2012 ANNUAL ACTIVITY AND MONITORING REPORT

SUMITOMO METAL MINING POGO LLC

Submitted To:

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1. Introduction

Sumitomo Metal Mining Pogo LLC (Pogo) prepared this report to fulfill the requirements of the *Alaska Department of Environmental Conservation (ADEC) APDES Permit AK005334-1 (5/1/11), Alaska Department of Environmental Conservation (ADEC) Waste Management Permit 2011DB0012 (2/7/2012), Alaska Department of Natural Resources (ADNR) Pogo Mine Millsite Lease ADL416949 (3/9/04)*, *and ADNR Plan of Operations Approval F20129500 (4/13/2012)*. This report covers the period from January 1, 2012 through December 31, 2012.

2. 2012 Monitoring

A prescriptive program of environmental monitoring is conducted as required by Pogo's permits and in accordance with Pogo's approved *Pogo Mine Monitoring Plan* and *Quality Assurance Plan (QAP)*.

The objectives of the monitoring programs are:

- To monitor the water quality of the effluent discharged from the facility,
- To monitor water quality changes in the Goodpaster River and in the groundwater below the facility that may occur as a result of mining activities or discharges from the facility,
- To monitor metal content in the fish tissue of juvenile Chinook salmon from the Goodpaster River upstream and downstream from the project facilities,
- To monitor the Carbon-in-Pulp (CIP) Tailings Processes associated with the underground paste backfill, and
- To monitor the Flotation Tailings and the materials placed in the Dry Stack Tailings Facility (DSTF).

Samples collected from the Water Treatment Plant #2 (WTP#2), groundwater locations, surface water locations, and the Off River Treatment Works (ORTW) effluent were

submitted to Analytica Environmental Laboratories. Samples collected for the Sewage Treatment Plant (STP), influent and effluent, were submitted to Analytica Laboratories. Annual WET Test samples were submitted to AECOM Environmental Laboratory and CH2MHill Laboratory. Fish tissue samples were submitted to Test America Laboratories, Inc. Flotation Tailings and Mineralized Developmental Rock samples were submitted to ALS Chemex.

2.1 ANNUAL VERIFICATION OF LABORATORY SPECIFIC MDL STUDY

ADEC Waste Management Permit 2011DB0012 (2/7/12), Section I.3.1.4, 1.7.3

Laboratories perform lab quality assurance and quality control procedures at regular intervals to verify the accuracy of the established MDLs. EPA-accredited laboratories' routinely spike and run replicate samples once or twice a year to either confirm or re-establish laboratory MDLs. Available in **Appendix F** is a copy of most recent MDL studies from the laboratories listed in Section 2 above.

2.2 SUMMARY

A summary of the 2012 monitoring results show:

- **Outfall 011:** During July Pogo installed two additional sand filters in WTP #2 and during December Pogo upgraded 9,430 feet of ORTW discharge line to increase throughput capacity. The maximum daily flow limit of 600 gpm was exceeded for approximately 10 minutes during a pressure test of this new line. Refer to **Section 2.3.1** for more detail.

- **Outfall 001:** During May an excursion for maximum daily flow was reported due to flooding of the Goodpaster River. During July ADEC authorized a dilution ratio increase of greater than 25:1 during a flood event of the Goodpaster River. Refer to **Section 2.3.2** for more detail.

- **Outfall 002:** During 2012 Pogo's Sewage Treatment Plant was upgraded from a sequencing batch reactor (SBR) system to a membrane bioreactor (MBR) system. No exceedances were reported during 2012. Refer to **Section 2.3.3** for more detail. An As-Built Report is included in **Appendix E**.

- **Surface Water:** There are no adverse trends in Surface water samples collected during the year. Due to extreme cold temperatures the December sample was not collected until January 2013. Refer to **Section 2.4.1** for more detail.

- **Ground Water:**

  - **11 Wells:** Two wells are located below the Drystack Tailings Facility (DSTF), MW11-001A and MW11-001B. They monitor groundwater downstream of the DSTF and upstream of the Recycled Tailings Pond (RTP). Samples were collected monthly during the first three quarters of 2012 to establish background water quality data. They were switched to quarterly during the fourth quarter. No adverse trends were observed. Refer to **Section 2.5.1** for more detail.

  - **500 Wells:** Three wells are located below the Recycled Tailings Pond (RTP) Dam, MW03-500, MW03-501, and MW03-502. They monitor groundwater downstream of the RTP seepage collection system. These wells were plugged and abandoned during October and replaced with wells MW12-500, MW12-501, and MW12-502. Samples were collected monthly during 2012. Refer to **Section 2.5.2** for more detail.

  - **200 Wells:** Two wells, MW04-213 and MW11-216, are located downgradient of the ore body to monitor groundwater quality. MW11-216 was sampled monthly during the first three quarters of 2012 and switched to quarterly during the fourth quarter. Refer to **Section 2.5.3** for more detail.

- **LL Wells:** LL04-031 and LL04-032 are located downgradient of the Off River Treatment Works (ORTW) to monitor groundwater between the ORTW and Goodpaster River. They were sampled in June. Refer to **Section 2.5.4** for more detail.

❑ **Process Control:**

- **PC001:** PC001 monitors CIP tails prior to use in paste backfill. All samples are within limits and conditions set forth within the permit. Refer to **Section 2.6.4** for more detail.

- **PC002, PC003 Solids:** PC002 monitors mineralized waste rock that is placed within the DSTF. PC003 monitors floatation tailings that are placed within the DSTF. No adverse trends were observed. Refer to **Sections 2.6.5 and 2.6.6** for more detail.

- **PC003:** PC003 monitors interstitial water pressed from the flotation tailings prior to placement within the DSTF. Samples indicate an increase in Nickel and Selenium levels. Pogo identified a mill reagent, Copper Sulfate, which contains selenium. A test run of low selenium Copper Sulfate was conducted during August**.** Refer to **Section 2.6.7** for more detail.

❑ Pogo was issued a Notice of Violation (NOV) by ADEC on December 5, 2011 for reported exceedances during 2011. A Compliance Order by Consent (COBC) was executed between Pogo and ADEC on May 9, 2012. Refer to **Section 2.3.5** for more detail.

A discussion of the results for each sampling program is provided below. Time series graphs are provided in **Appendix C**.

2.3 TREATED EFFLUENT MONITORING

ADEC APDES AK-005334-1 (5/1/11), Appendix A 3.0

Detailed data of treated effluent were previously submitted to ADEC via copies of the Discharge Monitoring Reports (DMRs) under the APDES Permit. All analytical data

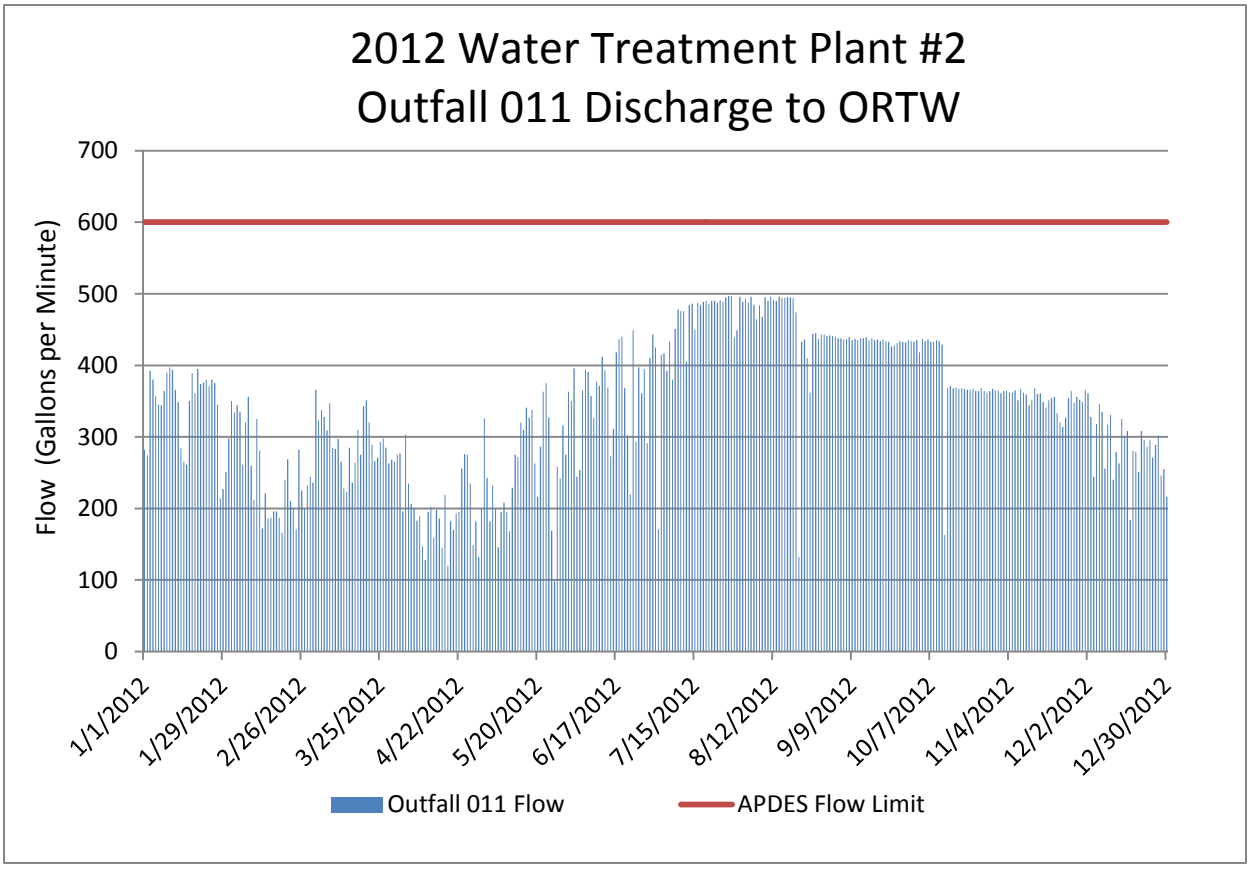
collected at the effluent monitoring stations, including monthly and weekly averages, are evaluated and reported in the monthly DMR. All exceedances or excursions of maximum daily, average monthly, or average weekly limitations are discussed below. Analytical data with maximum daily effluent limitations are presented graphically in **Appendix C.** The monitoring locations for treated effluent are shown on **Figure 2 in Appendix A**.

