significant changes in reclamation activity costs, and concurrent reclamation, expansion or other changes to the operation of the facility.	Section 10.0
1.9.5	Amendments to Plan of Operations affecting waste disposal operations authorized by permit.	N/A
1.10.3	Notify ADEC of any exceedances of water quality standards or permit limits at a surface or groundwater monitoring station	Section 8.0
Reclamation Plan Approval (RPA) No. F20069578		
	Summary of results of all fourth quarter monitoring required by state/federal authorizations.	Section 8.0
	Reclamation activities and surface acreage disturbed.	Section 3.1
	Milling activities, quantities of topsoil salvaged and stockpiled, tons (and CY) of ore and development rock mined at the Rock Creek Mine site, tons (and CY) of ore and both PAG and non-PAG development rock mined at the Big Hurrah site during the previous year and planned for next year, and the available pit volume below the anticipated pit lake elevation at the end of the previous year and expected at the end of the next year.	Section 3.1 Section 3.2 Section 3.3
	As built map submitted with annual report showing current development of all facilities within project area described in the Rock Creek Mine Plan of Operations Volume 4, including cleared and grubbed areas, topsoil or growth medium stockpiles, roads, PAG and non-PAG waste rock dumps, material sites, tailings facility, facility construction, and un-reclaimed exploration disturbance.	
	Adequacy of financial responsibility - inflation, changes in reclamation cost, concurrent reclamation, expansion or other changes to operation of facility.	Section 10.0

2.0 Project Overview

The Rock Creek Mine and Big Hurrah site are located on the Seward Peninsula along the west coast of Alaska (Figure 1).

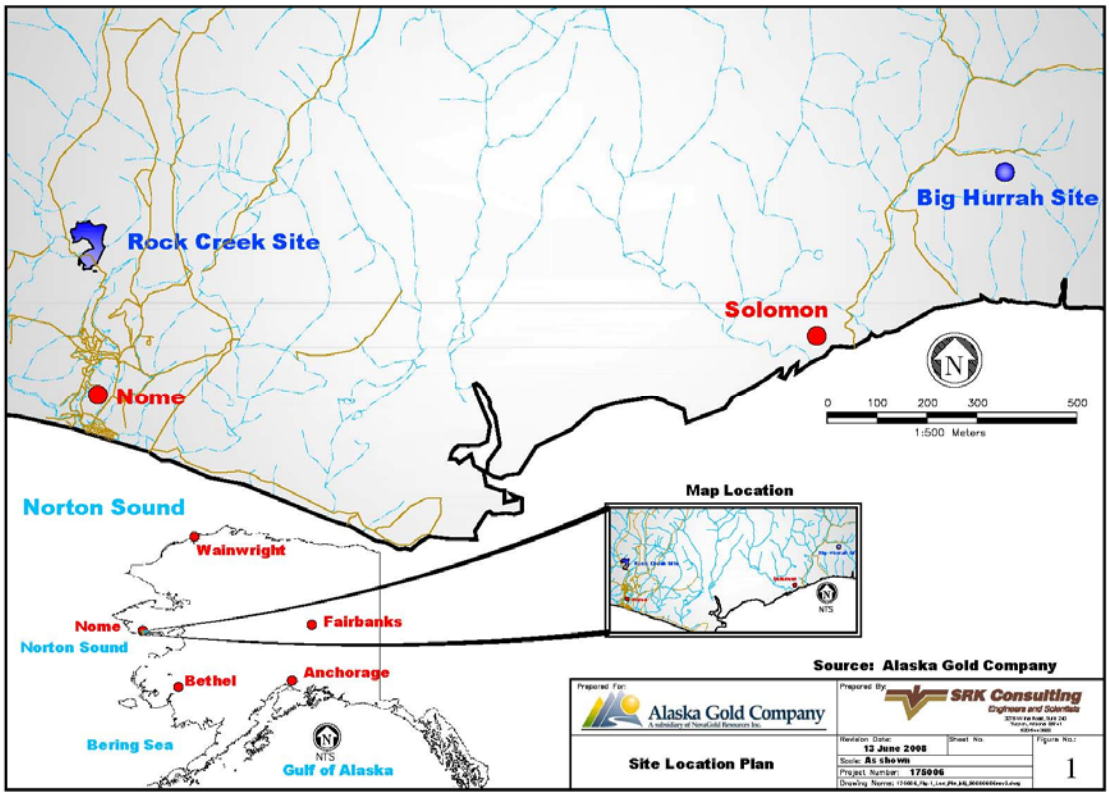

Figure 1: Rock Creek Mine and Big Hurrah Site Regional Location

2.1 Rock Creek Mine

The Rock Creek Mine is located approximately six miles north of Nome in the Snake River drainage on private lands owned by the Bering Straits Native Corporation and AGC. Mine facilities currently include an open pit, TSF, explosive storage areas, IWF, organic stockpiles, storm water diversion channels, and mine roads (Figure 2). Support facilities include the mill/gold recovery plant, maintenance shop, administration and mine dry buildings, warehouse, WTP, reagent storage locations, recycle water pond (RWP), and fuel storage locations (Figure 3).

While in Care and Maintenance status, the Rock Creek Mine operates on two 12-hour shifts per day, 365 days per year.

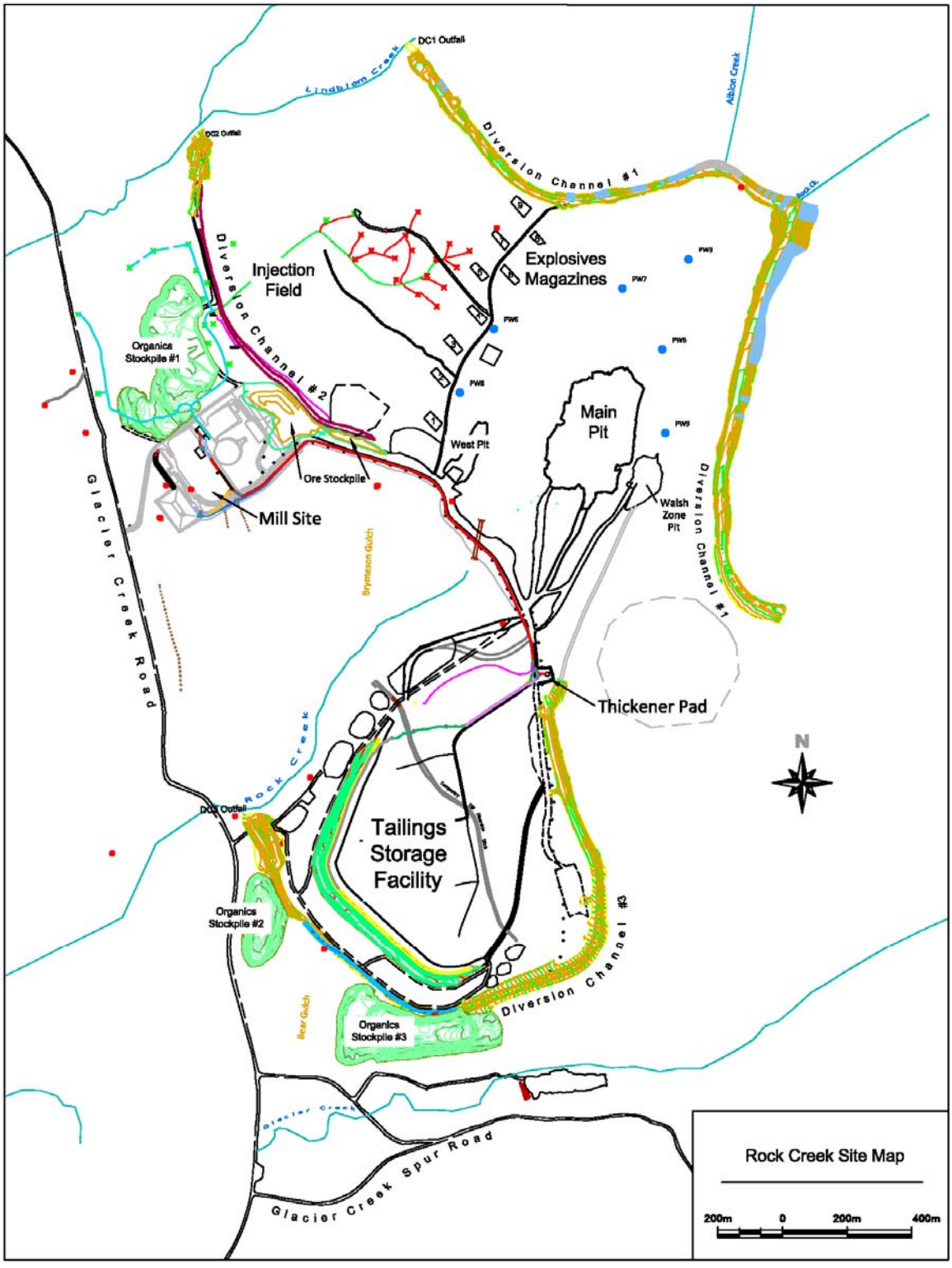

Figure 2: Rock Creek Site Map

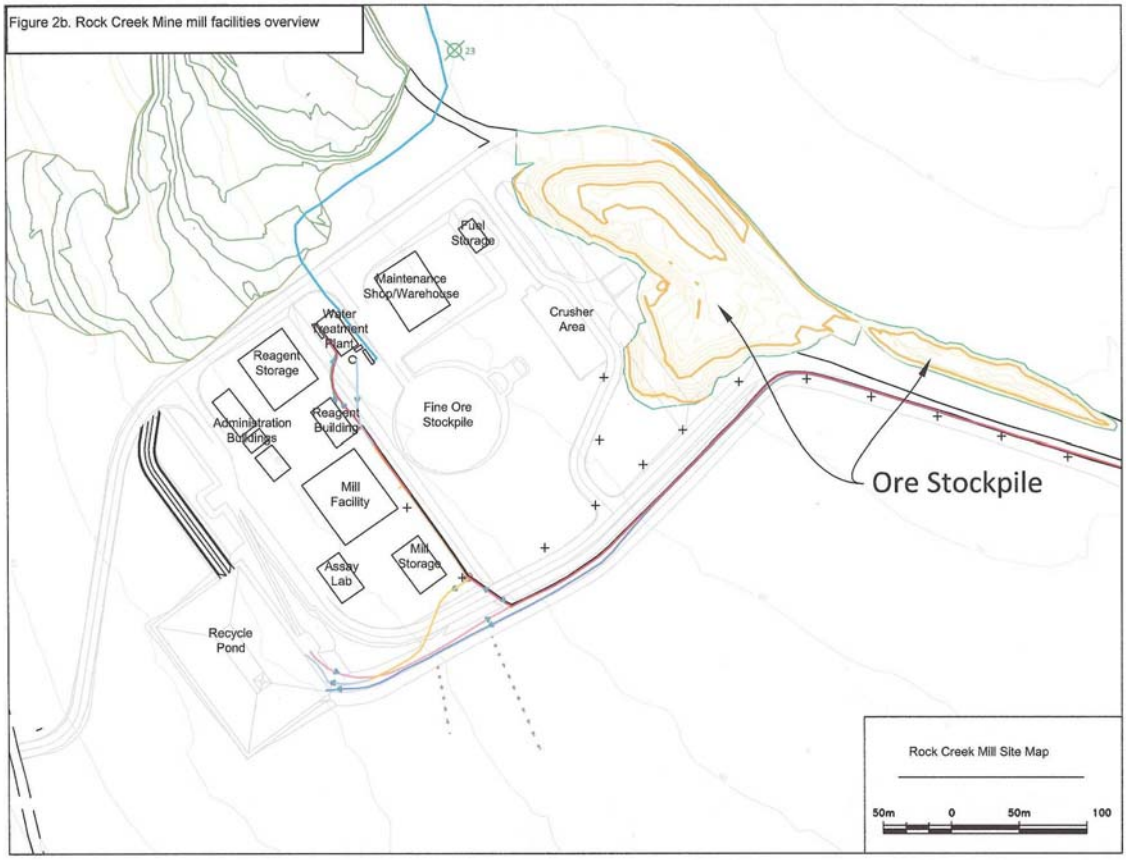

Figure 3: Rock Creek Mine Mill Facilities

2.2 Big Hurrah Site

The Big Hurrah site is located approximately 42 miles east of Nome in the Solomon River watershed on land owned by AGC. The Solomon Native Corporation owns the surface rights to the surrounding land.

2.3 Environmental Policy

AGC follows the corporate governance of NovaGold, which recognizes environmental management as a corporate priority. NovaGold employees place a great emphasis on preserving the environment for future generations and recognize the extensive benefits that are shared by the employees, shareholders and surrounding communities when the Rock Creek Mine is operated according to the highest standards for safety and responsibility. NovaGold adopted the following Statement of Principles to establish corporate-wide standards of excellence that are applied during all stages of exploration, development, mining and closure:

- NovaGold will communicate its commitment to excellence in environmental performance to its subsidiaries, employees, contractors, other agents and the communities in which it operates
- All new activities and operations will be managed to ensure compliance with applicable laws and regulations. In the absence of regulation, best management practices will be applied to minimize environmental risk.
- Remediation and mitigation of historical mining impacts on properties acquired by NovaGold will be managed through cooperative involvement of NovaGold with previous owners, government agencies and the community.

- To achieve its commitment to environment excellence, NovaGold will use an environmental management system that ensures prioritization, planning, implementation, monitoring and accurate reporting.
- NovaGold will strive to minimize releases to the air, land or water and will ensure appropriate treatment and disposal of waste.
- NovaGold will allocate the necessary resources to meet its reclamation and environmental obligations.
- NovaGold will continuously seek opportunities to improve its environmental performance through adherence to these principles.
- NovaGold will regularly report progress to its employees, shareholders and the communities in which it operates.

