



2011 ANNUAL ACTIVITY AND MONITORING UPDATE

April 12, 2012



SUMITOMO METAL MINING Pogo LLC.







Discharge Line
WTP #2 to ORTW

ORTW

Airstrip

Mill

Camp/Admin/Shop

Lower
Camp

1690
Portal

RTP

Drystack

1875
Portal

1525
Portal

Access
Road

Discussion Summary

- Monitoring Results
- Compliance Challenges
- Permit Update
- Other Activities



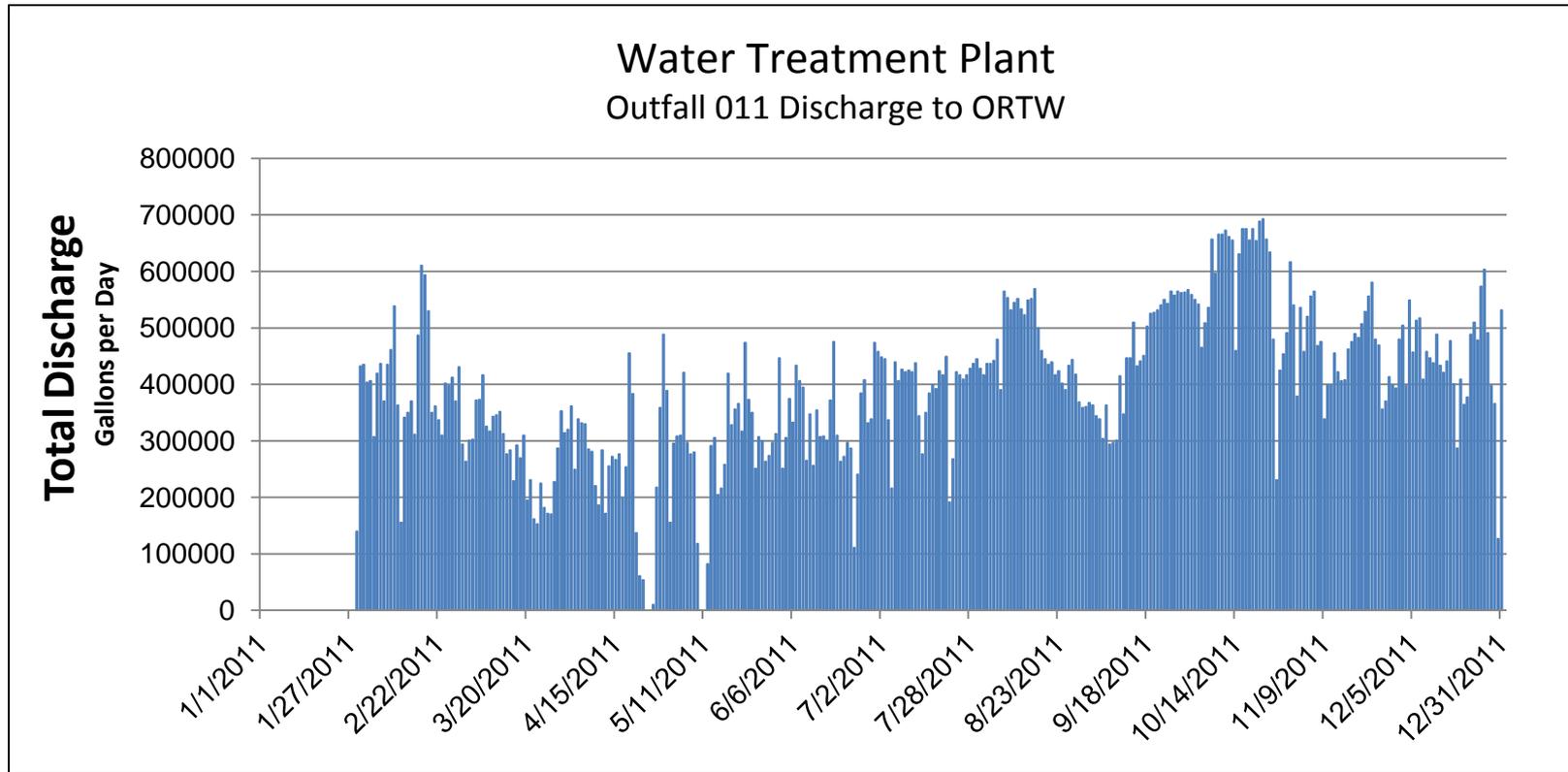
Monitoring Results



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132.5 Million Gallons Treated and Discharged



Four surface water stations are monitored on the Goodpaster River. 2011 Results are all within Permit Limits.