2.3.1 Outfall 011- Treated Effluent from Mine Water Treatment Plant

ADEC APDES Permit AK-005334-1 (5/1/11), 1.2

Groundwater and drill water collected from the underground workings are sent to Water Treatment Plant #1 (WTP#1), treated and returned for use underground, sent to the mill to be used as process water or pumped to WTP#2. Surface runoff and groundwater collected in the RTP is sent to WTP#2 (located near the 1525 portal), treated and then discharged to the ORTW or directed to the mill for use as process water. Discharge to the ORTW started on January 1st and continued through December 31st 2012, with no interruptions. The volume of water discharged from the WTP#2 is in **Chart 1**.

Chart 1: 2012 Water Treatment Plant #2 Outfall 011 Discharge to ORTW



Continuous pH data is collected at Outfall 011 along with weekly and quarterly laboratory samples for metals, Total Suspended Solids (TSS), Hardness, Weak-Acid Dissociable (WAD) Cyanide, Anions, Cations, and Total Dissolved Solids (TDS).

During July and August Pogo installed two additional sand filters in WTP #2. During November and December Pogo upgraded 9,430 feet of 6" ORTW discharge line to 10" discharge line. These projects were completed to increase throughput from WTP #2 to the ORTW.

On the December DMR, Pogo reported, that during pressure testing of the new 10 inch ORTW line, the 600 gpm flow limit was surpassed for approximately 10 minutes. The flow meter recorded 720 gpm for approximately 3 minutes and which flow returned to less than 600 gpm in approximately 6 minutes.

Except as noted above, all results are within the limits and conditions set forth within the

permit. 2012 Monitoring and historic data are provided in **Appendix I**. Time series graphs are provided in **Appendix C**.

2.3.2 Outfall 001 – Discharge from Off River Treatment Works

ADEC APDES Permit AK-005334-1 (5/1/11), 1.1

Treated effluent from WTP#2 is sent to the Off River Treatment Works (ORTW). After mixing in the ORTW, water flows over the weir of Pond 2 (Outfall 001) at the ORTW and into the Goodpaster River. The sampling location is at the weir.

Continuous turbidity and daily pH data is collected along with weekly and monthly laboratory samples for metals and WAD Cyanide, TDS, Turbidity, Sulfate, and Hardness at Outfall 001. In addition, the same sets of laboratory samples were collected upstream from the discharge point (NPDES001B) to determine background water quality of the Goodpaster River.

In May, Pogo reported a potential excursion of the Maximum Daily Outfall Flow for 25 minutes due to a significant rainfall event that occurred concurrently with high river levels. Pogo believes this incident falls under APDES Permit AK0053341, Appendix A, section 2.7.1, Upset Conditions. This condition was corrected as soon as it was noted and discharge was shut down 6 hours later when the Goodpaster River overflowed into the ORTW.

In another significant rainfall and high water event during July, Pogo requested ADEC to approve an increased dilution ratio so that Pogo could continue to discharge. Pogo received a record amount of rainfall during 2012 and the RTP was near capacity. ADEC approved a dilution ratio of greater than 25:1 during the period that the Goodpaster River was flooding the ORTW due to APDES Permit AK0053341, condition 1.1.6. During the flooding an increased dilution ratio occurred from July 2nd through the 7th, while flow from Outfall 011 was limited to 600 gpm.

Except as noted above, all results are within the limits and conditions set forth within the permit. 2012 Monitoring and historic data are provided in **Appendix I**. Time series graphs are provided in **Appendix C**.

2.3.3 Outfall 002 – Treated Effluent from Sewage Treatment Plant

ADEC APDES Permit AK-005334-1 (5/1/11), 1.3

The Sewage Treatment Plant (STP) operated throughout 2012 with discharge flows ranging between 9,796 and 30,524 gallons per day. Daily field parameters were collected to assess quality of treated effluent prior to discharge in the mixing zone in the Goodpaster River. Weekly samples were also collected for Biological Oxygen Demand (BOD5), TSS, Fecal Coliform, Nitrates, and Chlorine. Influent data from STP002 were collected for BOD5 and TSS on a monthly basis to determine quarterly percent removal.

Pogo upgraded the STP from a 25,000 gallon per day (gpd) Sequencing Batch Reactor (SBR) to a 40,000 gpd Membrane Bioreactor (MBR) during the third quarter of 2012. On October 18, 2012 ADEC granted a 90 day Interim Approval to Operate. This satisfied required correction action number two under the COBC; see **section 2.2.5** for more detail. The benefits of an MBR system are:

- No clarifier/settling tank necessary
- Accommodates small incremental expansions
- Produces high quality effluent
- Small facility footprint
- Low operator attention, automated
- Nutrient removal capability

Pogo reported no exceedances during 2012. All results were within the limits and conditions set forth within the permit. 2012 Monitoring and historic data are provided in **Appendix I**. Time series graphs are provided in **Appendix C**. An as-built is provided in **Appendix E**.

2.3.4 Whole Effluent Toxicity

ADEC APDES Permit AK-005334-1 (5/1/11), 1.4

The annual Whole Effluent Toxicity (WET) test was scheduled June 11 through June 15, 2012 by CH2M Hill's Aquatic Toxicology Laboratory in Corvallis, Oregon. A split of the same sample was also sent to AECOM Environmental Laboratory in Fort Collins, CO. One

of the sample coolers was lost in shipment during transport to CH2M Hill. The initial test was cancelled and re-scheduled for July. The test was completed July 16 through July 20, 2012.

Results from both laboratories are presented in **Appendix B** and indicate that the toxicity for *Ceriodaphnia dubia* (water flea) and Pimephales promelas (fathead minnow) were both <1.0 TU_c. Both species were within the limits and conditions (2.0 TU_c) set forth within the permit. Laboratory reports are provided in **Appendix H**.

2.3.5 Compliance Order by Consent

ADEC APDES Permit AK-005334-1 (5/1/11), 1.1, 1.2, 1.3, Appendix A 1.6, 2.6

On December 1, 2011 Pogo received a Notice of Violation for APDES Permit violations that occurred during late 2010 and 2011. Pogo Responded to the Notice of Violation on January 5, 2012. In June 2012 Pogo and ADEC entered into COBC 11-0929-50-0002 to fully address the alleged violations. Under the COBC, Pogo agreed to a penalty of $8,360 to resolve the alleged violations. Pogo also agreed to complete corrective actions in three areas of operation.

Required Corrective Action Number One:

Waste Water Treatment Plant #2 (WTP#2): Conduct two engineering studies to, first, determine the feasibility of increasing plant throughput from 300 to 600 gpm utilizing existing equipment; and second, to evaluate the benefits and drawbacks associated with a spectrum of available treatment options for increasing plant throughput to 600 gpm.