2.4 Regulatory Requirements

The Rock Creek Mine and Big Hurrah site are regulated primarily by the State of Alaska, with oversight by the Federal Government. The various permits, approvals and authorizations in effect as of December 31, 2009 are listed in Table 2.

Table 2: Regulatory Instruments

Regulatory Instrument	Issued by	Regulated Activities
Waste Management Permit 2003-DB0051	ADEC	Disposal of wastes from the Rock Creek and Big Hurrah projects to the TSF, inert solid waste landfills, underground injection of treated wastewater, groundwater and surface water monitoring, and management of development rock. The Temporary Closure Plan (TCP) was developed under the authority of this permit and finalized on February 20, 2009.
Department of the Army Permit POA-2006-742-M	Dept. of the Army	Placement of approximately 15,592,411 cubic yards of fill material into 346.5 acres of waters of the U.S. for development, operation and reclamation of the Rock Creek and Big Hurrah projects
Certificate of Reasonable Assurance	ADEC	Certificate of Reasonable Assurance for Department of the Army Permit POA-2006-742-M
Air Quality Control Minor Permit AQ0978MSS01	ADEC	Installation and operation of emission units in crushing and grinding circuit, shop/warehouse, emergency generators, and CIL, process, mill, laboratory and administration buildings
Underground Injection Control Permit AK- 5X27-001-A	EPA Region 10	Injection of treated mine dewatering wastewater and a onetime disposal of treated wastewater contained in the TSF associated with closure of the Rock Creek Mine project utilizing Class V injection wells.
APDES General Permit for Storm Water Discharges from Construction Activities No. AKR10BT00	ADEC	Discharge of storm water from construction activities at the Rock Creek Project
Reclamation Plan Approval F20069578	ADNR	Approval of Reclamation Plan for the Rock Creek and Big Hurrah projects
Final Consistency Response AK 0605-05AA	ADNR	Final response regarding consistency of Rock Creek and Big Hurrah projects with the Alaska Coastal Management Program and affected coastal district's enforceable policies
Certificate of Approval to Construct a Dam AK00309	ADNR	Construction of the TSF at the Rock Creek Mine project
Fish Habitat Permit FH06-III-0233	ADNR	Rehabilitation of 2.5 miles of existing access road along Big Hurrah Creek and installation of culverted road crossings in Big Hurrah and Linda Vista creeks

Regulatory Instrument	Issued by	Regulated Activities
Temporary Water Use Authorization TWUP F2006-09	ADNR	Withdrawal of groundwater from 11 interceptor wells surrounding Rock Creek Mine pit (pit dewatering)
Temporary Water Use Authorization TWUP F2006-10	ADNR	Withdrawal of surface water from Rock Creek drainage within the Rock Creek Mine pit (pit dewatering)
Temporary Water Use Authorization TWUP F2006-11	ADNR	Withdrawal of surface water from a tailings pond, tailings storage facility and process plant site drainage channels for mill process water for the Rock Creek Mine project
Temporary Water Use Authorization TWUP F2006-12	ADNR	Diversion of surface water from Rock Creek drainage diversion channels into Lindblom Creek to minimize drainage through the Rock Creek Mine site
Temporary Water Use Authorization TWUP F2006-13	ADNR	Withdrawal of groundwater from five interceptor wells surrounding the Big Hurrah Mine pit (pit dewatering)
Temporary Water Use Authorization TWUP F2006-14	ADNR	Withdrawal of surface water from the Little Hurrah Creek drainage within the Big Hurrah Mine pit (pit dewatering)
Temporary Certificate of Approval to Operate a Tailings Dam No. AK0039	ADNR	Reissued on December 31, 2009 as a temporary certificate to operate the TSF dam.
Compliance Order by Consent (COBC) No. 2009-0748-50-8078	ADEC	Establishes requirements for water management at the Rock Creek Mine through upgrading WTP treatment capacity and reducing water levels in the TSF.

In addition to the permits, approvals and authorizations listed in Table 2, AGC must comply with other state and federal laws including, but not limited to, state regulations regarding spill reporting, water quality standards, mining, reclamation and solid waste management, Resource Conservation and Recovery Act (RCRA), Emergency Planning and Community Right-to-Know Act (EPCRA), Toxic Substances Control Act (TSCA), Clean Air Act (CAA), and Clean Water Act (CWA).

2.4.1 WMP No. 2003-DB0051

ADEC issued WMP No. 2003-DB0051 to AGC on August 9, 2006. The WMP includes a requirement to submit quarterly and annual reports and regulates the following:

- Tailings disposal to the TSF at the Rock Creek Mine
- Inert solid waste disposal to solid waste landfill facilities at the Rock Creek Mine and Big Hurrah site
- Underground injection of treated mine wastewater at Rock Creek Mine and Big Hurrah site
- Groundwater and surface water monitoring at the Rock Creek Mine and Big Hurrah site
- Storage of potentially acid generating (PAG) development rock prior to disposal in the pit at closure at the Big Hurrah site
- Hazardous chemical storage and containment at the Rock Creek Mine and Big Hurrah site
- Reclamation and closure activities at the Rock Creek Mine and Big Hurrah site

The final TCP (February 20, 2009) was developed under the WMP and specifically addresses activities during the temporary closure period.

ADEC issued Compliance Order by Consent No. 2009-0748-50-8078 (COBC) to AGC to establish requirements for treatment and discharge of TSF water via the WTP and IWF.

ADEC approved AGC's request to commence treated water injection on May 15, 2009 and included a compliance schedule with modified effluent limits for certain parameters (antimony, arsenic, copper, manganese, and total dissolved solids [TDS]). The compliance schedule expired

on September 30, 2009, after which time the effluent limits in the UIC permit and WMP have applied.

2.4.2 RPA No. F20069578

ADNR (Division of Mining, Land and Water) issued RPA No. F20069578 for the Rock Creek Mine and Big Hurrah site to AGC on August 9, 2006. The RPA was issued in accordance with Alaska Statutes 27.19 (Reclamation) and 38.05 (Alaska Lands Act), and Alaska Administrative Code Title 11, Chapter 97 (Mining Reclamation). The RPA requires AGC to submit an annual report documenting the following activities:

- Financial assurances
- Review of geochemical characterization and water quality data
- Stockpiling of organic materials
- Geochemical characterization of development rock
- Waste rock handling
- Fuel and hazardous substance management
- Reclamation and mine closure
- Environmental audits

3.0 Rock Creek Mine Activities

Activities at the Rock Creek Mine in 2009 were directly related to the mine's Care and Maintenance status and consisted of TSF water management, WTP expansion and upgrade, IWF expansion, treated water injection, sump water land application, and maintenance of existing storm water diversion channels and best management practices (BMPs). These activities are discussed in the following sections.

3.1 Disturbance and Reclamation

Wetland and upland areas disturbed at the Rock Creek Mine during 2009 totaled 1.86 acres; no areas were reclaimed or replaced during 2009 (Table 3). The cumulative disturbed area, including disturbances prior to 2009, totals 417.86 acres with 5 upland acres reclaimed.

Table 3: Disturbed and Reclaimed Area

Year	Area (Acres)			
	Wetlands		Uplands	
	Disturbed	Replaced	Disturbed	Reclaimed
2008	0	0	42	5
Cumulative – End of 2008	241	0	139	5
Net Disturbance– End of 2008	**241**		**176**	
2009	0.92	0	0.94	0
Cumulative – End of 2009	241.92	0	139.94	5
Net Disturbance – End of 2009	**241.92**		**176.94**	

3.2 Development Rock Stockpiles

Development rock from the Rock Creek Mine was used entirely for construction activities; no stockpiles were constructed in 2009.

3.3 Organic Stockpiles

Approximately 32,070 cubic meters of organic and overburden material were excavated from the Rock Creek Mine site in 2009 and placed in Organic Stockpile 1, 2, or 3 for future use during reclamation activities (Table 4).

Table 4: Rock Creek Organic Stockpile Volumes

Description	Units	Stockpile #1	Stockpile #2	Stockpile #3	Total
Total Capacity	m^3	1,225,000	185,000	640,000	2,050,000
Total Volume End of 2008	m^3	487,482	40,962	625,793	1,294,237
End of 2008 Capacity Remaining	m^3	737,518	180,962	14,207	755,763
	%	60%	2%	2%	34%
Volume Placed – 2009	m^3	30,351	0	1,719	32,070
Total Volume End of 2009	m^3	517,833	180,962	627,512	1,326,307
End of 2009 Capacity Remaining	**m^3**	**707,167**	**4,038**	**12,488**	**723,693**
	%	**58%**	**2%**	**2%**	**35%**

3.4 Paste Tailings Storage Facility

ADNR issued a Certificate of Approval (No. AK00309) to AGC to operate the Rock Creek TSF dam on July 7, 2008. The State of Alaska suspended the Certificate in December 2008 when the Rock Creek Mine status was changed to Care and Maintenance. ADNR issued a Temporary Certificate of Approval to (No. AK00309) to AGC to operate the TSF dam on December 31, 2009.

In the fall of 2009, AGC buttressed the TSF to eliminate any potential slope stability concerns and installed an access ramp to the seepage reclaim area using the TSF design criteria. AGC also developed a *Dam Geotechnical Analysis and Investigation* work plan for 2009 and 2010. The work plan addresses the installation and monitoring of inclinometers, piezometers, thermistors and surface settlement monuments to verify the embankment is stable following buttress construction in 2009. AGC continues to collect TSF dam performance data to enhance the hydrologic understanding of the TSF and surrounding area.

3.5 Solid Waste Landfill

On September 7, 2009 AGC developed an inert materials landfill as permitted under the WMP. As of December 31, 2009 the inert landfill was approximately 75% full and must be compressed to accommodate more material before capping. Items discarded to the inert landfill during 2009 include:

- Vehicle track assemblies (6 sets)
- Rubber tracks from track vehicle (1 set)
- Miscellaneous undercarriage parts for tracked vehicles
- Rollers/idlers/pads/drive-gears/nuts and bolts
- Old pipe sections
- Old drill steel
- Scrap HDPE pipe pieces and plastic tubes from liner rolls
- Miscellaneous scrap iron pieces from truck shop and other mine locations

- Used grader and loader blades and wear parts from excavator buckets excavators
- Old steel culverts and newer galvanized culverts ranging from 10-inch to 60-inch crushed pieces
- Unusable sections from old equipment
- Hoods, cowlings, steel access parts and heavy steel parts from large equipment
- Wooden pallets containing miscellaneous parts

3.6 Inspections

AGC staff conduct weekly visual inspections of the TSF to identify any unusual conditions such as evidence of excessive deformation or crest cracking, embankment sloughing or deformation, erosion channel formation in the embankment slope, embankment toe erosion, and excessive seepage at the embankment toe or slope. Staff also record data from field monitoring instrumentation during the weekly inspection.

3.7 TSF Seepage Collection System

During 2009, AGC constructed a seepage collection system at the TSF dam's downstream toe consisting of flexible drain pipe backfilled with drain rock. The seepage collection sumps were lined with a geosynthetic clay liner (GCL), filled with drain rock and capped with GCL.

Water collected in the sump is conveyed by gravity to one of two collection sumps (Main and South). South Sump water is pumped to the Main Sump through a 3-inch insulated, heat-traced HDPE pipeline by a 7.5 hp submersible pump. Main Sump water is pumped by a 30 hp electric pump over the top of the TSF and back into the basin through a 6-inch seepage collection system consisting of a shallow ditch with perforated, heated and heat-traced HPDE pipeline. 2009 sump flow data are presented in Appendix D.

During TSF buttress construction, AGC recognized that a small portion of the seepage collection system was not performing as designed. AGC repaired the underperforming section, extending approximately 500 feet, by excavating the entire section and installing new drain pipe and drain rock; the repaired section now performs as designed.

3.8 Land Application

AGC submitted a proposal to ADEC on September 4, 2009 for authorization to land apply wastewater from the Main and South sumps to area A3 of the Rock Creek Mine site (Figure 4) using two Land Shark evaporator-sprayer units. AGC's proposal was based on the results and conclusions of a site-specific study that evaluated the technical feasibility and effectiveness of the land application disposal method.

The two Land Shark units were placed on a relatively flat bench approximately 2/3 up the A3 hillside. The larger unit emits a fine mist spray at a rate of 125 gpm while the smaller unit has a maximum capacity of 45 gpm. Each unit can rotate the spray direction 360 degrees. AGC conducted plumbing and electrical system testing using the smaller unit on September 23, 2009 and initiated full-scale wastewater land application on September 24, 2009 according to manufacturer specifications, established BMPs and operating procedures.

Initially, land application occurred only during daylight hours and only when the ambient air temperature was above 35 °F. The Land Shark units, however, proved to be more efficient at producing a very fine mist than anticipated and achieved notable evaporation even at relatively low temperatures (~40 °F). The actual spray field area was also larger than the original estimate and notably aided by higher wind speeds, which also increased the evaporation rate. Based on this information, ADEC modified the original approval and authorized land application during freezing conditions provided there is no appreciable accumulation of snow. Figure 5 shows a

picture of one Land Shark unit operating at 40 °F under an approximate wind speed of 10 to 20 miles per hour (mph).

According to the BMPs, the units and the spray field area were visually monitored every two hours at a minimum. Spray units were rotated as necessary to adjust the spray angle according to the wind speed and direction and if any significant deposition was observed. The AGC staff person conducting the visual inspection recorded the estimated wind speed and direction along with any findings regarding the piping, pumps, sprayers, and blower fans in a central log. This procedure was established to provide AGC staff with current information about any equipment malfunctions, such as broken pipes or power outages to the blower fans, and minimize the risk of uncontrolled runoff or discharge to the ditches and area streams.

AGC ceased land application for the season on October 25, 2009 when falling ambient temperatures led to accumulating snow in the spray field. Over 24 days of operation, the Land Shark units disposed of approximately 4.2 million gallons of wastewater to the A3 area (Table 5).