Whole Effluent Toxicity Testing

- Annual Whole Effluent Toxicity Testing took place in June. Water being discharged into the Goodpaster River was sent to the lab for biological assay.
- Water fleas and Fat Head minnows were grown in different concentrations of effluent to see how it affected growth and death rates. All results were within permit limits.



Ceriodaphnia dubia



Pimephales promelas



Fish Tissue Sampling in late September 2011



- Chinook salmon fry are collected annually and analyzed for metals content.

15 fish are collected in minnow traps upstream and 15 downstream of the mine.

5 to composite test
10 individual tests



Salmon fry are also measured, genetic samples taken for the Fish & Game Department and extra salmon fry are released back into the river.

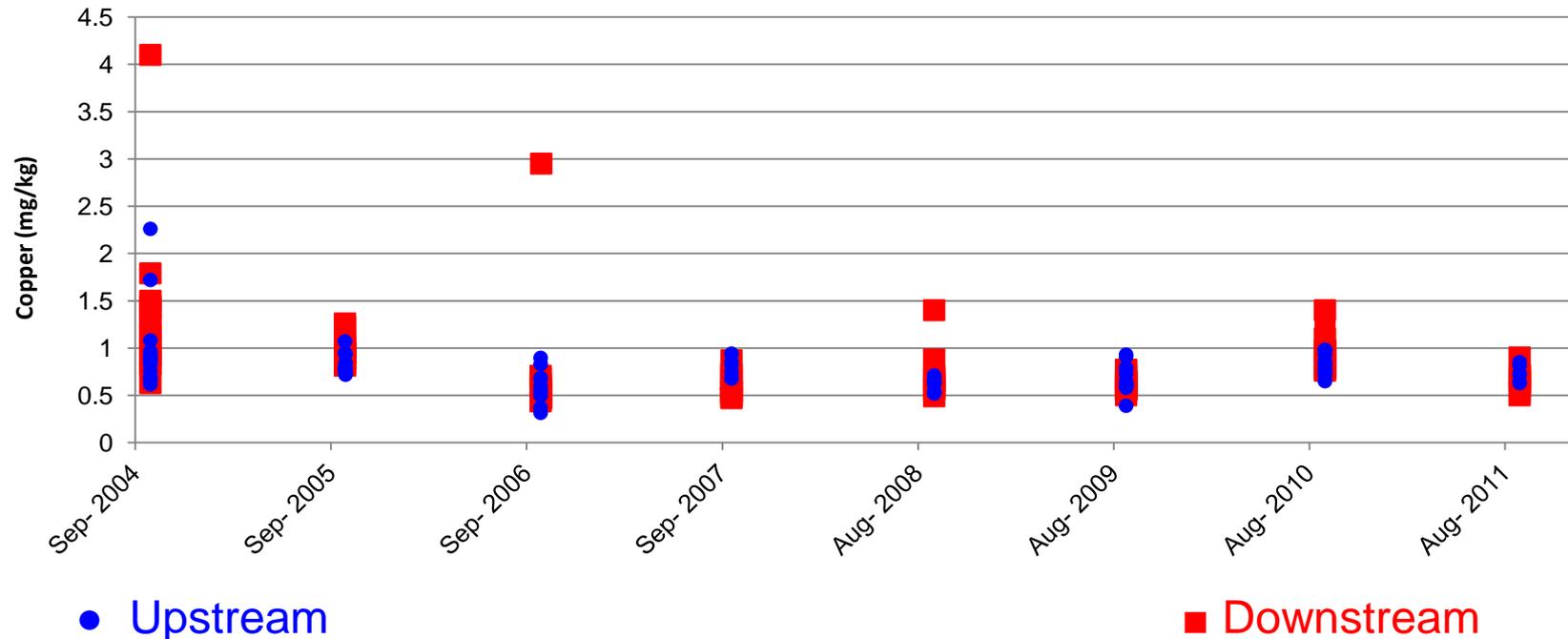


Brandi Baker, ADFG



Fish Tissue Sampling Results

Fish Tissue Values over time for Copper (mg/kg)



Mill began production in 2006.

Pogo did not start discharging until 2007.





Compliance Challenges



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Outfall 011 – MWT#2 Discharge





Gravel
Pit
Pond

To ORTW

Outfall 011
WTP#2

Outfall 011 - Iron

- NPDES Permit Effluent Limit: Daily Max of 1639 ppb and Monthly Average of 817 ppb.
- APDES Permit Effluent Limit: Daily Max of 1639 ppb and Monthly Average of 817 ppb.
- Summary of Exceedances:
 - March Monthly Average of 1102 ppb
 - April Monthly Average of 1168 ppb
 - April 27 Daily Max of 1700 ppb
 - May Monthly Average for iron of 854 ppm
 - June Daily Max of 2900 ppb

Note: Stopped using gravel pit pond water in June.