- *July 2, 2012: Preliminary results of the first study.* Submitted Report 6/27/12
- *August 31, 2012: Completion of first study.* Submitted Report 8/31/12
- *December 31, 2012: Preliminary results of the second study. Submitted Report 12/26/12*
- *April 30, 2013: Completion of the second study. Under development*
- *December 31, 2013: Increase the throughput to 600 gpm.*

In addition, Pogo completed the following upgrades:

- Installed 2 additional sand filters to decrease bottleneck in WTP#2
- Installed 10" ORTW line to increase discharge flow capacity

Required Corrective Action Number Two:

Sewage Treatment Plant (STP): Pogo replaced the UV system in late 2011 to address the fecal coliform exceedances. In addition, Pogo will voluntarily develop a plan for increasing plant throughput from 25,000 to 40,000 gpd.

- *July 2, 2012: Completion of Design Plan.* Submitted 5/14/12.

  August 1, 2012: ADEC will complete a design plan review. Design approved 7/11/12.

- *December 31, 2012: Increase throughput of STP to 40,000 gpd.* Interim Approval to Operate Received 10/18/12.

Pogo's plan for increasing throughput included:

- Replacing UV system in 2011.
- Upgrading to a Membrane Bioreactor (MBR) in 2012
- Adding an additional rotor screen in 2012.

Required Corrective Action Number Three:

Recycled Tailings Pond Seepage: Develop a dam seepage grouting plan based upon the results of electromagnetic imaging.

- *May 1, 2012: Complete dam seepage grouting plan.* Submitted 5/1/12.

  May 31, 2012: ADEC will provide feedback. Approved 5/23/12.

- *September 30, 2013: Complete grouting project.* Scheduled for March 2013. Pogo tried to complete in 2012 but could not due to high amounts of rainfall which resulted in a high water level in the RTP.

Pogo obtained *Certificate of Approval to Repair a Dam* from ADNR on May 23, 2012. It requires that Pogo commence grouting by June 1, 2013.

2.4 SURFACE WATER MONITORING

2.4.1 Goodpaster River

ADEC Waste Management Permit 2011DB0012 (2/7/12), Section I.6.4; ADEC APDES Permit AK-005334-1 (5/1/11), 1.5, Pogo Mine Monitoring Plan (11/1/11)

Four surface water stations are monitored to evaluate water quality along the Goodpaster River. They are SW01 located upstream of the Pogo Mine, SW41 located downstream of Outfall 001, SW42 downstream of Outfall 002, and SW15 located downstream from all Pogo facilities.

Surface water station SW12 located on the Goodpaster River at the confluence of Central Creek was also sampled concurrently with the fish tissue monitoring program on September 18th.

The locations of the surface water monitoring stations are shown in **Appendix A, Figure 2.**

Surface water samples are analyzed for WAD Cyanide, ion balance, major cations, anions, and total and dissolved metals. Physical and aggregate properties of ammonia, conductivity, hardness, nitrates, sulfates, pH, TDS, TSS, Turbidity, TKN, and Temperature were also measured.

During July Pogo collected an additional surface water sample concurrent with the second set of WET test samples. Pogo was scheduled to conduct early August surface water samples on August 8. After the August 7 helicopter incident Pogo consulted with ADEC and received approval to substitute the extra July 19 Surface Water sampling event for the early August sampling event.

Pogo was unable to collect the December 2012 surface water sample. Pogo had an extended period of extremely cold temperatures during December. The contract helicopter Pogo uses cannot fly below -30°F and it is unsafe for Pogo personnel to collect samples via snow machine below -20°F. When the weather warmed up it was snowy with active wind-chill advisories from the National Weather Service. These conditions also kept personnel from collecting samples via helicopter or snow machine. Pogo requested an extension from ADEC and was granted a new deadline of January 31, 2013. Pogo was able to collect samples on January 8, 2013. Sample results will be provided in the First Quarter 2013 report.

All other results are within the limits and conditions set forth within the permit.

2012 Monitoring and historic data are provided in **Appendix I**. Time series graphs are provided in **Appendix C**.

2.4.2 Fish Tissue

ADEC APDES Permit AK-005334-1 (5/1/11), 1.5.5

In order to help assess long term trends in Goodpaster River quality, annual whole body analysis of juvenile Chinook Salmon are required at monitoring sites both upstream (SW01) and downstream (SW12) from the project facilities. Juvenile Chinook salmon were collected at these stations on September 18, 2012. Audra Brase with the Alaska Department of Fish and Game was not able to assist with the sampling effort this year. In an effort to better assess any long term trends Pogo requested the collection of an additional 5 Slimy Sculpin from both SW01 and SW12.

The required numbers of juvenile Chinook were collected at both locations. Metals analysis was conducted on 10 individuals from each site, and a composite sample of 5 fish was also conducted from each site. While several Sculpin were observed in the river Pogo personnel were only able to catch one, upstream, at SW01. Pogo will request the use of kick nets, for collecting Slimy Sculpin, on the 2013 Fish Resource Permit. As required by **Fish Resource Permit SF2012-276** a report of collecting activities and data submission form was submitted to ADFG on October 30, 2012.

All results are consistent with historical data and no statistical differences are observed.

2012 Monitoring and historic data are provided in **Appendix I**. Time series graphs are provided in **Appendix C**.

2.5 GROUNDWATER QUALITY MONITORING

Groundwater samples are analyzed for cyanide, ionic balance, major cations and anions, and dissolved metals. Physical and aggregate properties of ammonia, conductivity, hardness, nitrates, pH, TDS, Total Settleable Solids (TSS), Turbidity, TKN, and Temperature are also measured.

The locations of the groundwater monitoring stations are shown in **Appendix A, Figure 2**.

2.5.1 Downgradient of DSTF

ADEC Waste Management Permit 2011DB0012 (2/7/12), 1.1.4 1.2.7, 1.6.4 Pogo Mine Monitoring Plan (11/1/11), 6.0

MW11-001A and MW11-001B provide information on water quality trends down-gradient from the DSTF and up-gradient of the RTP. MW11-001A is an alluvial well and MW11-001B is a bedrock well. These wells were sampled monthly for the first 12 months to establish background data. A table of the background water quality was included in the 3rd quarter report. Samples were taken on October 23 and December 12, 2012. Starting with the December 12 sample these wells will be sampled quarterly

No adverse trends were observed in the data. All results are within the limits and conditions set forth within the permit.

Monitoring and historic data are provided in **Appendix I**. Time series graphs are provided in **Appendix C**.

2.5.2 Downgradient of RTP Dam

ADEC Waste Management Permit 2011DB0012 (2/7/12), 1.1.4, 1.2.6, 1.6.4, Pogo Mine Monitoring Plan (11/1/11), 6.0

Three wells located below the RTP Dam, MW03-500, MW03-501, and MW03-502, monitor groundwater downstream of the RTP seepage collection system. Samples for these wells were collected monthly throughout 2012; however, the permit only requires a quarterly sample. It was discovered in third quarter 2012 that MW03-501 had collapsed. It was decided to replace all three wells. These wells were plugged and abandoned during October and replaced with wells MW12-500, MW12-501, and MW12-502. The original MW03- 500 series wells were drilled as bedrock exploration core holes and then converted into monitoring wells. The MW12-500 series wells were drilled as alluvial wells, terminating at bedrock, to better characterize water quality below the RTP. Refer to Pogo's Third Quarter 2012 Report for further details.

Trigger limits for groundwater monitoring at these locations are set forth in Pogo's ADEC Waste Management Permit 2011DB0012 and Pogo Mine Quality Assurance Project Plan

as part of the requirements and can be found in **Table 1**.

Table 1: Upper Tolerance Limit Concentrations Triggering Corrective Action

Parameter	Units	Location		
		MW03-500	MW03-501	MW03-502
Antimony, Dissolved	µg/L	0.36	0.35	0.35
Arsenic, Dissolved	µg/L	47.8	47.6	45.0
Chloride	mg/L	0.79	1.23	1.06
Cyanide, WAD	µg/L	5.2	5.2	5.2
Nitrate as Nitrogen	mg/L	1.28	2.66	2.39
Potassium, Dissolved	mg/L	3.18	3.69	3.27
Selenium, Dissolved	µg/L	1.35	0.99	0.64
Sodium, Dissolved	mg/L	5.41	5.27	3.90

Samples were collected on October 16, November 14, and December 20, 2012. Chloride, Nitrate, Selenium, Sodium, and Potassium levels continue to be above the trigger limits. Results of sampling during the quarter are noted below in **Table 2**. Pogo is working with ADEC to complete corrective actions including additional grouting of the RTP. Due to above average rainfall, Pogo was unable to complete the grouting at the RTP during 2012 (pond level too high). Grouting is scheduled to begin in March 2013.