In summary, the Land Shark units operated reliably and without any significant incident or breakdown. The units were more efficient than anticipated at producing a very fine mist and achieving evaporation, especially at low temperatures below freezing. As required by the COBC, on November 25, 2009, AGC submitted to ADEC a final report on the land application system for 2009, including the results of visual and groundwater monitoring that showed no impacts on the surrounding environment.

Table 5: Daily Land Application Rates

Date	Operating Hours (*Minutes*)[a]	GPM	GPD
9/23/2009	12 (*720*)	60	43,200
9/24/2009	-	-	-
9/25/2009	-	-	-
9/26/2009	-	-	-
9/27/2009	12 (*720*)	210	151,200
9/28/2009	12 (*720*)	210	151,200
9/29/2009	24 (*1,440*)	210	302,400
9/30/2009	24 (*1,440*)	210	302,400
10/1/2009	24 (*1,440*)	210	302,400
10/2/2009	5 (*300*)	210	63,000
10/3/2009	-	-	-
10/4/2009	-	-	-
10/5/2009	-	-	-
10/6/2009	12 (*720*)	210	151,200
10/7/2009	12 (*720*)	210	151,200
10/8/2009	12 (*720*)	210	151,200
10/9/2009	12 (*720*)	210	151,200
10/10/2009	10 (*600*)	210	126,000
10/11/2009	3 (*180*)	210	37,800
10/12/2009	12 (*720*)	210	151,200
10/13/2009	12 (*720*)	210	151,200
10/14/2009	12 (*720*)	210	151,200

Date	Operating Hours (*Minutes*)[a]	GPM	GPD
10/15/2009	4 (*240*)	210	50,400
10/16/2009	12 (*720*)	210	151,200
10/17/2009	12 (*720*)	210	151,200
10/18/2009	12 (*720*)	210	151,200
10/19/2009	24 (*1,440*)	210	302,400
10/20/2009	22 (*1,320*)	210	277,200
10/21/2009	24 (*1,440*)	210	302,400
10/22/2009	24 (*1,440*)	210	302,400

[a] Land application initially restricted to days with above-freezing ambient air temperatures.

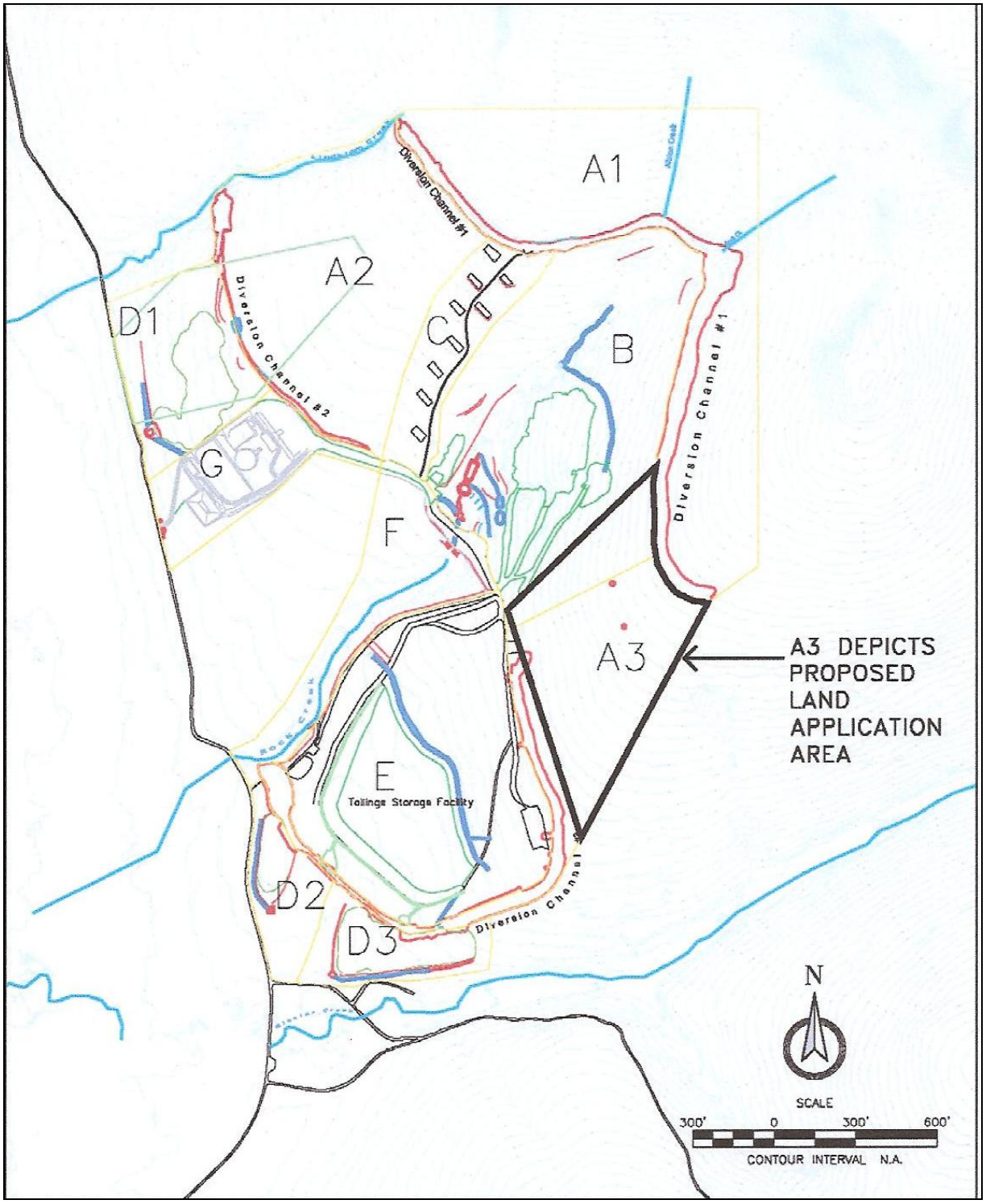

Figure 4: Land Application Area

Figure 5: Land Shark in Operation

3.9 Recycle Water Pond

The RWP is a synthetically lined retention pond designed to capture runoff from the plant site and TSF decant water. Over time, leaks were detected in the primary liner from small punctures. Rather than remove and reinstall the primary liner, AGC installed a secondary liner as an overlayment, with a leak collection recovery system (LCRS) placed in between. An additional synthetic underliner is installed below the primary and secondary liners. The interstitial water volume (between the primary and secondary liners) from the LCRS is continuously pumped back to the RWP, with total flow volumes recorded each day (Appendix B).

The LCRS leak rate design criteria is 492 gallons per day. Data show that, at some points during 2009, the recorded flow rate exceeded the design criteria. By the end of 2009, however, flow rates had returned to below the design criteria with no evidence of leakage through the liner system.

AGC conducts daily visual inspections of the RWP and liner systems, and routinely samples contained water for cyanide (total and WAD). Data show that water from the RWP is not adversely impacting groundwater quality in the immediate vicinity. As required by the Temporary Certificate to operate the TSF dam, AGC will conduct an engineering evaluation of the integrity of the RWP liner system in 2010.

4.0 Storm Water Management

AGC obtained initial coverage for construction-related storm water discharges at the Rock Creek Mine site in 2005 for both the Rock Creek and Big Hurrah sites under the Construction General Permit (CGP) issued by EPA-Region 10.[3] AGC developed a comprehensive SWPPP that specifies all BMPs (structural and non-structural) implemented at each location to control storm water runoff to surrounding streams, and continues to revise and update the SWPPP to reflect current conditions.[4]

[3] In January, 2010, ADEC issued a State of Alaska CGP under which AGC's storm water discharges are now covered.

[4] AGC provided an update of the SWPPP to ADEC and EPA in February, 2010.

All facilities planned under the mine's initial Plan of Operations have been constructed and no additional mine-related construction activities are anticipated at the Rock Creek Mine. With the exception of the topsoil stockpiles, all areas have achieved final stabilization. Some soil-disturbing activities continue at the site, but they are part of routine site maintenance rather than any long term construction activities.

Structural BMPs at the Rock Creek Mine include three diversion channels (DC-1, DC-2, and DC-3) to route storm water runoff, primarily during spring break-up, and limit sediment discharges from the site (Figure 6). During summer 2009, AGC conducted frequent turbidity sampling in Rock and Lindblom creeks to evaluate the need for additional sediment controls or improvements to existing structures. Elevated turbidity levels in Lindblom Creek downstream of the DC-1 and DC-2 outlets prompted AGC to develop plans to improve each diversion channel.

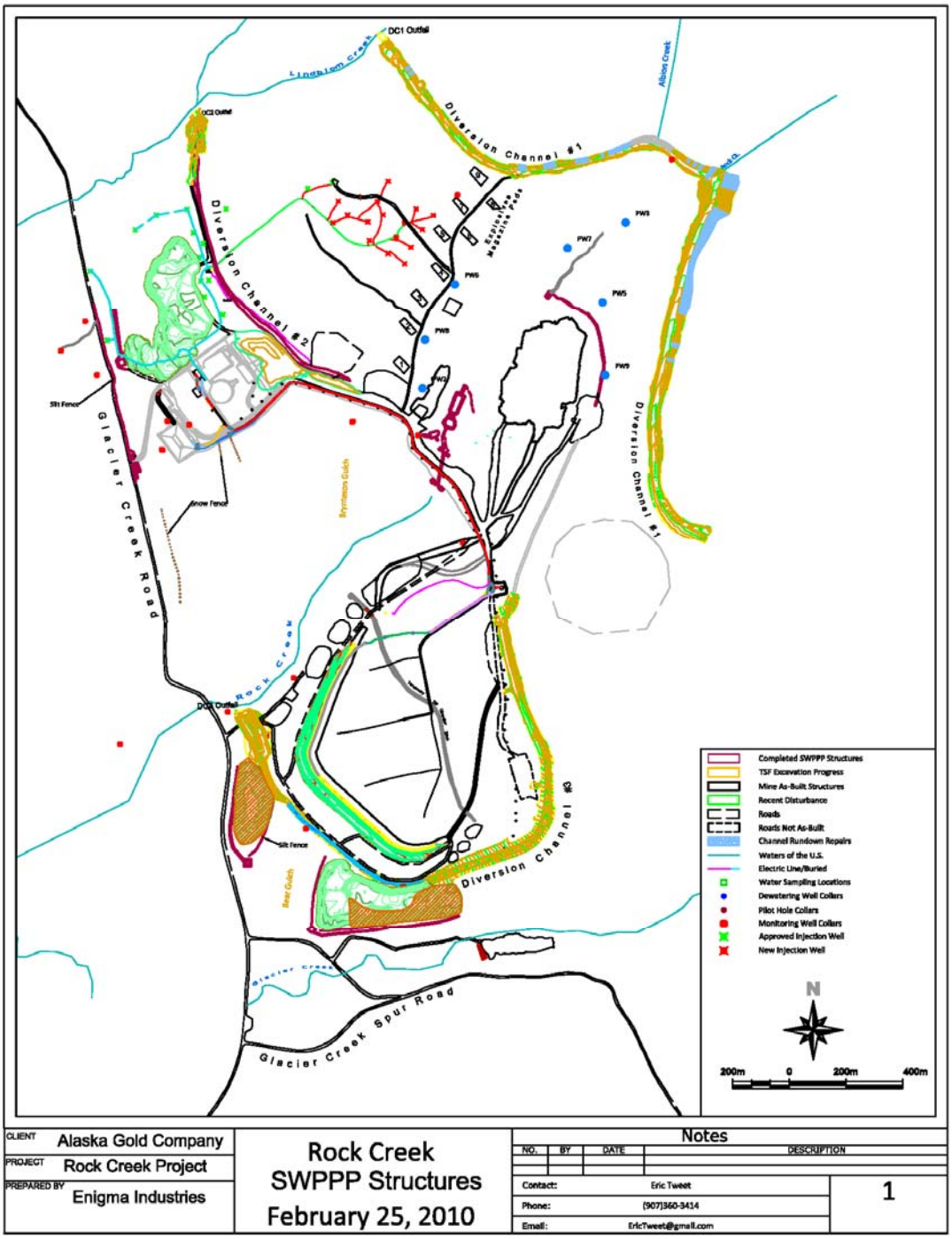

Figure 6: Rock Creek SWPPP Structures

4.1 Lindblom Creek

In August 2009, AGC contracted with Ecological Resource Consultants, Inc. (ERC) and HydroGeo, Inc. (HydroGeo) to evaluate improvement options for DC-1, including the need to incorporate additional rock protection along the channel. Based on contractor recommendations, AGC installed riprap in critical segments and installed rock runouts along unstable slopes upgradient of the channel. Hydroseeding was used to stabilize less critical areas in DC-1 and has

proven to be effective in minimizing sediment loadings along these segments. AGC also re-evaluated the design of the DC-1 outfall and completed a reconstruction project.

AGC installed riprap along the entire DC-2 channel due to upgradient slope instability and lined the sediment basin located immediately upstream from the DC-2 outfall to eliminate seepage. These improvements have significantly reduced sediment loadings to Lindblom Creek.

AGC believes that these improvements will continue to reduce turbidity levels in Lindblom Creek. AGC will continue to monitor their performance during spring through fall 2010. The SWPPP will be further modified, as appropriate, to identify and implement new/modified BMPs to control sediment loadings to Lindblom Creek.

4.2 Rock Creek

Turbidity levels in Rock Creek were lower during spring 2009 as compared to 2008, demonstrating the effectiveness of implemented BMPs and sediment controls. To further limit sediment loadings to Rock Creek, AGC hydroseeded both sides of DC-3's upper portion during fall 2009 and installed riprap on both sides of the channel's lower portion.