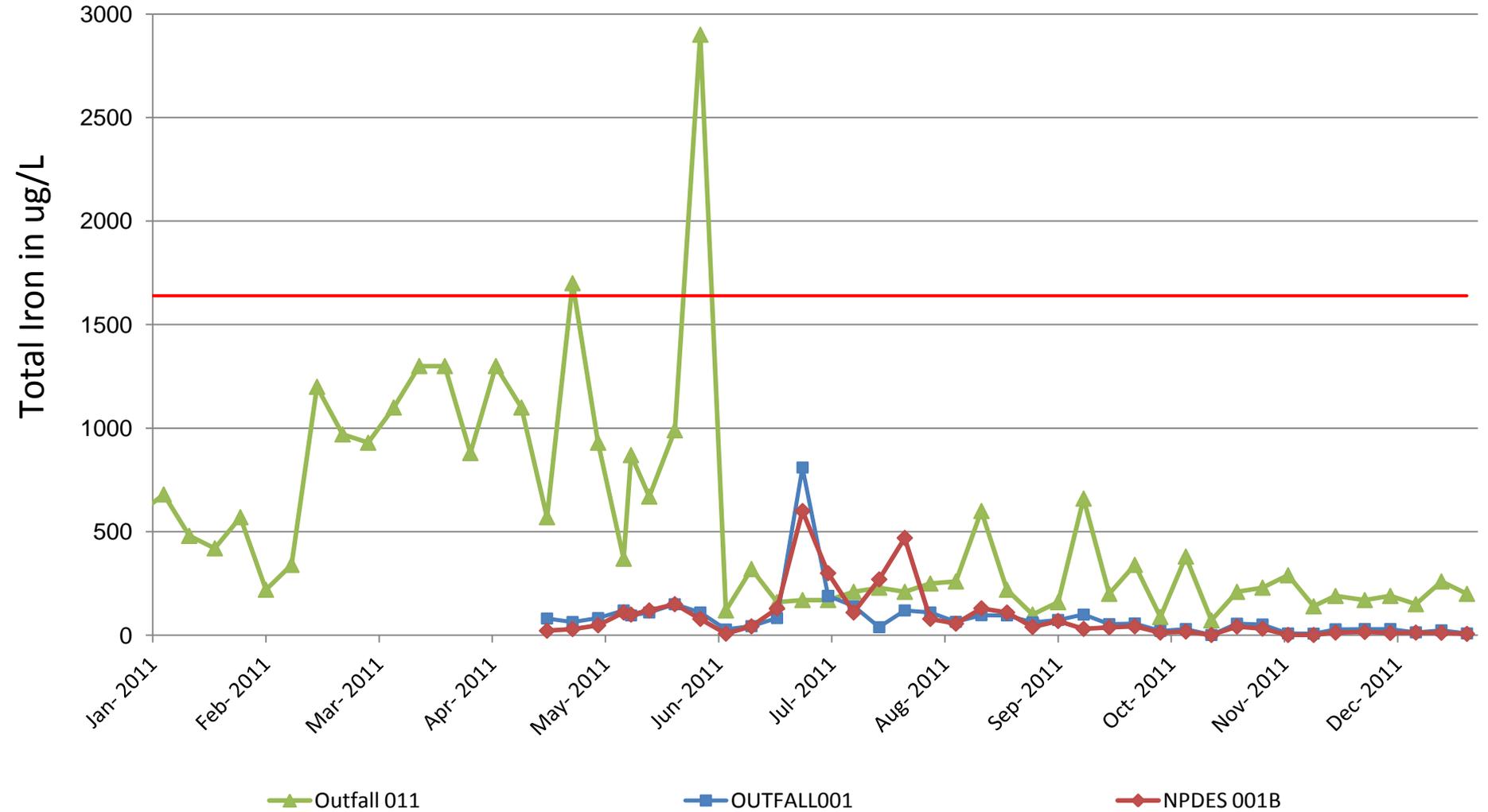


Additional Voluntary Action Taken

- Started monitoring River water at Outfall 001B for key Outfall 001 and 011 parameters.
- Started monitoring Outfall 011 for key Outfall 001 parameters.



Outfall 011 - Total Iron



Gravel Pit Pond Water

Key Issues:

- Iron at Outfall 011
- Manganese at Outfall 001

Learning:

- Should have re-characterized water prior to use.

Note: Pogo stopped using gravel pit pond water in June.



Outfall 011 - Low pH

- Seven Probe A < 6.0 pH exceedance events greater than 60 minutes in 2011.
- Outfall 011 has a continuous pH meter with dual probes (pH Probes A and B) to improve operability because the probes tend to go out of calibration.
- Readings taken during the same time minute intervals from pH Probe B all showed compliance with permit limits.
- Pogo replaced pH probe A in March. No exceedances at Outfall 011 since.