Table 2: MW03/12-500, 501 and 502 Well Results

Parameter	Units	MW03-500	MW12-500		MW03-501	MW12-501		MW03-502	MW12-502	
		10/16/12	11/14/12	12/20/12	10/16/12	11/14/12	12/20/12	10/16/12	11/15/12	12/20/12
Antimony, Dissolved	ug/L	<0.36	<0.36	<0.36	Collapsed	<0.35	<0.35	<0.35	<0.35	Dry
Arsenic, Dissolved	ug/L	<47.8	<47.8	<47.8	Collapsed	<47.6	<47.6	<45	<45	Dry
Chloride	mg/L	2.37	2.31	2.13	Collapsed	2.32	1.88	2.31	1.98	Dry
Cyanide, WAD	ug/L	<5.2	<5.2	<5.2	Collapsed	<5.2	<5.2	<5.2	<5.2	Dry
Nitrate as Nitrogen	mg/L	11.5	13.5	13.9	Collapsed	14.2	14.9	15	15.3	Dry
Potassium, Dissolved	mg/L	3.6	<3.18	<3.18	Collapsed	4.5	4	<3.27	4.9	Dry
Selenium, Dissolved	ug/L	1.36	1.37	<1.35	Collapsed	1.47	1.32	1.12	1.13	Dry
Sodium, Dissolved	mg/L	7	7.6	8	Collapsed	7.9	10	6.8	9	Dry

Except as noted above, all results are within the limits and conditions set forth within the permit.

2012 Monitoring and historic data are provided in **Appendix I**. Time series graphs are provided in **Appendix C**. An as-built report for MW12-500, MW12-501, and MW12-502 and well abandonment report for MW03-500 series wells are provided in **Appendix D**.

2.5.3 Downgradient of Ore Zone

ADEC Waste Management Permit 2011DB0012 (2/7/12), 1.1.4, 1.2.7, 1.6.4; Pogo Mine Monitoring Plan (11/1/11), 6.0

Monitoring wells MW04-213 and MW11-216 provide information on water quality trends down-gradient from the ore zones. Samples are required to be collected semi-annually. Samples for MW04-213 were collected monthly from May through September. MW11-216 was sampled monthly through 2012. The first 12 months samples were used to establish background data. A table of the background water quality was included in Pogo's 3rd Quarter Monitoring Report. Sample collection will return to a semi-annual schedule during 2013.

All results are within the limits and conditions set forth within the permit.

2012 Monitoring and historic data are provided in **Appendix I**. Time series graphs are provided in **Appendix C**.

2.5.4 Downgradient of ORTW

Not required by permit.

Monitoring stations LL04-031 and LL04-032 provide information on ground water quality trends between the ORTW and the Goodpaster River. Samples were collected on June 27, 2012.

2012 Monitoring and historic data are provided in **Appendix I**. Time series graphs are provided in **Appendix C**.

2.5.5 Meteorological Monitoring

Pogo installed two new Meteorological (MET) Stations during August 2011. One is located near the Pogo Airstrip and the other on top of Pogo Ridge above the 1690 portal. On September 30, 2012 Pogo completed one year of Prevention of Significant Deterioration (PSD) quality data collection and achieved a 99% recovery rate. The meteorological data will be used to support future dispersion modeling efforts. A copy of the Sumitomo Metal Mining Pogo LLC, Annual Data Report for the Pogo Meteorological Monitoring Program is provided in **Appendix G**.

2.6 PROCESS CONTROL MONITORING

Process facilities are monitored as follows.

2.6.1 Water Balance

ADEC Waste Management Permit 2011DB0012 (2/7/12), 1.6.2.4; Pogo Plan of Operations (11/1/2011), 8.0

The beginning RTP reservoir volume was 21.7 million gallons and the ending RTP volume

was 6.8 million gallons.

Added to RTP

- 72.8 million gallons of runoff and seepage water was collected in the RTP; and
- 0.7 million gallons of treated water was recycled to the RTP.

Removed from RTP

- 22.4 million gallons were pumped from the RTP for underground drill water;
- 41.6 million gallons were pumped from the RTP to the mill process; and
- 24.4 million gallons were pumped from the RTP to the WTP#2.

Recycled at Mill

- 27.0 million gallons were recycled at the Mill from WTP#2; and
- 24.4 million gallons were recycled at the Mill from the RTP.

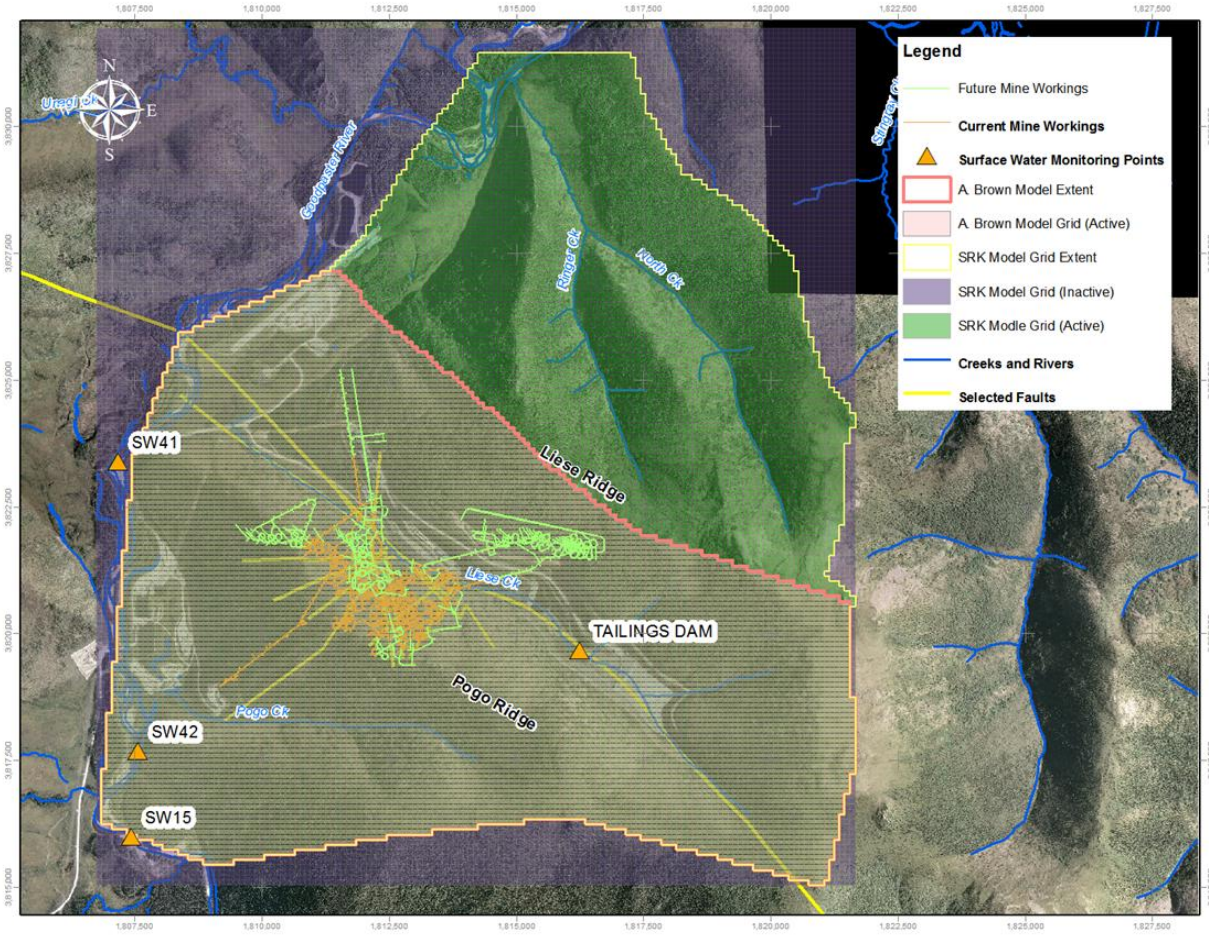
Discharge from ORTW

- 178.8 million gallons were treated and discharged via the ORTW.

2.6.2 Hydrology Study for East Deep Expansion

In 2012 Pogo initiated a hydrogeologic characterization study for the East Deep expansion project. The study will predict water inflow into the underground workings and mine-water discharge rates as well as impacts to water levels and water chemistry in the hydrologic regime. **Figure 1** provides the study area and model domain.

Figure 1: Hydrology Study Area and Model Domain



The following field work was completed in 2012:

1. Conducted drawdown test on two exploration water wells. Both wells were pump tested for seven days.
2. Conducted packer air-lift/recovery and injection tests on nine surface exploration drill holes.
3. Installed six piezometers in surface exploration core holes.
4. Conducted hydraulic pressure monitoring and shut-in tests in four underground and four surface exploration core holes.
5. Constructed two test wells in the airstrip area to test interaction of alluvial with bedrock groundwater. Pump tested the alluvial well for seven days.

The following field work is planned for 2013:

1. Conduct packer air-lift/recovery and injection tests on nine surface exploration core holes.
2. Install nine piezometers in surface exploration core holes.
3. Conduct hydraulic pressure monitoring and shut-in recovery tests on eight underground exploration core holes.