5.0 Water Treatment Plant

Rock Creek's WTP was commissioned on February 15, 2009 and is designed to remove metals from wastewater prior to disposal in the IWF. Treatment is achieved through chemical precipitation, oxidation, microfiltration, and pH adjustment.

Raw water is drawn from the TSF and pumped to the Raw Water Feed Tank prior to the treatment process. Once pumped from the Raw Water Feed Tank, wastewater goes through an ozone diffuser and ozone retention tank. Ozone oxidizes arsenic from its reduced state (As^{3+}) to the much more insoluble oxidized form (As^{5+}). Likewise, antimony is oxidized from its reduced state (Sb^{3+}) to its more insoluble form (Sb^{5+}). In their oxidized states, arsenic and antimony more readily bind with iron salts that are also added during the treatment process, creating a floc particle that can be removed during the filtration process. Manganese is removed by a similar process that aids oxidation and precipitation. An inline residual ozone analyzer continually monitors the downstream ozone concentration enabling AGC staff to modulate ozone production according to influent metals concentrations. In December 2009, the ozone system malfunctioned. Until repairs could be completed in January 2010, AGC used alternative methods to ensure the necessary oxidation required for metals removal. Hydrogen peroxide injection was used as a temporary measure until calcium hypochlorite could be procured, shipped to the site, and added to the treatment system.

Following oxidation, hydrochloric acid is added to the raw water to reduce the pH balance to the optimal range of 4.0 to 5.0, which aids the coagulation process. Water is then sent to the plate clarifiers for primary removal of coagulated arsenic and antimony prior to membrane filtration. This process consistently removes approximately 90 percent of all coagulated arsenic and antimony prior to membrane filtration stage. Water from the plate clarifiers is sent to a reaction tank where it is chemically treated in preparation for membrane filtration.

After secondary chemical addition, the water enters the membrane filter skid assembly. This treatment skid consists of a small buffering feed tank, feed pump, membrane filter modules, a reverse filtration supply tank and reverse filtration pump. An air compressor is also located near the filter skid to supply compressed air to the membranes during the reverse filtration cycle. The membranes have a fixed pore size that only allows smaller particles through, retaining the larger particles on the outside of the filter. The larger coagulated arsenic and antimony particles and many other possible contaminants cannot pass through the filter.

Filtered water from the microfiltration process is pumped to the treated water storage tank. When the water level in the treated water storage tank reaches the high water level, reinjection pumps turn on and pump water into one of the injection wells.

Through agreements with ADEC contained in the COBC, AGC agreed to meet certain benchmarks to improve WTP treatment performance and comply with all applicable WTP effluent limitations in the WMP. AGC agreed to upgrade WTP treatment capacity so that it was capable of operating at a design capacity of 500 gpm by November 1, 2009, with a specific requirement to inject water at a minimum monthly average rate of 400 gpm after November 15, 2009. Pursuant to the COBC and related agreements, AGC implemented the following changes to the WTP:

- Switched reagents from ferrous sulfate to ferric chloride to enhance metals treatment and improve solids management
- Installed a larger reaction tank and associated pumping and piping capacity to meet the increased design flow requirement
- Improved plant automation to ensure the WTP continuously operates within established operating parameters for metals removal
- Continually monitored WTP performance and modified treatment processes as needed

AGC has complied with all agreements and requirements of the COBC, resulting in significant reductions in the TSF water elevation.

6.0 Injection Well Field

The Rock Creek Mine IWF is developed and operated as authorized by UIC Permit No. AK-5X27-001-A, issued by EPA-Region 10. The IWF is also regulated by ADEC WMP No. 2003-DB0051, which incorporates many of the same conditions as the UIC permit.

ADEC authorized AGC to commence underground injection on May 15, 2009 and included a compliance schedule with modified effluent limits for certain parameters (antimony, arsenic, copper, manganese, and total dissolved solids). The compliance schedule expired on September 30, 2009 after which time the effluent limits in the UIC permit and WMP have applied.

For the temporary closure period, the IWF was developed to dewater the TSF and reduce the water elevation behind the TSF dam to an acceptable level. AGC has operated the IWF since May 2009 when injection was initiated with the original 15 wells at an operating capacity of approximately 220-250 gpm. The initial capacity, however, was insufficient to dewater the TSF at an acceptable rate. In fall 2009, AGC developed additional injection wells by drilling 20 boreholes in an area above the existing IWF. Of these 20 boreholes, 15 were deemed acceptable and incorporated into the UIC and WMP permits. Referred to as the upper IWF, the new wells have increased Rock Creek's injection capacity to 500 gpm when combined with the lower IWF (Figure 7).

Both the lower and upper IWFs are serviced by pipeline from the WTP. During IWF construction the pipeline was insulated and heat-traced, while each well head was enclosed within a small shed to improve winter access.

As noted in Section 5.0, agreements contained in the COBC require AGC to inject water at a minimum monthly average rate of 400 gpm commencing after November 15, 2009 until the TSF pond elevation reaches 140 feet. This minimum rate requirement was met during the second half of November and for the month of December 2010. At the end of 2009, wastewater from the WTP was being injected in the IWF at an average rate of 421 gpm. Injection data for 2009 are presented in Appendix C.

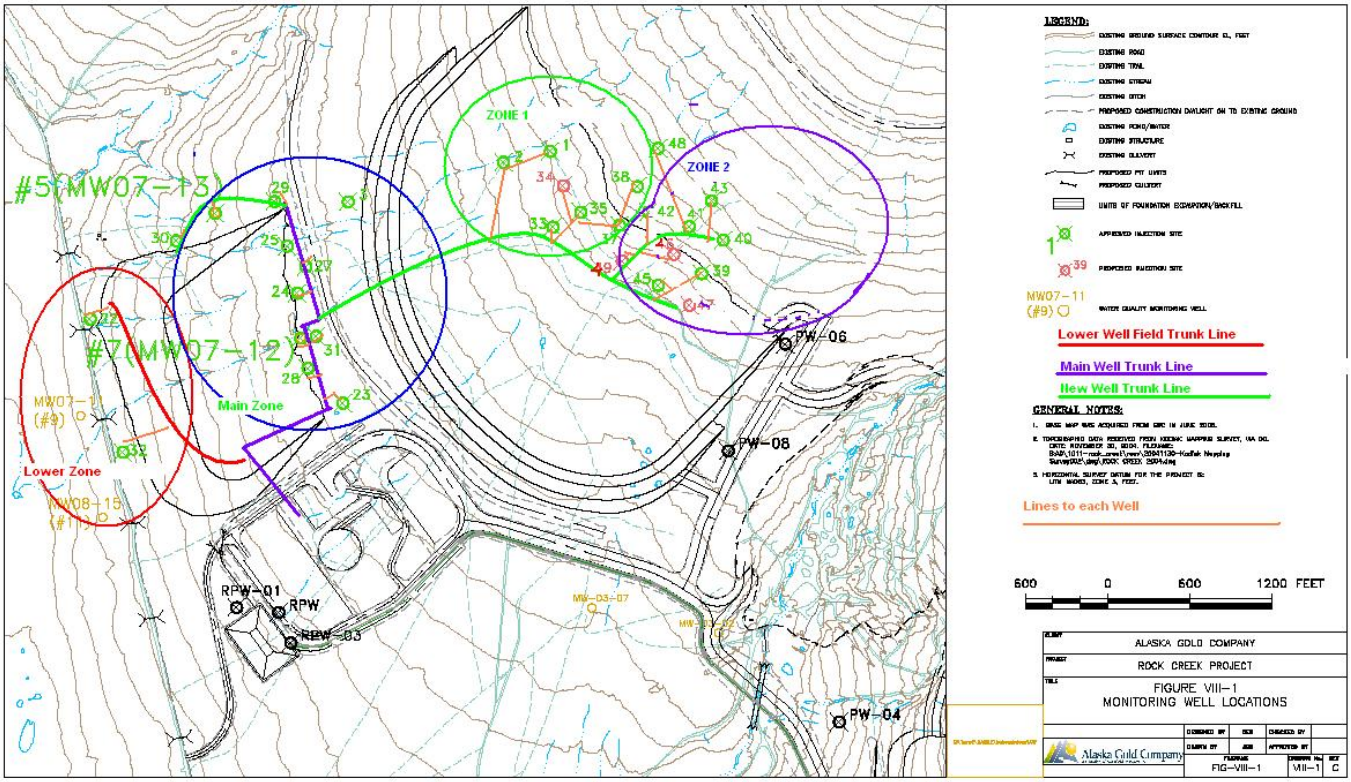

Figure 7: Injection Well Fields

7.0 Reportable Spills

There were three reportable spills at the Rock Creek Mine in 2009 (Table 6). The substances spilled were related to construction and maintenance activities, and included untreated water, hydrochloric acid, and engine oil. All spills were reported and cleaned up immediately in accordance with applicable regulations and AGC standard practices. Corrective actions were taken as appropriate to minimize the potential for any recurrence.

Table 6: Reportable Spills

Item Spilled	Date	Potential Responsible Party	Location	Quantity	Cause
Untreated Water	2/28/2009	Alaska Gold Company	Rock Creek	1500 gallons	Water escaped from raw water tank in WTP
Hydrochloric Acid	6/3/2009	Alaska Gold Company	Rock Creek	250 gallons	Broken valve on tote container caused by contact with another tote
Engine Oil	12/18/2009	Alaska Gold Company	Rock Creek	5 gallons	Leaking oil filter on Hitachi haul truck

8.0 Monitoring (Analytical)

AGC conducts a range of analytical monitoring activities to demonstrate compliance with WMP No. 2003-DB0051 and UIC Permit No. AK-5X27-001-A by sampling various water sources, development rock, and paste tailings. Because the Rock Creek Mine was in Care and Maintenance status during 2009, analytical monitoring focused almost entirely on water sources. The specific monitoring requirements and sampling frequencies are contained in the Rock Creek Monitoring Plan (November 2008) and the final TCP (February 20, 2009).

The analytical monitoring program for water is divided into four separate categories: contained, ground, surface, and treated water. Each category is discussed in more detail below. In addition to required sampling events, Tetra Tech, a subcontractor overseeing upgrades to the WTP, collected multiple water samples from various points in the treatment process to optimize WTP performance. These additional samples are not subject to specific compliance requirements but are available for review upon request.

With the exception of some conventional parameters analyzed in the field by AGC staff (e.g., pH, temperature, turbidity), all water chemistry samples are analyzed by a contract laboratory (SGS Environmental Services Inc.) in Anchorage for priority pollutants (Table 7). SGS also analyzes periodic samples for turbidity that are collected as part of AGC's QA/QC program.

Analytical data for samples collected from Rock Creek and Big Hurrah monitoring locations are reported in appendices A1–A34. These appendices are abridged to display only data with applicable water quality standards or permit limits, and are further limited to parameters for which at least one detectable result was observed during 2009. Complete analytical data are available from AGC.

Table 7: Water Chemistry Parameters

Parameter	Ground Water	Surface Water	Contained Water	Treated Water
Aluminum*	X	X	X	X
Antimony*	X	X	X	X
Arsenic*	X	X	X	X
Barium*	X	X	X	X
Beryllium*	X	X	X	X
Cadmium*	X	X	X	X
Calcium*	X	X	X	X
Chromium*	X	X	X	X
Cobalt*	X	X	X	X
Copper*	X	X	X	X
Iron*	X	X	X	X
Lead*	X	X	X	X
Magnesium*	X	X	X	X
Manganese*	X	X	X	X
Molybdenum*	X	X	X	X
Nickel*	X	X	X	X
Phosphorus*	X	X	X	X
Potassium*	X	X	X	X
Selenium*	X	X	X	X
Silicon*	X	X	X	X
Silver*	X	X	X	X
Sodium*	X	X	X	X
Strontium*	X	X	X	X
Thallium*	X	X	X	X
Tin*	X	X	X	X
Titanium*	X	X	X	X
Vanadium*	X	X	X	X
Zinc*	X	X	X	X
pH	X	X	X	X
Conductivity	X	X	X	X
Total Dissolved Solids	X	X	X	X
Alkalinity	X	X	X	X
Ammonia-N	X	X	X	
Chloride	X	X	X	X
Fluoride	X	X	X	X

Parameter	Ground Water	Surface Water	Contained Water	Treated Water
Sulfate	X	X	X	X
Sulfide	X			
Cyanide (total)	X	X	X	X
Cyanide (WAD)	X	X	X	X
Mercury	X	X	X	
Total Suspended Solids	X	X	X	
Nitrate/Nitrite-N	X	X	X	X
*Metals analyzed for total and dissolved concentrations				

8.1 Contained Water

Contained water sampling is conducted on a monthly basis and includes sampling of the TSF Pond, RWP, South Sump, Main Sump, Main Pit Lake, and RWP Underliner (Figure 8). TSF Pond, South Sump and Main Sump samples are used to monitor water quality in the TSF water management system while the RWP and RWP Underliner samples are used to evaluate the integrity of the RWP system. AGC is not required to monitor the Main Pit Lake, but collects monthly samples of the pit water to establish background chemistry of storm water runoff from the pit surfaces.

There are no contained water systems at the Big Hurrah site.