Outfall 001 – Off River Treatment Works Discharge



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ORTW

NPDES 001B
Pump House
with
Mixing Chamber

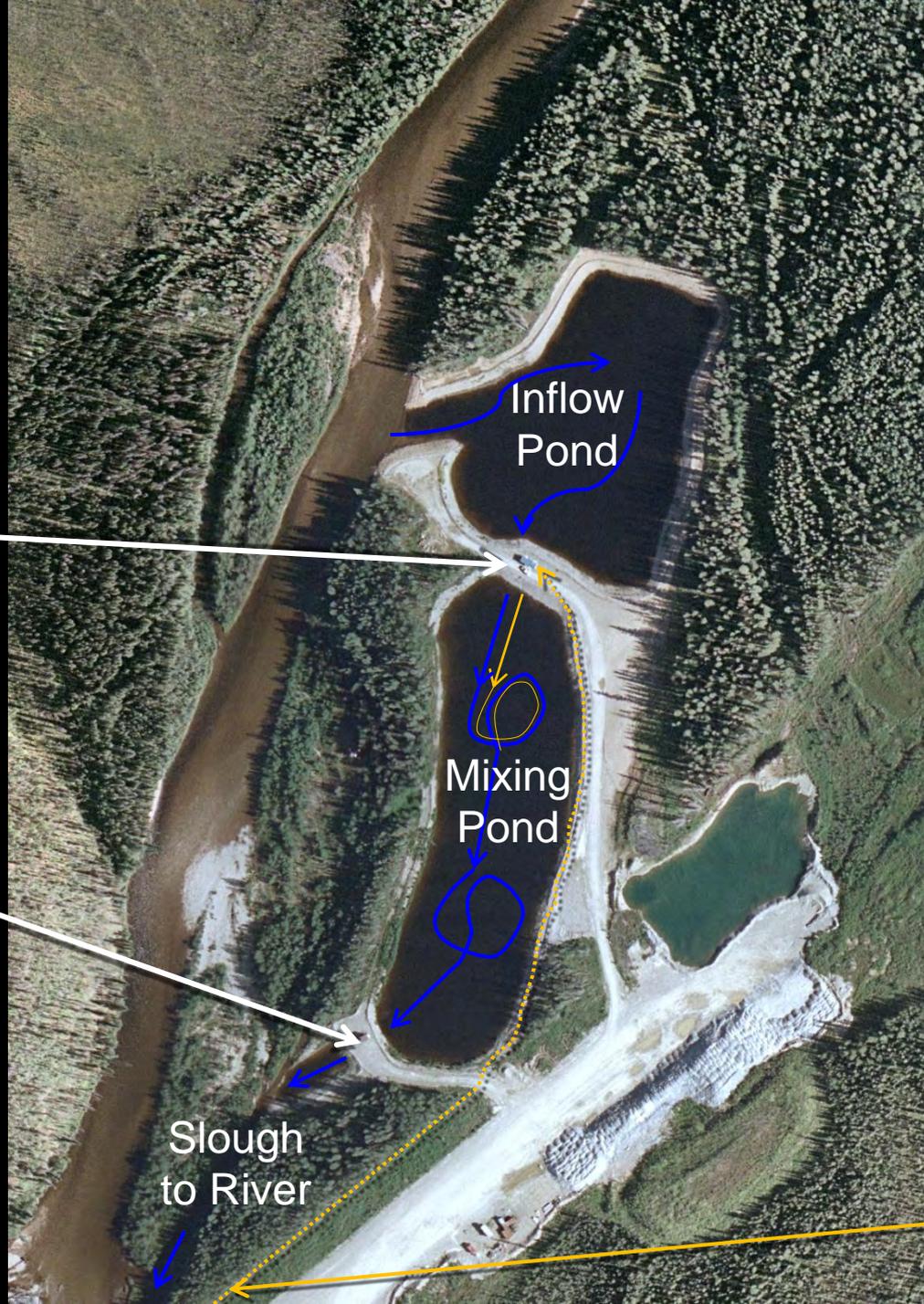
Outfall 001 /
Weir

Slough
to River

Inflow
Pond

Mixing
Pond

From WTP #2
Outfall 011



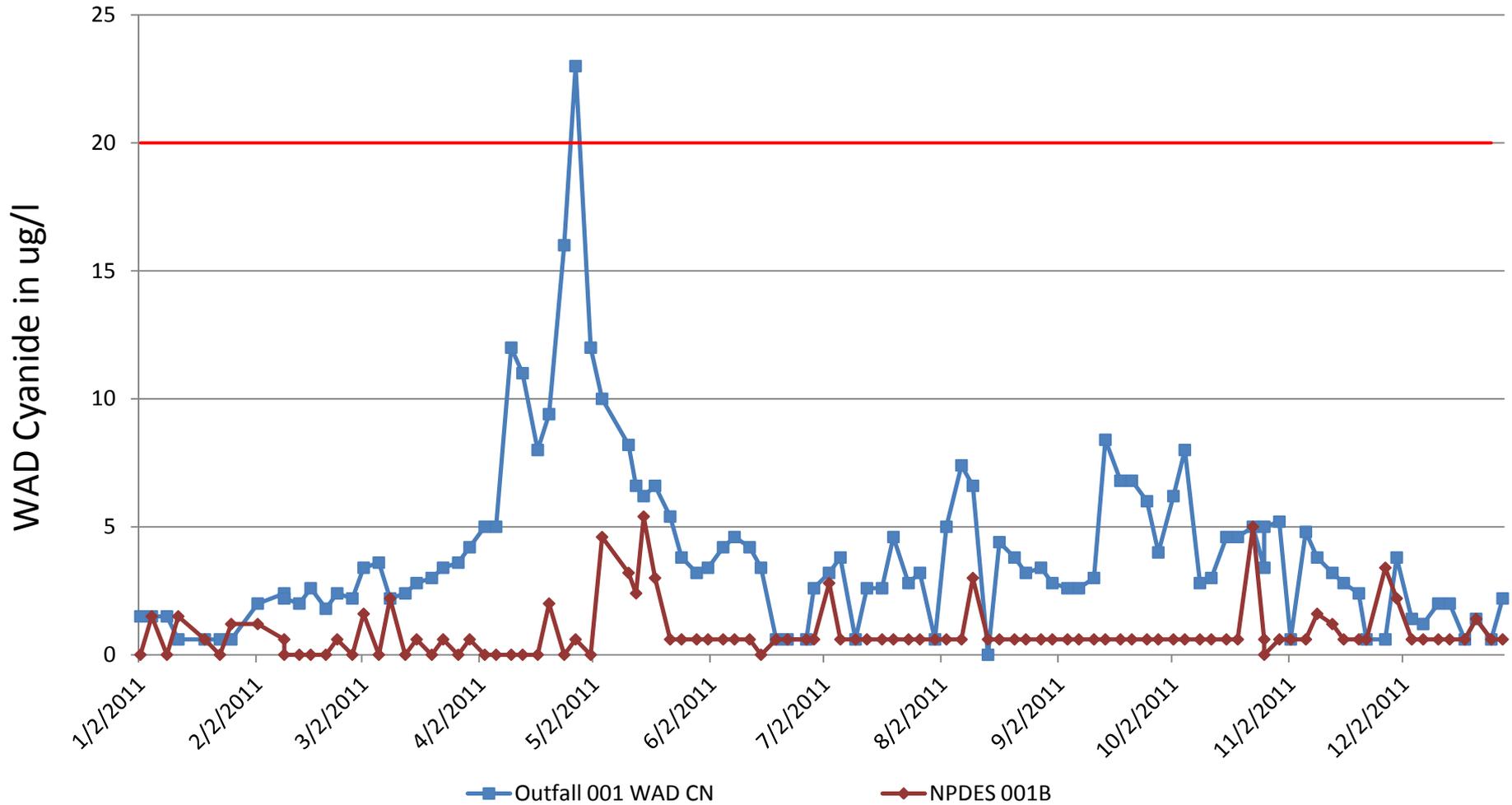
Outfall 001 - Weak Acid Dissociable (WAD) Cyanide

- NPDES Permit Effluent Limit: Daily Max of 8.5 ppb and Monthly Average of 4.3 ppb.
- APDES Permit Effluent Limit Daily Max of 6.9 ppb and Monthly Average of 4.7 ppb (Note: APDES issued 3-10-11; effective 5-1-11).
- Summary of exceedances:
 - April 10 Daily Max of 12.0 ppb
 - April 13 Daily Max of 11 ppb
 - April 20 Daily Max of 9.4 ppb
 - April 24 Daily Max of 23 ppb
 - April Monthly Average of 11.2 ppb

Note: APDES Facility-Specific Limit is 20 ppb



Outfall 001 - WAD Cyanide in ppb



Outfall 001 - Manganese

- NPDES Permit Effluent Limit: Daily Max of 73 ppb and Monthly Average of 50 ppb.
- APDES Permit Effluent Limit: Removed.
- March 2011 Monthly Average Mn was 57 ppb.

Note: Pogo stopped using gravel pit pond water in June.