Once the project area and model domain were defined, the existing data was compiled and assessed. Visual MODFLOW-SURFACT was used to develop the new groundwater model for Pogo. The preliminary model will be presented to agencies in the second quarter 2013 when Pogo applies for permission to mine the East Deep deposit. The model will be refined with data collected during the 2013 field season and submitted to agencies by the end of 2013.

2.6.2.1 LIESE CREEK FLUMES

ADNR's October 14, 2008 inspection report suggests installation of a weir below the RTP to measure seepage flows. After consultation with Pogo's consulting hydrologist and ADNR, it was decided that a flume would be more accurate than a weir to measure flows. Four flumes were installed in the following locations during 2012:

1. Between the DSTF and RTP
2. At the toe of the RTP Dam
3. Below the confluence of the North and South Diversion Ditches into Liese Creek
4. Above Liese Creek Bridge

Installation of the flumes was completed during September 2012. Complications occurred on Flumes 2, 3, and 4 and they were removed during the Fourth Quarter of 2012. New flumes were ordered and are scheduled to be installed during the First Quarter of 2013, prior to spring thaw. The locations of flume installation are shown on **Figure 4** in **Appendix A**.

2.6.2.2 MW12-001A & MW12-001B

Two test wells were installed near Pogo's Airstrip to conduct a pump test for the East Deep Hydrology Study. The test wells were installed during October 2012. The pump test was conducted for 7.4 days and well recovery was monitored until recovery was completed. Data is being used to develop a ground water model for East Deep Expansion Permitting. Dedicated pumps will be installed in 2013 and the wells will be sampled monthly for 12 months to establish background water quality data for this location.

As-built drill logs for MW12-001A and MW12-001B are provided in **Appendix D**.

2.6.3 Permits to Appropriate Water and Temporary Water Use Permit Summary

ADNR Permits to Appropriate Water, LAS 24616, 24617, 24613, 24611, 24612 Condition 6; ADNR Temporary Water Use Authorization TWUP F2011-131, F2011-76, F2011-130 (2/13/12), Condition 14.

A summary of water usage for Permits to Appropriate Water and Temporary Water Use Permits in 2012 is provided in **Table 3** and **Table 4**. Pogo self-reported to ADNR on December 31, 2012 the use of greater than 395 acre-feet of groundwater authorized under Water Right LAS24617. Pogo submitted an application for temporary water right TWUP2013-023 on January 15, 2013 for an additional 1,613.3 acre-feet of water per year. Pogo also diverted greater than 404.63 acre-feet of fresh water under temporary water right TWUP2011-130 in 2012. This quantity is estimated using the amount of precipitation applied to the water shed area. Pogo received a greater than normal amount of precipitation in 2012 and estimates that approximately 1,300 acre-feet of fresh water was diverted. Pogo is in the process of expanding the DSTF. A new diversion ditch is being constructed approximately 150 vertical feet above the existing ditch. Pogo is in the process of amending TWUP2011-130 to accommodate more diverted water.

Table 3: Permits to Appropriate Water 2012 Monthly Total Flows

Month	LAS 24616 Surface Water Collected in Recycle Tailings Pond (RTP)	LAS 24617 Groundwater from Underground Mine Discharged to ORTW	LAS 24617 Groundwater from Underground Mine Recycled Underground	LAS 24613 Goodpaster River ORTW Influent	LAS 24611 Drinking Water Wells DW02 & DW03	LAS 24612 Gravel Pit Pond
	(gallons)	(gallons)	(gallons)	(gallons)	(gallons)	(gallons)
January	5,876,811	15,318,368	2,460,038	346,379,005	703,593	Water withdrawn by Pogo and by contractor, Delta Concrete, for road maintenance
February	4,447,433	12,704,228	2,634,976	243,434,826	716,767	
March	5,384,362	14,582,905	1,778,649	303,735,195	735,374	
April	3,998,460	12,423,523	2,852,865	202,024,800	736,815	
May	8,441,393	10,554,276	2,767,816	267,110,064	765,626	
June	11,754,433	10,448,319	2,958,761	321,025,453	783,982	
July	13,835,783	14,237,086	3,138,897	303,791,087	748,846	
August	14,802,201	13,173,388	1,121,036	310,117,555	785,925	
September	10,436,689	15,734,063	2,639,456	305,500,419	705,986	
October	9,698,228	16,386,805	2,615,556	257,266,467	802,222	
November	8,728,541	16,504,361	1,857,251	230,193,838	761,962	
December	8,702,678	14,716,627	842,181	191,546,175	768,522	
Total (gallons)	**106,107,013**	**166,783,949**	**27,667,483**	**3,282,124,884**	**9,015,619**	**1,262,400**
Total in Acre-ft	**326**	**512**	**85**	**10,072**	**28**	**4**
Permit Limit Acre-ft	**387.12**	**395.19**		**24,195.11**	**81.77**	**241.95**

Table 4: Temporary Water Use Permits 2012 Monthly Total Flows

Month	TWUP F2011-131 RTP Seepage Collection System Wells #5-8	TWUP F2011-131 RTP Seepage Collection System Well #9	TWUP F2011-76 Rosa Creek, Caribou Creek, Gilles Creek, Shaw Creek	TWUP F2011-130 Diversion Ditches
	(gallons)	(gallons)	(gallons)	(acre-feet)
January	6,184,324	2,824,136	Water withdrawn by contractor, Delta Concrete, for road maintenance	Annual Calculated Amount
February	5,579,155	252,847		
March	4,806,148	1,919		
April	3,416,826	1,956		
May	3,315,075	304,058		
June	4,070,044	651,486		
July	5,767,541	3,977,866		
August	6,394,643	4,017,654		
September	6,129,614	2,232,331		
October	6,305,498	2,431,508		
November	5,542,969	2,976		
December	4,153,204	1,768		
Subtotal	**61,665,038**	**16,700,505**		
Total	**78,365,543 gallons**		**357,000 gallons**	**1,300 acre-feet**
Permit Limit	**1,945,000,000 gallons**		**14,400,000 gallons**	**404.63 acre-feet**

2.6.4 CIP Tailings Cyanide Destruction

ADEC Waste Management Permit 2011DB0012 (2/7/12), 1.2.3, 1.6.2.3; Pogo Mine Monitoring Plan (11/1/11), 4.2

After cyanide destruction, the CIP tailings are stored in the CIP tank prior to being mixed with cement and used as backfill in the mine. Pogo's QAP requires monthly grab samples at station PC001 (CIP Stock Tank), which is located directly after the cyanide destruction circuit. Pogo collects a daily sample during a paste pour. The Waste Management Permit

requires that the interstitial water from CIP tailings must contain less than 10 mg/L of WAD cyanide as a monthly average and none of the samples can contain more than 20 mg/L of WAD cyanide.

100% of the CIP stock tank samples contained less than 10 mg/L. Results are reported in **Appendix C.**

2.6.5 Mineralized Development Rock Geochemistry

ADEC Waste Management Permit 2011DB0012 (2/7/12), 1.2.1, 1.6.2.6; Pogo Mine Monitoring Plan (11/1/11), 4.1

Composite samples of development rock materials placed in the DSTF were collected on March 10, June 1, September 5, November 14, and December 1. These samples were analyzed for whole-rock chemistry and ABA and results are reported in **Appendix B** as PC002. No adverse trends are observed.

2.6.6 Flotation Tailings Geochemistry

ADEC Waste Management Permit 2011DB0012 (2/7/12), 1.6.4; Pogo Mine Monitoring Plan (11/1/11), 4.0

Flotation tailings geochemistry samples were collected on March 13, June 19, September 22, November 17, and December 19, at PC003, the underflow of the filter-feed tank at the end of the mill circuit, prior to disposal on the DSTF.

No adverse trends are observed. The results are presented in **Appendix B**.

2.6.7 Flotation Tailings Interstitial Water Chemistry

ADEC Waste Management Permit 2011DB0012 (2/7/12), 1.6.4; Pogo Mine Monitoring Plan (11/1/11), 4.0

The interstitial water from the tailings samples collected at PC003 on March 13, June 19, September 22, and December 9 were also analyzed. Results indicate that Nickel levels remain high. Pogo suspects this is due to changes in ore chemistry.

Selenium levels remained elevated throughout the year. Pogo identified a mill reagent (Copper Sulfate) that contains trace amounts of selenium**.** A test run of low selenium copper sulfate was conducted during August, as noted in Pogo's Third Quarter Monitoring Report. Sample results are provided below in **Table 5**.