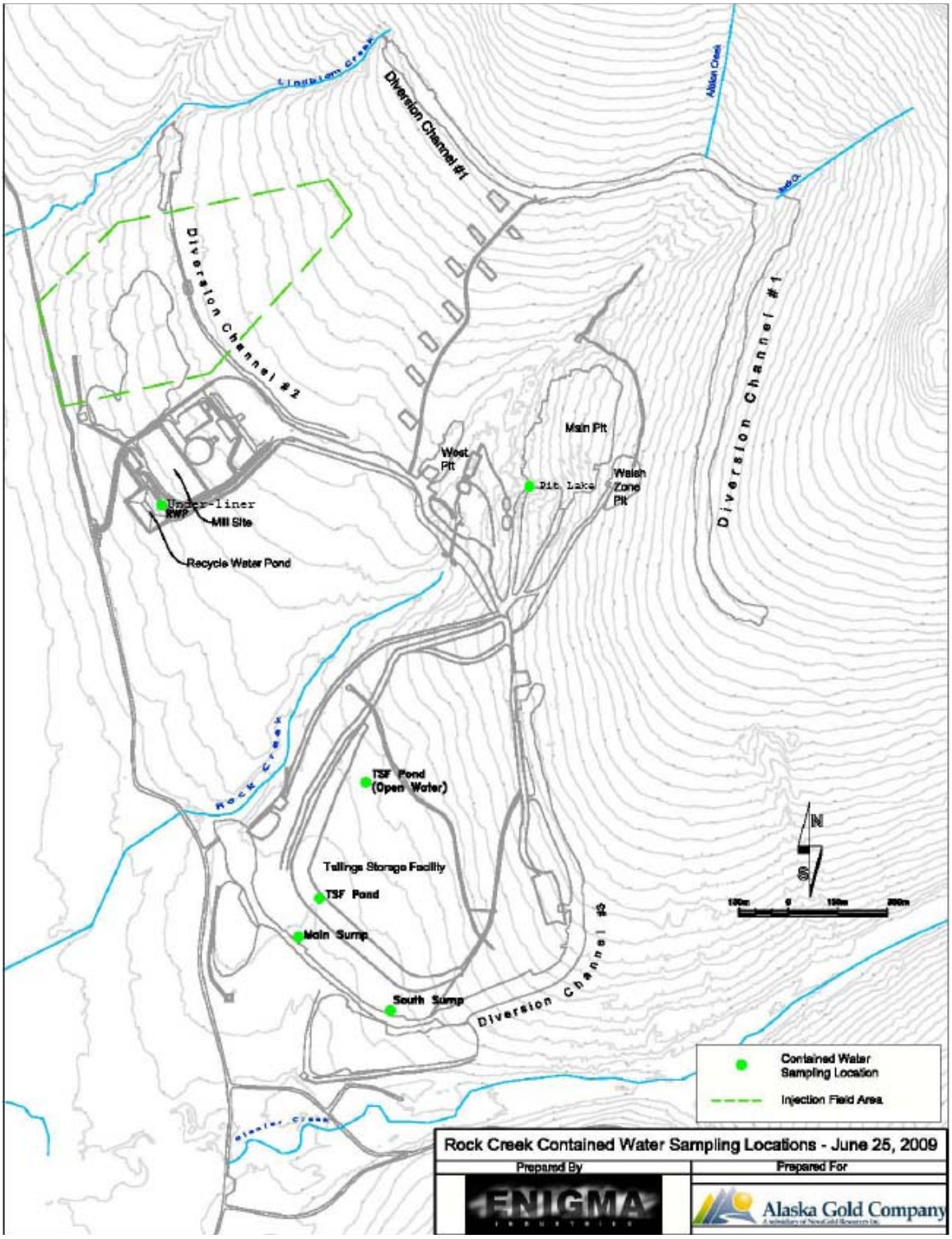

Figure 8: Contained Water Sampling Locations

8.1.1 Tailings Storage Facility

The TSF Pond is sampled monthly. Under ice-free conditions, samples are collected directly from the TSF Pond. When ambient temperatures result in pond freeze-over, samples are collected from the TSF recirculation loop located in the pump conex on top of the TSF dam. Samples collected from the TSF are not subject to limitations in the WMP. These data are used primarily to evaluate

any trends in the influent concentrations to WTP and plan accordingly for any necessary operational changes to the WTP processes.

Analytical data for TSF dam and pond monitoring samples are reported in Appendix A1.

8.1.2 Recycle Water Pond

Water from the RWP and RWP Underliner are sampled monthly. RWP samples are collected from ports on the recirculation loop immediately above the pond culverts. Samples are collected from the RWP Underliner to determine the amount of RWP water, if any, that is potentially reaching groundwater through breaches in the primary and secondary liners. The LCRS, installed between the primary and secondary liners, is designed to collect small leakage volumes from between the liners and pump it back to the RWP before reaching the RWP Underliner. The RWP Underliner pump was not sampled in November or December because it was frozen.

When the RWP was emptied in the spring, the pump culverts sustained considerable damage from the cumulative weight of the remaining ice; no damage to the liner system was observed during a subsequent inspection.

During the spring break up and again at the end of the year, groundwater levels rose above the 123-foot elevation mark, which is the maximum elevation of the primary liner membrane that was placed over the RWP sump area. When the water table exceeds this elevation, groundwater is able to infiltrate between the primary and secondary liners. The RPW#2 and RWP Underliner pumps can mitigate this seasonal water table rise, although both pumps experienced maintenance problems for extended periods. Repairs to each pump were completed in December 2009, with the LCRS flow rate decreasing notably in response; flow rates continue to be below the acceptable leak design rate criteria.

Water contained in the RWP may not exceed WAD cyanide levels of 25 mg/L for any one sample, nor may the 90th percentile of all samples exceed 10 mg/L (WMP Section 1.2.4). All RWP samples showed WAD cyanide levels well below this requirement (Figure 9). Samples collected from the RWP Underliner were also well below the permit limits (Figure 10). A single sample of the RWP sludge analyzed for WAD cyanide collected on October 12, 2009 showed a concentration of 0.11 mg/L. A comparison of RWP and RWP Underliner analytical data demonstrate that RWP water is not breaching the liner system or adversely impacting groundwater quality, despite the concerns over groundwater infiltration discussed above.

Analytical data for RWP and RWP Underliner monitoring samples are reported in appendices A2 and A3. No adverse trends were identified.

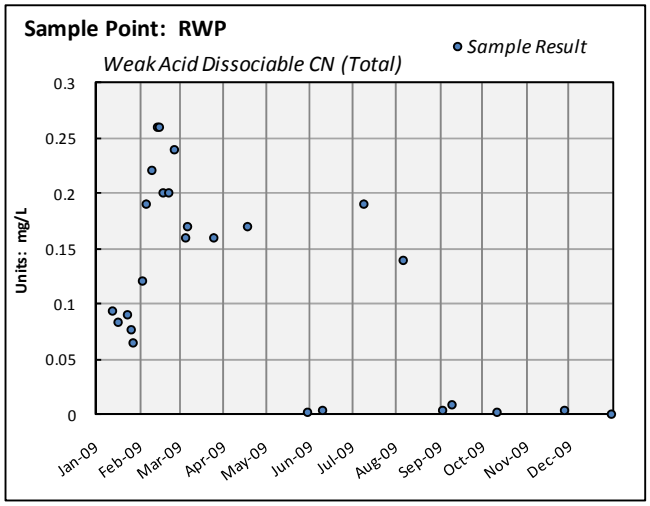

Figure 9: RWP WAD Cyanide

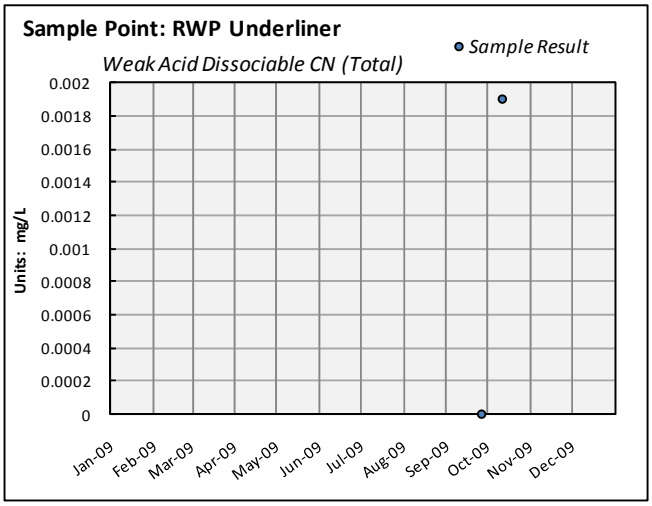

Figure 10: RWP Underliner WAD Cyanide

8.1.3 TSF Seepage Collection System

The TSF seepage collection system includes the South Sump and Main Sump below the TSF Dam. Water is recycled to the TSF from the Main Sump only; South Sump water is pumped to the Main Sump. Both sumps are sampled on a monthly basis directly from the sump culverts using bailers.

Water recycled to the TSF may not exceed a WAD cyanide level of 25 mg/L for any one sample, nor may the 90th percentile of all samples exceed 10 mg/L (WMP Section 1.2.4). Water samples collected from the Main Sump have routinely shown WAD cyanide concentrations well below the permit limits (Figure 11). There are no other permit limits that apply to the sump water.

Analytical data for Main Sump and South Sump monitoring samples are reported in appendices A4 and A5. These data are primarily used to monitor their input to the TSF, and thereby project potential changes in TSF water chemistry that could affect WTP treatment performance.

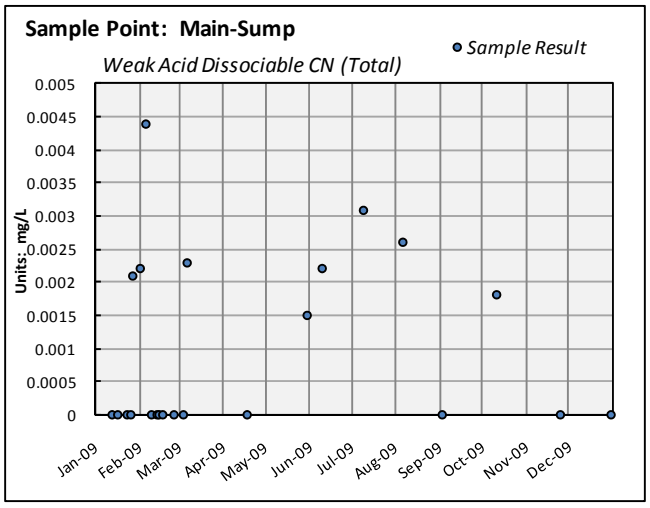

Figure 11: RWP WAD Cyanide

8.1.4 Pit Lake

No mining activities occur in the main pit nor is the pit actively dewatered during the temporary closure period. Instead, the main pit has been allowed to fill with storm water runoff creating a pit lake. There are no requirements to actively monitor the pit lake during temporary closure, but AGC has continued to collect monthly samples directly from the lake during periods of open water to continue documenting the quality of storm water that comes in contact with the pit. The pit lake was sampled on a monthly basis directly from the lake during periods of open water (June through October 2009); the pit lake was frozen over during other months.

Analytical data for Main Pit Lake monitoring samples are reported in Appendix A6. AGC also continues to monitor water levels in the Main Pit Lake. As of December 2009, the water levels continue to decrease; there is, therefore, no anticipated need to actively pump water from the pit at this time.

8.2 Surface Water

Surface waters at the Rock Creek Mine and Big Hurrah site are sampled monthly during periods of open flow. In addition, 3 regional surface water samples are collected in the vicinity of the Rock Creek Mine each quarter during periods of open water.

8.2.1 Rock Creek Mine

Surface water samples are collected monthly upstream and downstream from the points at which DC-1 and DC-2 discharge to Lindblom Creek, and where DC-3 discharges to Rock Creek. Regional surface water samples are also collected quarterly on the Snake River (above the mine and at Teller Bridge) and on Glacier Creek (Table 8). These sample points are modified from previous years to reflect changes in the TCP. Samples are collected only when open water is present in the creek bed. Monthly surface water samples were collected on Lindblom and Rock creeks from June through October during 2009, while samples were collected on the Snake River and Glacier Creek in the second and third quarters during 2009 (June and September); surface waters were frozen at all other times during the year.

Table 8: Surface Water Sampling Locations at Rock Creek

Sample ID	Location	Description
SABC	Snake River above Balto Creek	Snake River above mine site
SRTB	Snake River	Snake River at Teller Bridge
GLAC	Glacier Creek	Above gravel trail crossing above bridge
DC1-Upstream	Lindblom Creek	Upstream of the DC-1 outlet
DC1-Downstream	Lindblom Creek	Downstream of the DC-1 outlet
DC2-Upstream	Lindblom Creek	Upstream of the DC-2 outlet
DC2-Downstream	Lindblom Creek	Downstream of the DC-2 outlet
DC3-Upstream	Rock Creek	Upstream of the DC-3 outlet
DC3-Downstream	Rock Creek	Downstream of the DC-3 outlet

All analytical data collected from the Snake River (SABC and SRTB) and Glacier Creek (GLAC) in 2009 showed pollutants below applicable water quality standards.

During 2009, analytical samples collected from downstream locations within Rock and Lindblom creeks consistently met water quality standards for all pollutants except aluminum, arsenic, and iron. A summary of observed downstream exceedances for these pollutants is presented in Table 9 along with a summary of upstream and outfall exceedances. AGC notes that elevated levels

observed at upstream locations demonstrate naturally high background levels present in Rock and Lindblom creeks.

Table 9: Surface Water Summary

Sample Location			# of Observed Exceedances	
			Aluminum	Arsenic
Lindblom Creek	DC-1	*Upstream*	*2*	*2*
		Outfall		*3*
		Downstream		3
	DC-2	*Upstream*	*1*	*5*
		Outfall	*2*	*6*
		Downstream	2	6
Rock Creek	DC-3	*Upstream*		*5*
		Outfall	*1*	*6*
		Downstream		5

Aluminum

Aluminum is commonly found in soils in the Snake River valley and can be detected at elevated levels in surface water samples when sediments are suspended during periods of high flow or disturbance. AGC observed 2 downstream exceedances of the total aluminum water quality standard (87 ug/L) in Lindblom Creek (DC-2), although in each case total suspended solids (TSS) levels were also elevated (Table 10). No trend has been observed indicating DC-2 is causing aluminum loadings beyond natural conditions.