Outfall 001 – Low pH

- Four continuous meter pH < 6.5 exceedance events greater than 60 minutes in 2011.
- Readings do not correlate with those taken using a hand held pH meter, those taken at Outfall 011, those taken at Goodpaster River intake.
- Pogo was using a continuous pH meter at Outfall 001 to enhance operational control of discharge.
- It has been demonstrated that continuous pH meters malfunction during colder temperatures.
- March 29 Pogo started measuring pH daily with hand held meter at Outfall 001. **No excursions at Outfall 001 since.**



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Sewage
Treatment
Plant

Outfall
Line

Mixing
Zone

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Outfall 002 - Fecal Coliform

- Permit Effluent Limit: Daily Max of 400 CFU / 100mL and Monthly Average of 200 CFU / 100mL.
- **Summary of Exceedances:**

March 9 Daily Max of 34,000 CFU/100mL

March 11 Daily Max of 800 CFU/100mL

May 25 Daily Max of 1,727 CFU/100mL

May 31 Daily Max of 1,600 CFU/100mL

June 8 Daily Max of 30,000 CFU/100mL

June 15 Daily Max of 3,700 CFU/100mL

June 22 Daily Max of 3,300 CFU/100mL

June 30 Monthly Average of 666 CFU/100mL

July 6 Daily Max of 570 CFU/100mL

Aug 10 Daily Max of 2,900 CFU/100mL

Aug 17 Daily Max of 5,200 CFU/100mL

Aug 31 Daily Max of 9,500 CFU/100mL

Sept 7 Daily Max of > 200,000 CFU/100mL

Sept 12 Daily Max of 2,200 CFU/100mL



Corrective Actions Taken

- Communicated with ADEC via phone and email and met with ADEC on June 13, June 27 and Sept 22.
- Increased effluent sampling frequency and sent splits to a secondary laboratory.
- Completely inspected the system and replaced wear items, cleaned components, and replaced sand filters.
- Hauled Sewage Treatment Plant (STP) decant water offsite for disposal.
- Collected upstream and downstream samples from the Goodpaster River.
- Purchased and installed a new UV system.
- Pogo has been in compliance since September 12, 2011.



STP UV Disinfection System



Old UV System



New UV System



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Summary of 2011 Exceedances:

Outfall 011:

Low pH: 7 exceedances for pH below 6.0

Iron: One Daily Maximum and 3 Monthly Average

TSS: One Daily Maximum

Outfall 001:

WAD CN: 5 Daily Maximum and One Monthly Average

Manganese: One Monthly Average

Low pH: 4 exceedances for pH below 6.5

Outfall 002:

Fecal Coliform: 13 Daily Maximum and One Monthly Average



Notice of Violation (NOV) and Compliance Order By Consent (COBC)

- July 18, 2011 Joint ADEC and EPA site inspection at Pogo.
- December 1, 2011 Pogo Received Inspection Report and a NOV.
- January 5, 2012 Pogo Responded to NOV.
- February 21, 2012 Pogo Received Draft COBC from ADEC.
- March 13, 2012 Pogo Proposed corrective action language for COBC to ADEC for three areas:
 1. Outfall 002 - Sewage Treatment Plant
 2. Outfall 011/001 - MWTP#2
 3. RTP Seepage



Drystack Tailings Facility



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RTP History & Background

- 2008 surface seepage observed below RTP.
- 2009 Pogo grouted fractures in the south abutment.
 - ✓ Seepage collection at SCW 9 (shallow) decreased by 100 gpm after 2009 grouting.
 - ✓ Seepage collection at SCW 5-8 (deep) didn't change after 2009 grouting.
- 2010 Rhodamine Dye Test
- 2011 Hydro-geophysical Survey