Table 5 - Low Selenium $CuSO_4$ Test Sample Results

Liquid Samples before the Test (Current CuSO4)					
Sample Location	**Date**	**Method**	**Parameter**	**Result**	**Units**
Floatation Feed	8/9/2012	EPA 200.8	Selenium	965	ug/L
Flotation Concentrate	8/9/2012	EPA 200.8	Selenium	1060	ug/L
Ball Mill Cyclone O/F	8/9/2012	EPA 200.8	Selenium	697	ug/L
Flotation Tailings	8/9/2012	EPA 200.8	Selenium	1050	ug/L
Process Water	8/9/2012	EPA 200.8	Selenium	0.492	ug/L
Flotation Tails Thickener O/F	8/9/2012	EPA 200.8	Selenium	915	ug/L
Pre-Leach Thickener O/F	8/9/2012	EPA 200.8	Selenium	844	ug/L
Liquid Samples during the Test (Low Se CuSO4)					
Sample Location	**Date**	**Method**	**Parameter**	**Result**	**Units**
Floatation Feed	8/20/2012	EPA 200.8	Selenium	55.6	ug/L
Flotation Concentrate	8/20/2012	EPA 200.8	Selenium	56	ug/L
Ball Mill Cyclone O/F	8/20/2012	EPA 200.8	Selenium	74.3	ug/L
Flotation Tailings	8/20/2012	EPA 200.8	Selenium	60.8	ug/L
Process Water	8/20/2012	EPA 200.8	Selenium	6.54	ug/L
Flotation Tails Thickener O/F	8/20/2012	EPA 200.8	Selenium	60.2	ug/L
Pre-Leach Thickener O/F	8/20/2012	EPA 200.8	Selenium	153	ug/L

Pogo plans to run additional tests of low selenium $CuSO_4$ to confirm performance results and, if the tests are successful, switch to the low selenium $CuSO_4$ by the end of the second quarter of 2013.

Except as noted above, no adverse trends are observed.

2012 Monitoring and historic data are provided in **Appendix I**. Time series graphs are provided in **Appendix C**.

2.7 VISUAL MONITORING

2.7.1 Facility Inspection

ADEC Waste Management Permit 2011DB0012 (2/7/12), 1.6.2.1, 1.6.9.3, 1.6.9.4; Pogo Mine Monitoring Plan (11/1/11), 2.0, 3.1; Pogo RTP Operating and Maintenance Manual (11-1-11), 4.0

Weekly visual inspections of the DSTF, RTP dam, and Monitoring Wells were completed throughout 2012. No cracks, bulging, settlement, geotechnical concerns, erosion, or damage were observed during 2012.

2.7.2 Biological Survey

ADEC Waste Management Permit 2011DB0012 (2/7/12), 1.6.2.5; Pogo Mine Monitoring Plan (11/1/11), 2.4

The objective of the visual biological survey program is to monitor wildlife interaction with the surface waste disposal facilities.

No wildlife issues with the RTP or DSTF occurred during the year.

2.8 DEVELOPMENT ROCK SEGREGATION AND STORAGE

ADEC Waste Management Permit 2011DB0012 (2/7/12), 1.2.1, 1.6.2.6; Pogo Mine Monitoring Plan (11/1/11), 4.1, Appendix A

During 2012, 1,848 rounds were blasted underground and sampled in accordance with the Rock Segregation Procedure. 540 rounds (29%) exceeded either the Arsenic threshold of 600 mg/l or the Sulfide threshold of 0.5% and these were encapsulated in the DSTF. Two hundred and fifty-nine rounds were not sampled due to operational challenges and these rounds were also placed internally in the DSTF.

2.9 WASTE DISPOSAL

ADEC Waste Management Permit 2011DB0012 (2/7/12), 1.2.1, 1.6.6

During 2012, 581,975 dry tons of flotation tailings, 182,975 tons of mineralized rock and 162,650 tons of non-mineralized rock were placed in the DSTF. During the year, 135,043 dry tons of CIP Tailing and 253,427 tons of filtered flotation tailings were placed underground as paste backfill.

The quantities of miscellaneous waste materials placed either into the DSTF or underground during the year are shown in **Table 6**.

Table 6: Miscellaneous Waste Disposal in DSTF and Underground

Material	Disposal Location	Quantity	unit
Grinding Media Flotation Debris Screen Residue	DSTF	179	tons
Water Treatment Plant Used Filter Media	Underground	443	yds
Water Treatment Plant Sludge	DSTF	230	yds
Water Treatment Plant Sludge	Underground	92	yds

2.10 GEOTECHNICAL MONITORING

ADEC Waste Management Permit 2011DB0012 (2/7/12), 1.5.3; Pogo DSTF Construction and Maintenance Manual (11-1-11)

The shells and the General Placement Area (GPA) of the DSTF were constructed between January 1, and December 31, 2012. Approximately 402,075 tons of tailings and non-mineralized rock were placed at the shells and approximately 525,525 tons of tailings, mineralized and non-mineralized rock were place in the GPA.

The geotechnical monitoring program for shell construction was carried out in accordance with the approved Pogo DSTF Construction and Maintenance Manual. The geotechnical monitoring for shell construction consists of geotechnical tests that include grain size distribution, Atterberg limits, Standard Proctor Tests and field density measurements using the Troxler density gauge. A summary of 2012 geotechnical monitoring is as follows:

Fourteen DSTF tailing samples were sent to Mappa Testlab in North Pole, Alaska, for geotechnical testing. The results are summarized in **Tables 7 and 8**. The optimum water content ranged from 12.9% to 17.2%, and the average was 15.3%. The maximum dry

density ranged from 105.7 pcf to 111.6 pcf, and the average was 108.6 pcf. These results are consistent with historical data.

The field moisture and density measurements were conducted fourteen times in 2012. The results are summarized below in **Tables 9 and 10**. Thirteen of the fourteen measurements conducted during the year achieved the target of compaction (90% of maximum dry density). The measurement conducted on October 18 resulted in a lower dry density. This was due to testing in colder weather and the top layer having been compacted several hours prior to testing which compromised the testing method and calculated results of the testing. Shell 2 construction ceased on July 8, 2012 and shell 3 construction ceased on December 29, 2012.

Table 7: 2012 Geotechnical Monitoring for DSTF Shell Construction Results of Standard Proctor Tests for SHELL 2.

Date Sampled	Optimum Moisture Content (%)	Maximum Dry Density (pcf)
1/9/2012	14.6	109.9
1/10/2012	14.6	109.7
1/26/2012	13.5	111.1
1/27/2012	12.9	109.7
3/5/2012	16.1	107.7
3/6/2012	15	108.2
5/14/2012	17.2	106.4

Table 8: 2012 Geotechnical Monitoring for DSTF Shell Construction Results of Standard Proctor Tests for SHELL 3.

Date Sampled	Optimum Moisture Content (%)	Maximum Dry Density (pcf)
1/31/2012	13.9	108.8
4/20/2012	15.8	109
7/31/2012	15.8	106.5
8/29/2012	16.8	105.7
10/18/2012	14.5	111.6
11/8/2012	16.8	107.9
12/19/2012	16.1	107.8

Table 9: 2012 Results of Field Density Measurements at the DSTF Shell 2

Date Sampled	Shell Elevation (ft AMSL)	Moisture Content (%, Average)	Dry Density (pcf, Average)	% of Maximum Dry Density (Average)
1/9/2012	2280	16.4	101.5	94.2
1/10/2012	2280	18	101.3	92.3
1/26/2012	n/a	16.9	103.2	92.9
1/27/2012	n/a	18.4	101.6	92.6
3/5/2012	2337	17.7	99.3	92.2
3/6/2012	2335	18.9	99.7	92.1
5/14/2012	2348	16.4	99.5	93.5

Table 10: 2012 Results of Field Density Measurements at the DSTF Shell 3

Date Sampled	Shell Elevation (ft AMSL)	Moisture Content (%, Average)	Dry Density (pcf, Average)	% of Maximum Dry Density (Average)
1/31/2012	2257	19.9	103.1	94.8
4/20/2012	2277	15.6	103.4	94.9
7/31/2012	2285	17.2	98.6	92.6
8/29/2012	n/a	14.9	106.6	100.9
10/18/2012	2310	19.1	97.6	87.5
11/8/2012	2317	18.8	101.5	94.1
12/19/2012	2338	17.8	100.0	92.8

3. 2012 AS-BUILT REPORTS AND MAPS

ADEC Waste Management Permit 2011DB0012 (2/7/12), 1.5.9.1; ADNR Plan of Operations Approval F20129500 (2/7/12), pg. 5

Five Plan of Operation (POO) Revisions were approved in 2012.

Revision 1 was for construction of a 77-bed "D-Wing" camp addition to the lower camp facilities. The construction included additions to the mine dry and dining areas also. The addition consists of several modular housing units built upon treated wooding pilings.