Due to staff oversight, AGC neglected to report aluminum exceedances to ADEC as required by WMP Section 1.10.3. Reporting procedures have been modified to ensure full compliance with all permit requirements.

Table 10: Downstream Aluminum Exceedances

Date	Upstream		Downstream	
	Al (ug/L)	TSS (mg/L)	Al (ug/L)	TSS (mg/L)
6/23/2009	389	16.9	283	17.3
8/13/2009	15.8	0.503	92.8	2.7

Arsenic

Arsenic is naturally present at elevated levels throughout the Snake River valley, indicated by the fact that nearly all samples collected during 2009, including those from upstream locations, showed concentrations above the water quality standard (10 ug/L). SRK Consulting conducted a natural condition analysis verifying the ubiquitous nature of arsenic in the Rock Creek vicinity (SRK 2008). AGC notes that there are no trends showing that the mine is causing any elevation of arsenic levels beyond naturally occurring conditions in the area. Further, it is important recognize that both Lindblom and Rock creeks support little aquatic life and are not appropriate for water supply use (based on naturally occurring metals levels). As noted above, no exceedances have been observed in Glacier Creek or the Snake River. The mine, therefore, has had no adverse impacts on surface water or associated natural resources.

AGC reported arsenic exceedances to ADEC by memo dated July 24, 2009 in which background arsenic levels were discussed. Additional exceedances that were the result of natural conditions and consistent with the SRK analysis were not reported to ADEC. Note that, as indicated in Section 4.0, AGC undertook significant improvements to the diversion channels during 2009.

These improvements will primarily serve to reduce suspended solid loadings to the streams. AGC will continue to monitor the streams to assess whether there are also reductions in metals levels.

Analytical data for samples collected from Rock Creek surface water locations are reported in appendices A7–A18. These appendices are abridged to display only data with applicable water quality standards or permit limits, and are further limited to parameters for which at least one detectable result was observed during 2009.

8.2.2 Big Hurrah

Surface water is monitored at 6 locations on and around the Big Hurrah site (Table 11). Complete analytical data of all samples collected from Big Hurrah surface water locations are reported in Appendices A19–A24. No adverse trends were identified.

Table 11: Surface Water Sampling Locations at Big Hurrah

Sample ID	Location	Description
BHBL	Lower Big Hurrah Creek	Big Hurrah Creek below mine site
BHRU	Upper Big Hurrah Creek	Big Hurrah Creek above mine site
HUFF	Huff Creek	Huff Creek tributary to Big Hurrah Creek above mine site
LHRL	Lower Little Hurrah Creek	Mouth of Little Hurrah Creek below proposed pit
LHRU	Upper Little Hurrah Creek	Little Hurrah Creek above proposed pit
LIDA	Linda Vista Creek	Linda Vista Creek tributary to Big Hurrah below mine site

8.3 Groundwater

AGC's groundwater monitoring program was developed to determine whether TSF seepage, if any, or injection to the IWF contribute to a significant increase in constituents of concern (COC) concentrations or exceedances of applicable water quality standards. Additional wells are monitored downgradient of the RWP to identify leaks and below the Rock Creek Mine to identify broad changes to groundwater chemistry from the entire site (Table 12). Monitoring wells designated as "A" or "B" refer to deep and shallow collection points for the same well.

Groundwater samples are collected monthly from each well. Standing water is purged from the well before a water sample is collected. Monitoring well MW08-14B did not have a purge pump installed until December 2009. This well was sampled in October and November using a 3-foot bailer.

No groundwater monitoring was conducted at Big Hurrah during the 2009 season.

Table 12: Rock Creek Ground Water Sample Locations

Well Sample ID	Location	Description
MW03-05	Above Rock Creek Culvert	Background Monitoring Well
MW06-08A,B	South TSF dam/South of south sump	TSF Monitoring Well
MW06-09A,B	West TSF dam/West of main sump	TSF Monitoring Well
MW06-10A,B	Between North TSF and Rock Creek	TSF Monitoring Well
MW07-11	South of Injection Well Field	Down gradient of Injection Well Field
MW08-14A,B	South of Recycle Water Pond	Down gradient of Recycle Water Pond
MW08-15	South of Injection Well Field	Down gradient of Injection Well Field

8.3.1 TSF Monitoring Wells

There are 6 groundwater sampling points downgradient of the TSF: MW06-08A/B; MW06-09A/B; and MW06-10A/B. Samples are collected from each sample point monthly as specified in the TCP (TCP Table D.1). Throughout 2009, wells MW06-08B and MW06-10B were dry; samples, therefore, were not collected at those points.

The TCP incorporates specific action levels for key parameters in the groundwater that account for the natural conditions around the Rock Creek Mine (Table 13). These action levels, supported by an analysis by SRK Consulting (SRK 2008a), were based on an initial assessment of background COC concentrations and were intended to assess whether TSF seepage is reaching the wells. When either the action level or the water quality standard is exceeded, AGC must initiate corrective actions and monitoring to address any water quality issues (WMP 1.2.10 and 1.10.3).

Table 13: TSF Monitoring Well Action Levels

Parameter	Units	Alaska WQS	MW06-08A	MW06-08B	MW06-09A	MW06-09B	MW06-10A
Antimony	µg/L	6	1.0	1.0	1.0	1.0	6.0
Arsenic	µg/L	10	[a]	[a]	[a]	[a]	[a]
Copper[b]	µg/L	12.4	1.5	1.5	1.5	1.5	1.5
Cyanide, WAD	µg/L	5.2	5.2	5.2	5.2	5.2	5.2
Manganese	µg/L	50	[a]	[a]	[a]	[a]	[a]
Molybdenum	µg/L	10	10.0	10.0	10.0	10.0	10.0
Nickel[b]	µg/L	71.7	5.0	5.0	5.0	5.0	5.0
Nitrate + Nitrite as N	mg/L	10	0.10	0.10	0.10	0.10	0.10
Potassium	mg/L	[c]	0.60	0.50	0.90	0.70	0.80
Sodium	mg/L	[c]	4.0	3.0	5.5	4.0	4.0
Sulfate	mg/L	250	50	30	50	50	30
Total Dissolved Solids	mg/L	500	350	200	350	300	300

[a] Action levels were not explicitly established in the TCP for arsenic and manganese; the default action level is the WQS for each.
[b] Hardness-dependent WQS for copper and nickel are shown here using the lowest observed hardness value (146 mg/L as CaCO3) in the six sample points.
[c] No applicable WQS.
WQS = Water Quality Standard

Sampling data from the TSF monitoring wells have shown elevated levels of key constituents above the applicable water quality standards (Table 14**Error! Reference source not found.**). Arsenic, for example, was present at elevated levels in nearly every sample collected at each sample point (Figure 12).

Table 14: TSF Monitoring Well Summary

Parameter	MW06-08A		MW06-09A		MW06-09B		MW06-10A	
	# Times Exceeding:		*# Times Exceeding:*		*# Times Exceeding:*		*# Times Exceeding:*	
	WQS	TCP Action Level	WQS	TCP Action Level	WQS	TCP Action Level	WQS	TCP Action Level
Antimony	-	4	-	-	-	1	-	-
Arsenic	22	-	24	-	30	-	24	-
Copper	-	-	-	-	-	-	1	-
Manganese	6	-	1	-	29	-	-	-
Nickel	-	-	-	-	-	5	-	-
Potassium	-	-	-	23	-	29	-	8
Sodium	-	-	-	23	-	18	-	-
Sulfate	-	-	-	-	-	14	-	4
Total Dissolved Solids	-	-	-	-	-	9	-	-
Total Nitrate/Nitrite	-	-	-	-	-	5	-	-

WQS = water quality standard
Monitoring wells MW06-08B and MW06-10B were dry throughout 2009; no samples collected.

As required under WMP Section 1.2.10, AGC implemented a corrective and investigative action plan consisting of accelerated monitoring and further statistical analysis. This plan is designed to more accurately determine the extent to which observed exceedances in the TSF monitoring wells are the result of natural background conditions rather than any influence from the TSF, and whether there have been any adverse impacts to groundwater. AGC notes that the TSF has received only a small volume of tailings during the limited operating period, with no tailings placed in the TSF since 2008.

Tetra Tech, Inc., under contract to AGC, conducted a detailed statistical analysis of baseline conditions for each well. Contrary to the 2008 SRK analysis, which aggregated groundwater data from all TSF monitoring wells, Tetra Tech's study reviewed data for each well individually to account for the potential differences in geochemistry and hydrology at each location. The resulting analysis demonstrated the strong influence of background groundwater concentrations on the observed exceedances in each well. In fact, nearly all sample results from the TSF wells, when considered against the more accurate natural conditions for each well, are well within normal ranges for the Snake River valley.

AGC submitted the detailed results of the Tetra Tech study to ADEC on April 27, 2010. This submittal proposes specific trigger levels for each well based on the higher of water quality standard or the well-specific background level. In the future, AGC would only perform further corrective action beyond monitoring when these levels have been exceeded.

Analytical data for TSF monitoring well samples are reported in Appendices A25–A28.

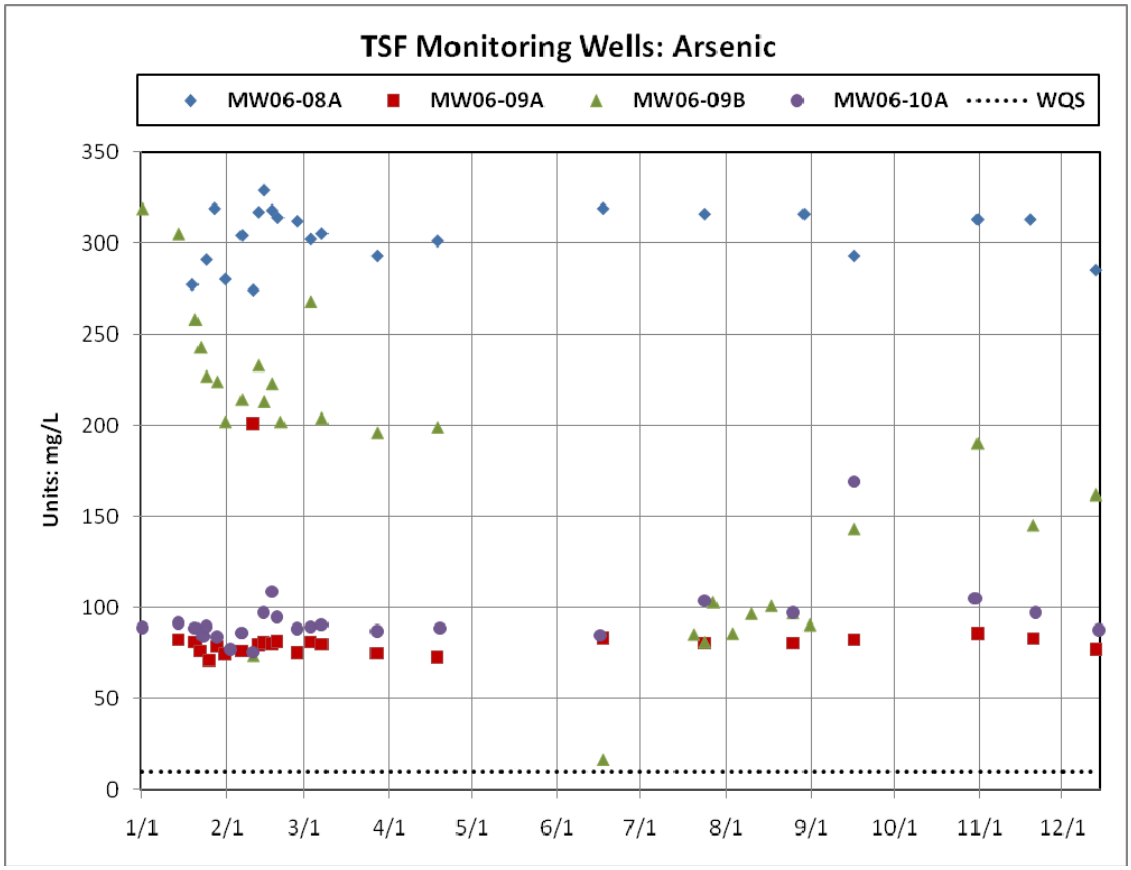

Figure 12: Arsenic Sample Data (TSF Monitoring Wells)

8.3.2 RWP Monitoring Wells

There is one shallow and one deep ground water monitoring well downgradient of the RWP (MW08-14A and 14B). These locations are monitored to identify possible leaks from the RWP and RWP Underliner.

Analytical data for RWP monitoring well samples are reported in Appendices A29–A30. No adverse trends were identified in the well data for 2009.

8.3.3 IWF Monitoring Wells

Two monitoring wells are located downgradient of the lower injection well field. Both wells are converted injection test wells completed in bedrock and are located along the west side of the Glacier Creek Road, north of the mine entrance gate. Well MW07-11 is located to the north of well MW08-15A. Analytical samples were collected monthly from both IWF monitoring wells beginning in June 2009 following the start of injection to the IWF on May 15, 2009.

Unlike the TSF, the TCP does not include specific action levels for the IWF. In 2009, sample results showed elevated levels above water quality standards for several constituents, notably antimony and arsenic (Table 15).

Table 15: IWF Monitoring Well Summary

Well ID	# Times Exceeding WQS					
	Aluminum	Antimony	Arsenic	Iron	Manganese	Zinc
MW07-11	-	7	8	-	-	4
MW08-15A	3	-	3	2	2	-

As required under WMP Section 1.2.10, AGC implemented a corrective and investigative action plan consisting of accelerated monitoring and further statistical analysis to more accurately determine the extent to which observed exceedances in the IWF monitoring wells are the result of natural background conditions rather than any influence from injection. Tetra Tech, under contract to AGC, conducted a detailed analysis of IWF groundwater data and concluded that, with the exception of antimony, the observed water quality standard exceedances in Table 15 were the result of natural background concentrations present in the groundwater rather than any influence from injection.