Revision 2 was for expansion of the DSTF. Construction of a new diversion ditch will increase capacity from 7.5M to 20M tons of dry stack tailings and waste rock. Pogo began construction of the ditch during April and finished the season in October with approximately 70% completion. The reclamation cost model update for the DSTF expansion was updated with the Plan of Operations Modification during the second Quarter of 2012.

Revision 3 was for construction of two additional sand filters at Mine Water Treatment Plant #2. They were constructed in a 20' x 20' lean-to style addition to the main building upon a poured concrete slab. Cost for demolition of this structure will be added to the cost model in 2013.

Revision 4 was to upgrade approximately 9,500 feet of Off River Treatment Works (ORTW) pipeline from six-inch HDPE SDR 26 to ten-inch HDPE SDR 17.

Revision 5 was for the new 2150 Portal for the East Deep expansion. The approval allows expansion of Pogo's power distribution substation, two additional 138kV – 13.8kV transformers, development of the 2150 portal area, and power cable runs between the two locations.

In 2012 Pogo also completed an upgrade to the Sewage Treatment Plant (STP) and lower camp utilities and began installation of a new Potable Water Treatment Plant #3 (PWTP #3) to service lower camp. The STP upgrade was completed within the existing building. PWTP #3 consists of two skid mounted modular units (10' x 48' and 8' x 12') placed on

reinforced concrete footings. Cost for demolition of this structure will be added to the cost model in 2013.

Available As-built reports for the projects are provided in **Appendix E**. Pogo Mine Site 2012 As-built maps are located in **Appendix A** of this report**.** **Figure 3** provides an overview of all facilities within the Pogo Millsite lease boundary at end of 2012. **Figures 3a** through **3d Appendix A** provide additional detail for the major areas of the mine.

4. RECLAMATION AND FINANCIAL RESPONSIBILITY

ADEC Waste Management Permit 2011DB0012 (2/7/12), 1.11, 3. ADNR Plan of Operations Approval F20129500 (2/7/12), pg. 3, 9; ADNR Pogo Mine Millsite Lease ADL416949 (3/9/04), Section 8

An updated mine reclamation and closure cost estimate was agreed to by ADEC and ADNR on March 20, 2012 (refer to March 20, 2012 Letter). The reclamation and closure bond is currently $52.29 million (refer to **Table 11**). The updated access road/transmission line reclamation and closure cost estimate was also agreed to by ADNR on March 9, 2011 at $4.8 million and has not changed during 2012 (refer to **Table 12**).

Table 11: Summary of Mine Reclamation and Closure Cost Estimates as of December 2012

SUMMARY OF ESTIMATED RECLAMATION AND CLOSURE COSTS-POGO MINE SITE									
Item Description		**1 year holding cost**	**Phase I**	**Phase II**	**Phase III**	**Phase IV Water Treatment**	**Phase IV Reclamation**	**Phase V**	**Total**
Direct Cost		$ 812,700	$ -	$ 952,400	$ 10,819,000	$ 6,298,300	$ 3,686,000	$ 109,500	$ 22,677,900
Site Management Cost		$ 1,221,900	$ -	$ 27,800	$ 2,953,800	$ 5,374,833	$ 2,001,700	$ -	$ 11,580,033
Subtotal Direct Cost		**$ 2,034,600**	**$ -**	**$ 980,200**	**$ 13,772,800**	**$ 11,673,133**	**$ 5,687,700**	**$ 109,500**	**$ 34,257,933**
Indirect Costs	**% of Subtotal**								
Mobilization/Demobilization	**5.0%**	$ -	$ -	$ 49,010	$ 688,640	$ -	$ 284,385	$ 5,475	$ 1,027,510
Subtotal		**$ 2,034,600**	**$ -**	**$ 1,029,210**	**$ 14,461,440**	**$ 11,673,133**	**$ 5,972,085**	**$ 114,975**	**$ 35,285,443**
Contractor Overhead and Profit	**15.0%**	$ 305,190	$ -	$ 154,382	$ 2,169,216	$ 1,750,970	$ 895,813	$ 17,246	$ 5,292,816
Subtotal		**$ 2,339,790**	**$ -**	**$ 1,183,592**	**$ 16,630,656**	**$ 13,424,103**	**$ 6,867,898**	**$ 132,221**	**$ 40,578,259**
Performance Bond	**3.0%**	$ 70,194	$ -	$ 35,508	$ 498,920	$ 402,723	$ 206,037	$ 3,967	$ 1,217,348
Insurance	**1.5%**	$ 35,097	$ -	$ 17,754	$ 249,460	$ 201,362	$ 103,018	$ 1,983	$ 608,674
Subtotal		**$ 2,445,081**	**$ -**	**$ 1,236,853**	**$ 17,379,036**	**$ 14,028,187**	**$ 7,176,953**	**$ 138,171**	**$ 42,404,281**
Contract Administration	**4.0%**	$ 97,803	$ -	$ 49,474	$ 695,161	$ 561,127	$ 287,078	$ 5,527	$ 1,696,171
Engineering Re-Design	**3.0%**	$ -	$ -	$ 37,106	$ 521,371	$ -	$ 215,309	$ 4,145	$ 777,930
Contingency	**15.0%**	$ 366,762	$ -	$ 185,528	$ 2,606,855	$ 2,104,228	$ 1,076,543	$ 20,726	$ 6,360,642
Total Indirects		**$ 875,046**	**$ -**	**$ 528,761**	**$ 7,429,623**	**$ 5,020,410**	**$ 3,068,183**	**$ 59,069**	**$ 16,981,092**
Total Direct + Indirect		$ 2,909,646	$ -	$ 1,508,961	$ 21,202,423	$ 16,693,543	$ 8,755,883	$ 168,569	$ 51,239,025
Inflation Proofing	**2.06%**	$ 59,926	$ -	$ 31,078	$ 436,676	$ 343,813	$ 180,332	$ 3,472	$ 1,055,297
Total Closure Cost		**$ 2,969,572**	**$ -**	**$ 1,540,039**	**$ 21,639,099**	**$ 17,037,356**	**$ 8,936,215**	**$ 172,041**	**$ 52,294,322**
								Rounded	$ 52,294,000

Table 12: Summary of Pogo Access Road/Transmission Line Reclamation and Closure Cost Estimates as of December 2012

Pogo Access Road and Transmission Line - Estimated Closure Cost							
		Phase I	Phase II	Phase III	Phase IV	Phase V	Total
Direct Cost		$ -	$ 13,666	$ -	$ 2,478,500	$ -	$ 2,492,167
Site Management Cost		$ -	$ 128	$ -	$ 582,645		$ 582,773
Subtotal Direct Cost		**$ -**	**$ 13,794**	**$ -**	**$ 3,061,145**	**$ -**	**$ 3,074,940**
Indirect Costs	% of Subtotal						
Mobilization/Demobilization	6.5%	$ -	$ 897	$ -	$ 198,974	$ -	$ 199,871
Subtotal		$ -	$ 14,691	$ -	$ 3,260,119	$ -	$ 3,274,811
Contractor Overhead and Profit	15.0%	$ -	$ 2,204	$ -	$ 489,018	$ -	$ 491,222
Subtotal		$ -	$ 16,895	$ -	$ 3,749,137	$ -	$ 3,766,032
Performance Bond	3.0%	$ -	$ 507	$ -	$ 112,474	$ -	$ 112,981
Insurance	1.5%	$ -	$ 253	$ -	$ 56,237	$ -	$ 56,490
Subtotal		$ -	$ 17,655	$ -	$ 3,917,849	$ -	$ 3,935,504
Contract Administration	4.0%	$ -	$ 706	$ -	$ 156,714	$ -	$ 157,420
Engineering Re-Design	4.0%	$ -	$ 706	$ -	$ 156,714	$ -	$ 157,420
Contingency	10.0%	$ -	$ 1,766	$ -	$ 391,785	$ -	$ 393,550
1 year holding cost			$ 41,000				$ 41,000
Total Indirects		**$ -**	**$ 48,038**	**$ -**	**$ 1,561,916**	**$ -**	**$ 1,609,955**
Total directs and indirects		$ -	$ 61,833	$ -	$ 4,623,061	$ -	$ 4,684,894
Inflation Proofing	2.66%	$ -	$ 1,645	$ -	$ 122,973	$ -	$ 124,618
Total Closure Cost		**$ -**	**$ 63,478**	**$ -**	**$ 4,746,035**	**$ -**	**$ 4,809,513**
						Rounded	**$ 4,810,000**

4.1 ALL-SEASON ROAD AND TRANSMISSION LINE

Right-of-Way permits for Pogo Access Road ADL 417066 and ADL 416809 (12/18/03), Transmission Line ADL 416817 (12/18/03), and Communication Site Access Road ADL 417247 (10/1/04).

The Early Entry Authorizations (EEAs) for ADL 416809 and 416817 were extended to December 17, 2012 by ADNR on January 5, 2012. In November 2012, ADNR discovered that Pogo had not completed an appraisal for the ROW permits. Pogo contracted with an appraiser and expects to submit the appraisal during the first quarter 2013. ADNR conducted an unofficial audit for easement payments on November 7, 2012. The EEAs for 416809, ADL 416817, and ADL 417247 were extended to March 1, 2013 by ADNR on November 14, 2012.

4.2 POGO MILLSITE LEASE

ADNR Pogo Mine Millsite Lease ADL416949 (3/9/04), Section 23 Modifications

Refer to Section 3 and Section 5 of this document.

5. PERMIT ACTIVITIES

5.1 2012 PERMIT ACTIVITIES

Permitting activities conducted during 2012 included:

Pogo's ***ADNR Plan of Operations Approval F20039500 (12/18/03)*** was renewed when *Plan of Operations Approval F20129500* was issued on February 7, 2012.

Pogo Reclamation and Closure Plan Stipulation number 3 states: "Permittee shall provide ADNR a draft of the proposed revegetation test trail program by May 1, 2012. The first trial shall be initiated by the end of 2013." Pogo submitted a *Draft Revegetation Test Trial Program for Reclamation at the Pogo Mine* on May 1, 2012. Comments were received on May 11, 2012. Pogo submitted the *Final Revegetation Test Trial Program for Reclamation at the Pogo Mine* on July 17, 2012.

Pogo DSTF Construction and Maintenance Plan Stipulation number 1 states: "Table 1 (Material Placement Schedule at the DSTF) and the "year-by-year" drawing in Appendix C shall be updated to reflect twelve-month per year construction schedule in the next revision to the Pogo DSTF Construction and Maintenance Plan, unless otherwise approved by ADNR." The next revision to the Pogo DSTF Construction and Maintenance Plan was with the DSTF Expansion submitted in March 2012. ADNR granted Pogo an extension of time until March 1, 2013 in their Approval document.

Pogo's ***ADEC Waste Management Permit, 0131-BA002 (12/18/03)*** was renewed when *Waste Management Permit 2011DB0012* was issued on February 7, 2012.

Pogo's ***US Army Corps of Engineers (COE) Section 404 Permit Q-1992-211*** was modified to expand the DSTF from 7.5 to 20 million tons. It was approved by COE on February 23, 2012.

Pogo's ***Plan of Operations Approval F20129500*** was revised five times in 2012 as follows:

1. Additional to D-Wing Dorm was approved on February 29, 2012.
2. DSTF Expansion was approved on April 13, 2012.
3. The addition of Two Sand filters to WTP#2 was approved on May 22, 2012.
4. Upgrade of 9,500 feet of ORTW line was approved on October 9, 2012.
   East Deep Expansion Power Distribution System and 2150 Portal was approved on December 20, 2012.

Pogo DSTF Construction and Maintenance Plan Stipulation number 1 states: "Table 1 (Material Placement Schedule at the DSTF) and the "year-by-year" drawing in Appendix C shall be updated to reflect twelve-month per year construction schedule and shall be provided along with the 2012 Pogo Mine Annual Report, unless otherwise approved by ADNR." When Pogo updated our DSTF material balance for the end of 2012 the crest elevation of the General Placement Area (GPA) was 2,490 feet. The year-by-year plan shown in *Pogo DSTF Construction and Maintenance Plan Figure for end of 2012* predicted it to be at 2,497 feet by the end of 2012. Pogo estimates that the GPA will grow to 2,508 feet by the end of 2013. The year-by-year plan shown in *Pogo DSTF Construction and Maintenance Plan Figure for end of 2013* predicts it to be at 2,510 feet by the end of 2013. These are very close and Pogo doesn't see a need to update these figures until 2014.

Pogo began construction of the new diversion ditch and haul road on April 16, 2012. Construction stopped on October 16, 2012. Approximately 70% of the project is completed. Construction will resume in March 2013. ADNR toured the construction site during their September 6, 2012 site inspection. On September 10, 2012 Pogo requested widening the new haul road running surface from 33 feet to 41 feet. It was approved by ADNR on September 12, 2012. On September 13, 2012 Pogo proposed shortening the new South Diversion Ditch by 400-450 feet to avoid a section of very steep slope. The new ditch would tie in with the existing ditch in the same manner. It was approved by ADNR on October 9, 2012. During an agency meeting on December 13, 2012 Pogo proposed some changes to the inlets designs. A written design change request will be submitted during the first quarter 2013. Minor design changes are necessary to accommodate actual ground conditions after excavating test pits in the inlet areas.

Pogo's ***Plan of Operations Amendment Approval F20129500 (April 13, 2012) Project Specific Stipulation number 1*** states: "Permittee shall complete a dry stack tailings facility closure study approved, by ADNR, to evaluate the hydrologic, geochemical and geotechnical characteristics of the facility and proposed cover design. The study should model impacts to post-closure down-gradient water quality. Pogo shall submit a draft Study Plan to ADNR within 90 days from the effective date of this Plan of Operations Amendment. ADNR will provide comments, if any, to Pogo within 30 days of receipt of the draft Study Plan. Pogo shall incorporate ADNR's comments, if any, and complete the study. A report of the DSTF study should be submitted to ADNR by the end of 2013."

Pogo met with ADNR on May 17, 2012. Pogo submitted an outline for the Study Plan on July 11, 2012 and also requested additional time to submit the Plan or until August 31, 2012. It was granted on July 12, 2012. ADNR visited Pogo on September 6, 2012 and was provided an update then. On August 29, 2012 Pogo requested more time to complete the Study Plan or until October 15, 2012 in order to focus on the installation of three piezometers within the existing DSTF. The purpose of the piezometers is to: 1) Demonstrate the slope stability of the 20 million ton DSTF under operational and closure configurations; 2) Establish a design basis and preliminary hydraulic design to minimize erosion and infiltration, including design of an engineered cover; and 3) Characterize the projected post-closure water quality of surface water runoff and potential seepage from the DSTF. They were installed in October 2012. Preliminary results were presented to the agencies during a meeting on December 13, 2012.

A meeting was held on October 4, 2012. The purpose of the meeting was to submit the DSTF Closure Study Plan, discuss it and agree on the main elements. ADNR approved the Study Plan on October 19, 2012. ADEC provided their comments on November 16, 2012. Pogo responded on December 13, 2012 during a meeting with the agencies.

Pogo submitted a "Five-Year Work Plan for Archeological Monitoring along the Pogo Mine Access Road" to the State Historic Preservation Officer (SHPO) on May 18, 2012. Pogo received approval of the annual report and Five-Year work plan on May 22, 2012 from the SHPO.

5.2 FUTURE PERMIT ACTIVITIES

Future permitting activities planned for 2013 include:

- Submit temporary water use permit application for additional water use from underground mine workings.
- Increase permitted water use under TWUPF2011-130 for DSTF diversion ditch.
- Amend Pogo*'s US Army COE Section 404 Permit Q-1996-0211 for an additional 2.8 acres of wetland impact for the DSTF Ex*pansion.
- Complete corrective action requirements under *ADEC COBC 11-0929-50-0002 (May 9, 2012)*.
- Amend Pogo's *ADEC APDES AK-005334-1 (5/1/11)* to permit a new mine water treatment plant and potentially increase Pogo's discharge rate to the Off River Treatment Works (ORTW) in 2013.
- Complete construction of the new DSTF expansion facilities.
- Complete update to Pogo's DSTF Closure Plan.
- Initiate an update to Pogo's Underground Closure Plan.
- Complete Hydrology Study for East Deep expansion.
- Initiate an update to Pogo's Rock Characterization for East Deep expansion.
- Amend Pogo's *Plan of Operation Approval F20129500 (February 2012)* for East Deep expansion, conversion of reclamation and closure cost model to SRCE Model, addition of ROW Bond to SRCE Model, and cost of living update for ROW aspect.
- Submit Title V Permit for Pogo Mine triggered by East Deep expansion portal heaters.
- Obtain *Right-of-Way Permits for the all-season road ADL416809 and 417066, Transmission Line ADL 416817, and Communication Site Access ADL 417247.*

Appendix A: Maps

Appendix B: Effluent Toxicity Testing (WET), Whole Rock Geochemistry, and Flotation Tailings Solids Chemistry Data

Appendix C: Time Series Graphs of Monitoring Data

Appendix D: As-Built Reports for MW12-001A and MW12-001B, MW12-500, MW12-501, and MW12-502

Abandonment Report for MW03-500, MW03-501, and MW03-502

Appendix E: As-Built Reports

Electronic Appendices

Appendix F: Laboratory MDL Studies

Appendix G: Meteorological Monitoring Annual Data Report

Appendix H: Whole Effluent Toxicity Testing (WET) Laboratory Reports

Appendix I: 2012 Monitoring and Historic Data