Antimony levels in MW 07-11 steadily rose after injection began, reaching a maximum level of approximately 25 ug/L during September 2009. Subsequently, antimony levels have declined after AGC completed upgrades to the WTP that improved metals removal (Figure 13). In fact, the antimony level in the WTP effluent was consistently below 6 ug/L during the last quarter of 2009. AGC will continue to monitor the antimony level in MW07-11 during 2010 to evaluate whether it continues to decline toward the water quality standard (6 ug/L).

AGC submitted the detailed results of the Tetra Tech study to ADEC on April 27, 2010 along with a proposal to adopt trigger levels for monitoring well MW07-11 that reflect natural conditions.

There is insufficient background data to establish background-based trigger levels for monitoring well MW08-15A. As noted above, WTP effluent levels for the parameters listed in Table 13 are now consistently below water quality standards. During 2010, AGC will continue to review the data from MW08-15A to determine whether there are any detectable changes in water quality over time.

Analytical data for IWF monitoring well samples are reported in Appendices A31–A32.

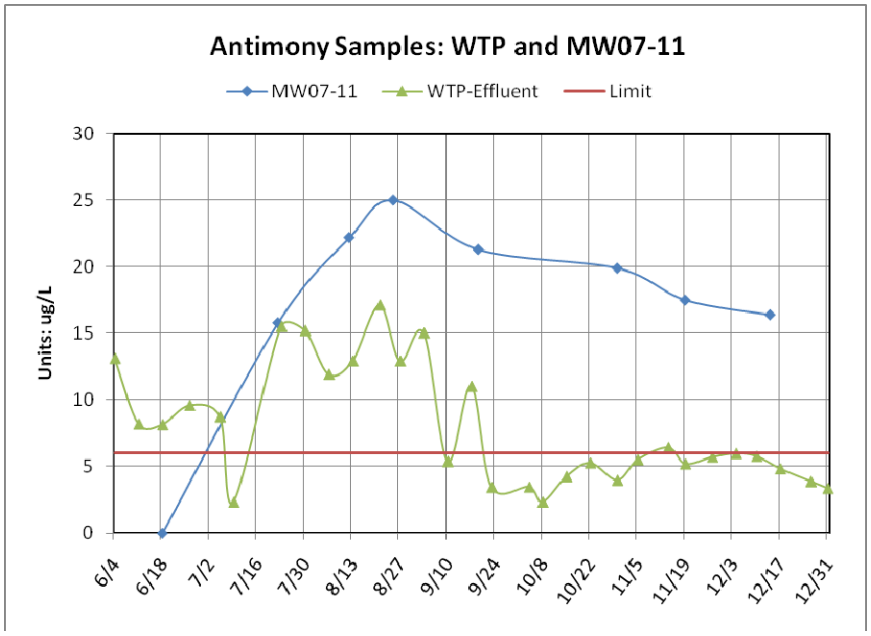

Figure 13: WTP and MW07-11 Antimony Samples

8.3.4 Other Groundwater Monitoring Wells

MW03-05 is located on Rock Creek below the mine site and is sampled in order to observe trends in water chemistry downgradient of the mine site. Limits are not applicable at this location.

Analytical data for monitoring well MW03-05 samples are reported in Appendix A33. No adverse trends were identified during 2009.

8.4 Water Treatment Plant

The WTP treats water from the TSF for injection to the IWF. Injected water is subject to effluent limitations contained in UIC Permit Section 7, which are also incorporated into WMP Section 1.6. As part of its authorization to commence groundwater injection on May 15, 2009, ADEC issued a compliance schedule containing temporary effluent limitations applicable through September 30, 2009 (Table 16). The COBC requires AGC to comply with all applicable permit limitations contained in the WMP by October 1, 2009 following the completion of upgrades to the WTP.

Table 16: Compliance Schedule Limits

Parameter	Units	Compliance Schedule Limit	UIC Permit Limit
Antimony	ug/L	12.9	6
Arsenic	ug/L	10.8	10
Copper	ug/L	26.3	14
Manganese	ug/L	166	50
TDS	mg/L	873	500

Since October 1, 2009, weekly sampling data have shown that apart from isolated issues concerning antimony and manganese, the WTP has performed as intended and satisfied COBC requirements. After October 1, 2009 AGC observed 1 minor antimony exceedance (Figure 14) and 3 minor manganese exceedances (Figure 15). Each exceedance was related to unanticipated malfunctions with the ozone generation system, which failed to inject ozone at the expected rate

thereby reducing oxidation in the reaction tank. While oxidation is not essential to metals removal in the system, it generally improves the efficiency with which they are removed. AGC has documented these issues and notified ADEC by memorandum dated December 2, 2009. AGC continues to monitor the ozone system and began introducing supplemental oxidants to the WTP on December 20, 2009 to ensure adequate metals removal.

Analytical data for WTP effluent monitoring samples are reported in Appendix A34.

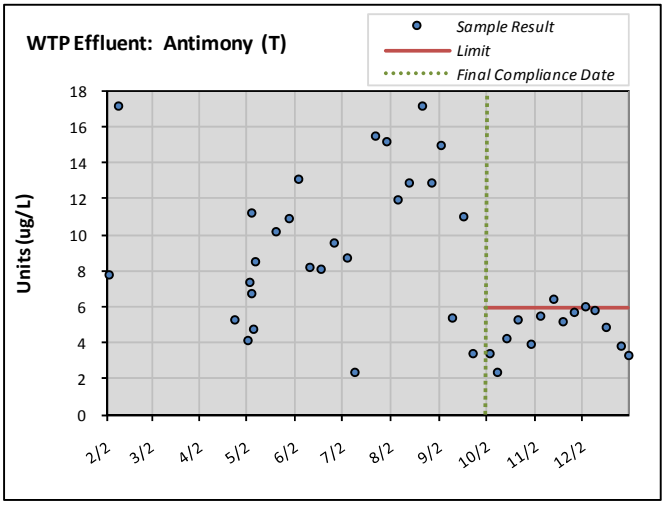

Figure 14: WTP Effluent (Antimony)

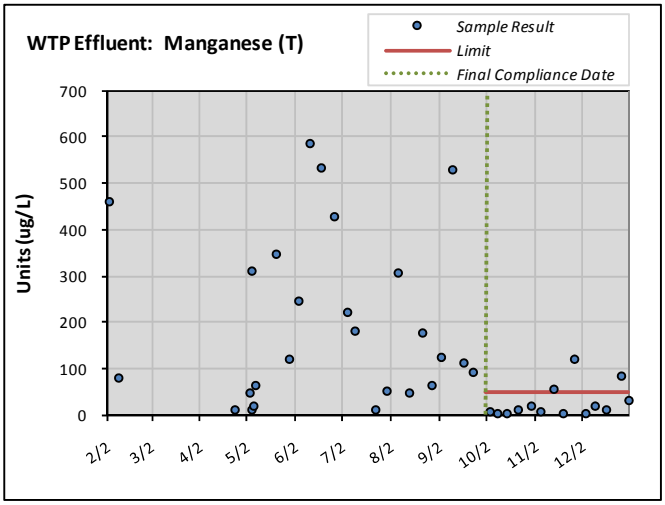

Figure 15: WTP Effluent (Manganese)

8.5 Cyanide Monitoring of Tailings

There is no monitoring of cyanide in tailings during the temporary closure period.

8.6 Development Rock Stockpile Seepage Analysis

There are no development rock stockpiles at Rock Creek or Big Hurrah. All development rock at Rock Creek was used in mine construction. There was no mining at Big Hurrah.

8.7 Geochemical Characterization

There is no geochemical characterization data to report. There is no mining activity while the mine is in temporary closure.

8.8 Other Water Quality Monitoring

In accordance with ADEC Waste Management Permit 2003-DB0051, ADEC must be notified in the next quarterly report of any water quality monitoring that is conducted beyond what is required in the monitoring plan.

In September 2009, AGC contracted Tetra Tech to make improvements to and optimize the water treatment plant. Tetra-Tech consultants collected and submitted various water samples of water treatment plant influent, in-stream, and effluent water which were submitted to an outside lab for total and dissolved metals analysis. These samples were used to optimize the water treatment plant operation and to bring effluent waters into compliance with UIC permit standards by October 1, 2009. Sample data are available for review upon request.

9.0 Visual Monitoring

Daily and weekly visual monitoring was conducted on the Rock Creek Mine facilities regulated under the Waste Management Permit 2003-DB0051. Monitoring of erosion control structures and diversion structures was conducted in accordance with SWPPP. Visual inspections were completed by AGC staff and reported during daily SWPPP meetings.

Copies of the daily inspections and activities reports are available from AGC for review upon request.

9.1 Tailings Storage Facility

9.1.1 TSF Dam

Visual inspections of the TSF include: inspections of the dam for signs of seeps, settlement, cracking, and unusual observations; continuous recording of seepage collection system volumes; continuous recording of thickener discharge amounts; inspections of support structures such as pipes, plumbing, etc.; and daily measurements of the pond water surface elevation. Throughout 2009, AGC routinely shared monitoring results with ADNR.

9.1.2 TSF Seepage Collection System

The TSF seepage collection system (main and south sumps) was visually inspected each day by the process operator to ensure that no abnormal event has occurred. The sumps, pipe line and the pumps were inspected each day. Flow meters were read and recorded.

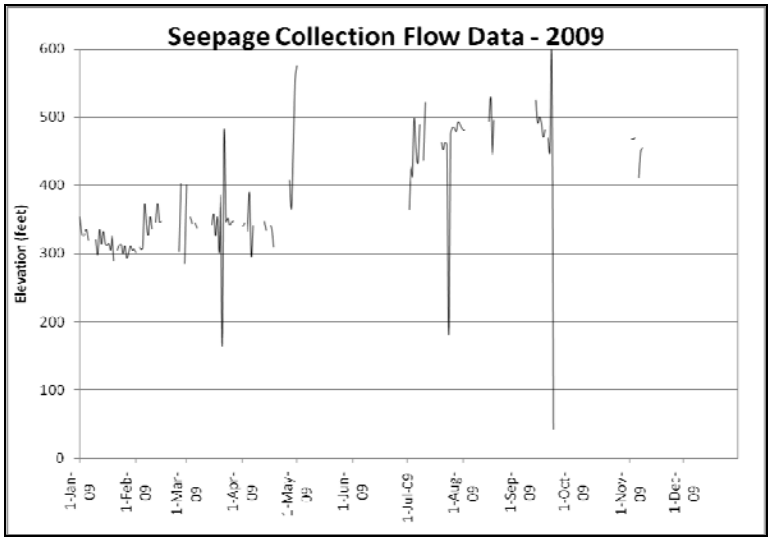

Figure 16: Seepage Collection System Flow Data

9.1.3 Thickener

Paste tailings are not discharged from the thickener during the temporary closure period; visual inspections are not conducted.

9.1.4 Support Structures

The TSF dam structure, along with the liner has been visually inspected daily and repaired as needed. The conditions have been recorded on the daily TSF Inspection Log as per the Rock Creek Tailing Operation and Maintenance (O&M) manual.

9.1.5 Water Surface

The water surface elevations have been recorded on the daily TSF inspection log as per the Rock Creek Tailing O&M manual. After the expanded well field became fully operational in November 2009, the water level in the TSF has consistently been lowered at a higher rate than predicted by the theoretical site water balance. The COBC will terminate when the TSF water elevation falls below 140 feet.

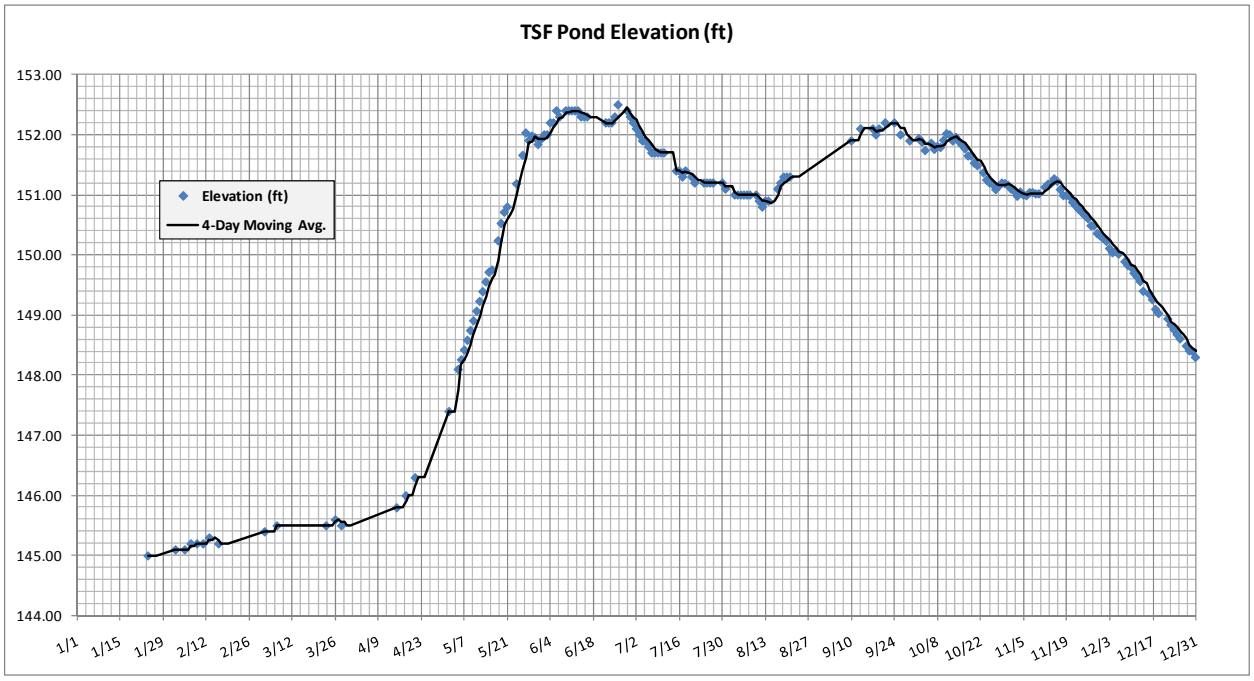

Figure 17: TSF Pond Elevation

9.2 Recycle Water Pond

Visual inspections of the RWP include: continuous monitoring of volumes pumped from the LCRS; recording of volumes pumped from ground water wells RWP-01 and RWP-02; daily recording of the pond surface water elevation; and inspections of the pond liner for signs of compromise.

9.2.1 Leak Collection and Recovery System

Flow at the LCRS is measured daily. The pumped volume is recorded on the RWP monitoring sheet along with notes from the visual inspection (Figure 18).

There is a direct correlation between the ground water level and the LCRS volume. At the 123-foot elevation, groundwater begins to infiltrate the LCRS. This is controlled with the pumping of the RPW-02 and the RWP Underliner pump. There were maintenance problems with both of these pumps throughout 2009. Specifically, the RPW-02 pump froze and the RWP Underliner pump failed in November 2009. Both pumps have since been repaired.

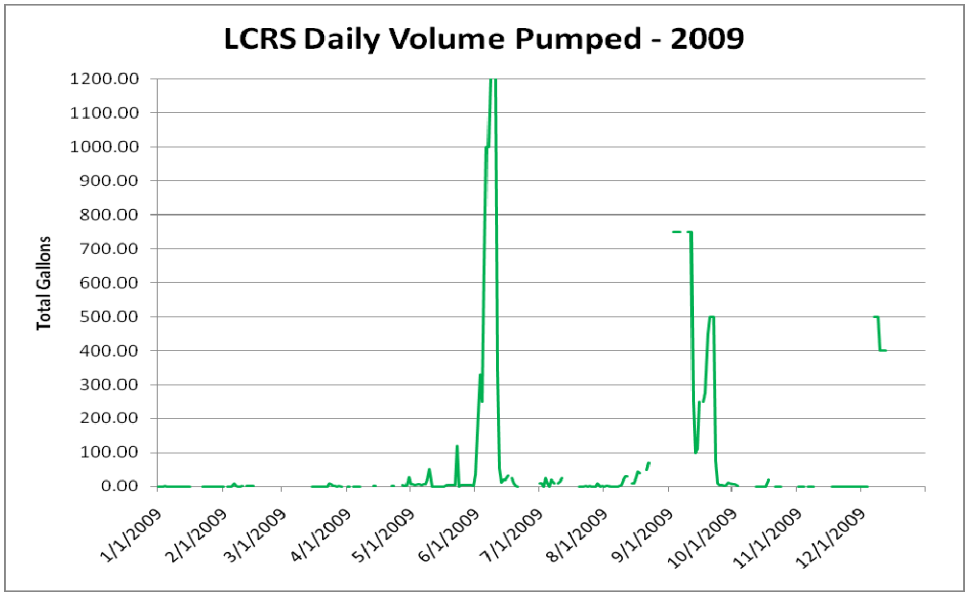

Figure 18: LCRS Pumped Volume

9.2.2 Water Surface

The surface of the water is monitored and recorded on the RWP monitoring sheet (Figure 19). During 2009, the RWP water elevation has occasionally exceeded the target level of 139 feet specified in the TCP. In late 2009, AGC specifically took steps to provide for removal of water and solids from the RWP and allow for pumping of well water to the WTP for treatment and injection. These actions, which will be completed during early 2010, will ensure adequate capacity for spring 2010 inflows to the RWP.

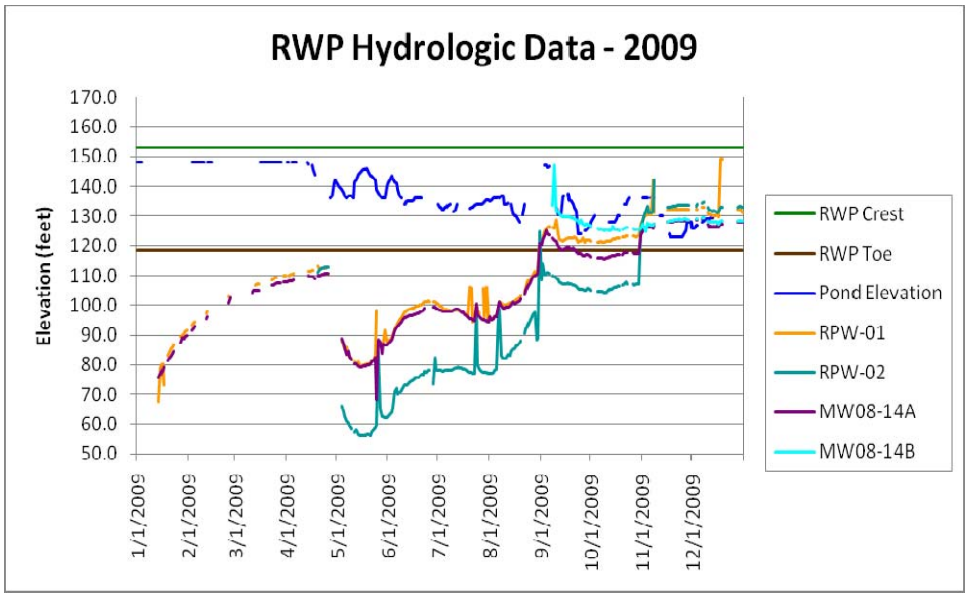

Figure 19: RWP Elevation Data

9.2.3 Pond Liner

The pond liner was inspected in the spring of 2009 following spring break-up. No visual tears or holes were observed. The LCRS, however, showed signs that a small amount of water was transiting through the pond liner to the LCRS. As discussed in Section 3.9, AGC will conduct an

engineering evaluation of the RWP liner system's integrity in 2010 when the ice clears. Based on the results of the evaluation, necessary liner repairs will be made.

9.3 Monitoring Wells

There are 15 monitoring wells that are monitored for ground water elevations at Rock Creek. Table 17 below lists the locations of these wells.

Table 17: Monitoring Well Locations

Well ID	Location	Description
MW08-14a	Downgradient RWP (deep)	RWP water table monitoring
MW08-14b	Downgradient RWP (shallow)	RWP water table monitoring
RPW-01	North side RWP	RWP water table monitoring
RPW-02	East side RWP	RWP water table monitoring
MW06-8a	South of TSF (deep)	TSF water table monitoring
MW06-8b	South of TSF (shallow)	TSF water table monitoring
MW06-9a	West of TSF (deep)	TSF water table monitoring
MW06-9b	West of TSF (shallow)	TSF water table monitoring
MW06-10a	North of TSF (deep)	TSF water table monitoring
MW06-10b	North of TSF (shallow)	TSF water table monitoring
MW07-11	Downgradient Lower IWF	IWF water table monitoring
MW08-15	Downgradient Lower IWF	IWF water table monitoring
PW-06	South of Upper IWF	IWF water table monitoring
PW-08	South of Upper IWF	IWF water table monitoring
JEFF	Downgradient Upper IWF	IWF water table monitoring

9.3.1 Visual Inspections

TSF monitoring wells are required to have visual inspections on a quarterly basis. As part of the ground water monitoring program all sampled monitoring wells are visually inspected monthly at the time of ground water sampling. No damage or unusual conditions were observed during these inspections.

9.3.2 Groundwater Elevations

AGC monitors groundwater elevations daily at wells MW07-11 and MW08-15A below the IWF to note any instances of upwelling or other abnormalities. Both wells are converted injection test wells completed in bedrock and are located along the west side of the Glacier Creek Road, north of the mine entrance. Wells PW-06 and PW-08 are also used to monitor groundwater levels in the area of the upper IWF. Well PW-06 is located west and cross-gradient of the injection wells and well PW-08 is located downgradient of the well field.

Prior to treated water injection, water levels in the monitoring wells were stable at an approximate elevation of 54 feet in MW07-11 and 78 feet in MW08-15A (Figure 20). By the end of June 2009, the water level in well MW07-11 had risen from 54 feet to 60 feet amsl, while the increase in well MW08-15a rose from 79 feet to 102 feet amsl. From July through December water level elevations in both wells slowly decreased to 55 feet (MW07-11) and 77 feet (MW08-15A).

Water levels in the monitoring wells have always been below the ground surface elevation, indicating that the injection activities have not over pressurized the ground water system.

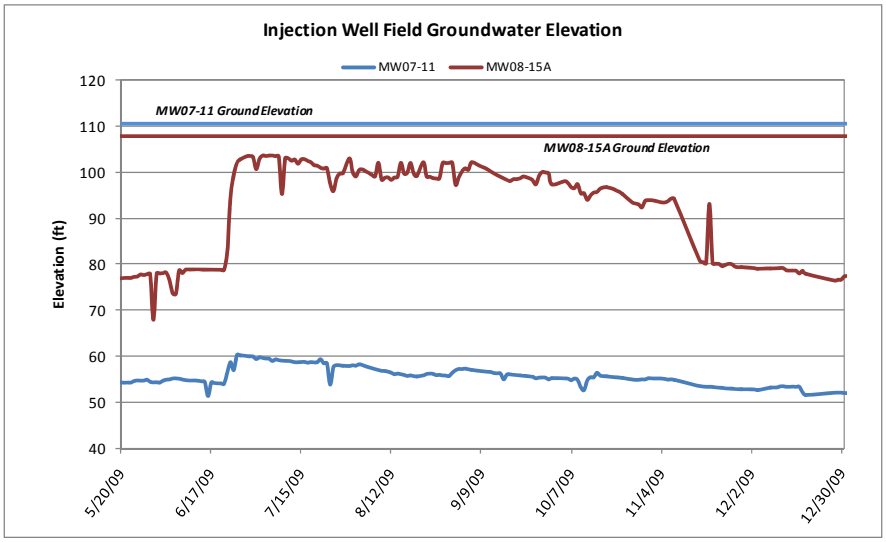

Figure 20: MW07-11 and MW08-15A Groundwater Elevations

AGC also monitors groundwater elevations at monitoring wells below the RWP and TSF. No anomalies or upwellings were observed.

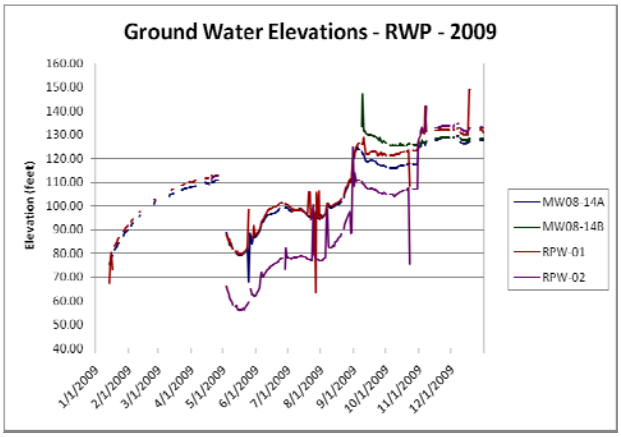

Figure 21: RWP Groundwater Elevations

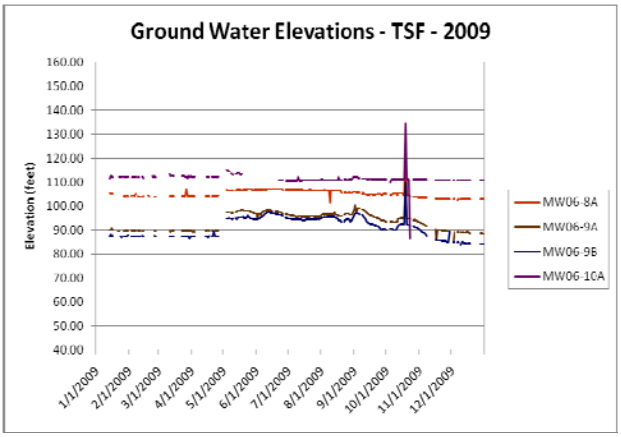

Figure 22: TSF Groundwater Elevations

9.4 Pit Dewatering Wells

The pit dewatering wells are not in operation during the temporary closure period. There are no inspections of the wells at this time.

9.5 SPCC – Containment

A weekly fuel containment inspection is conducted and filed at the safety department for review. Overall conditions for containments are good with no damage or physical hazards.

9.6 Air Quality

Inspections of the ambient air boundary signage identified several signs knocked over by high winds. Signs were reset or brought in for repair.

9.7 Wildlife

Numerous wildlife observations were made in 2009, including reindeer, moose, fox, bear, and muskoxen. There were no reported mortalities in 2009. Current policy is to contact the Security Office when wildlife is observed. An up to date wildlife monitoring map is located in the Rock Creek Mine administrative office showing the location of all reported animal sightings within the mine site.

10.0 Financial Responsibility

AGC has posted a Reclamation Bond in the amount of $6,844,700.00 which is backed by an Irrevocable Standby Letter of Credit between AGC and Wells Fargo Bank. The current Reclamation Bond amount of $6,844.700.00 was approved by the agencies in 2007 as sufficient for reclamation purposes based on the closure and long-term monitoring cost estimate after the final closure of both the Rock Creek and Big Hurrah sites.

As part of the annual financial review conducted by NovaGold, AGC has clarified that the entire bond amount remains available for Rock Creek Mine. No significant changes have occurred at this time even though Rock Creek Mine is in temporary closure/care and maintenance. AGC and ADNR are currently reviewing financial assurances for the mine in view of temporary closure conditions. AGC anticipates updating these assurances during the first half of 2010.

11.0 References

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