2010 Tracer Dye Test at RTP



20 gallon x 20% (200,000,000ppb) Rhodamine

RTP: approx. 21.4M gallon

Target Concentration at RTP = **187 ppb**



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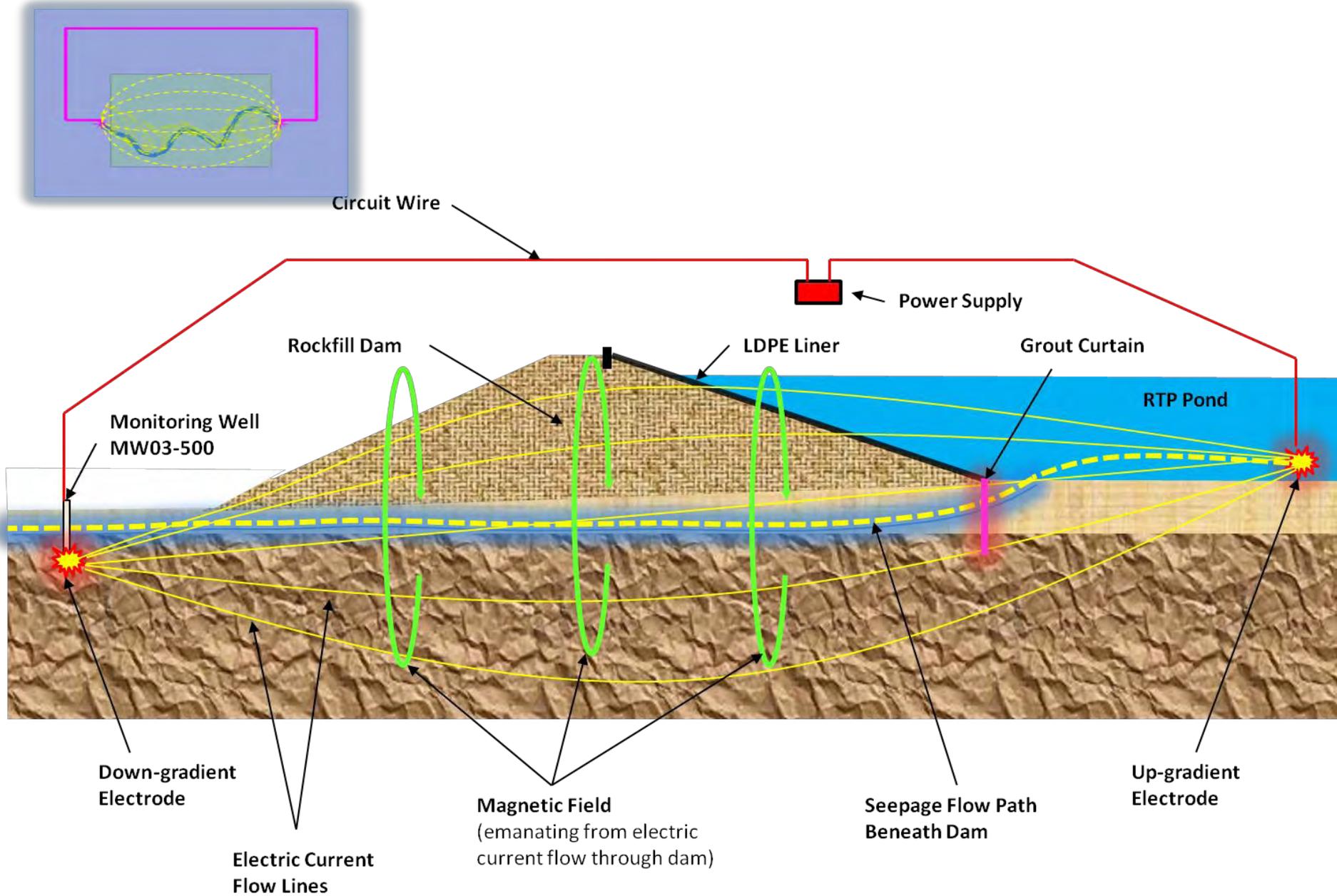
2011 Hydro-Geophysical Survey



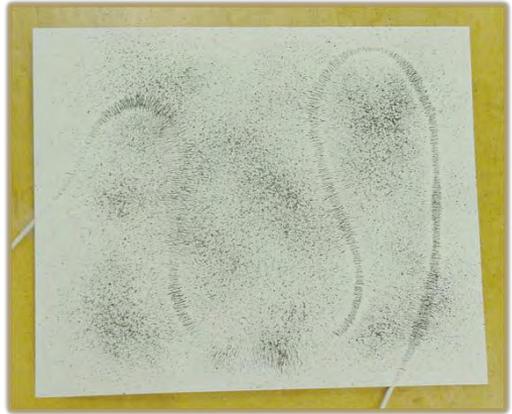
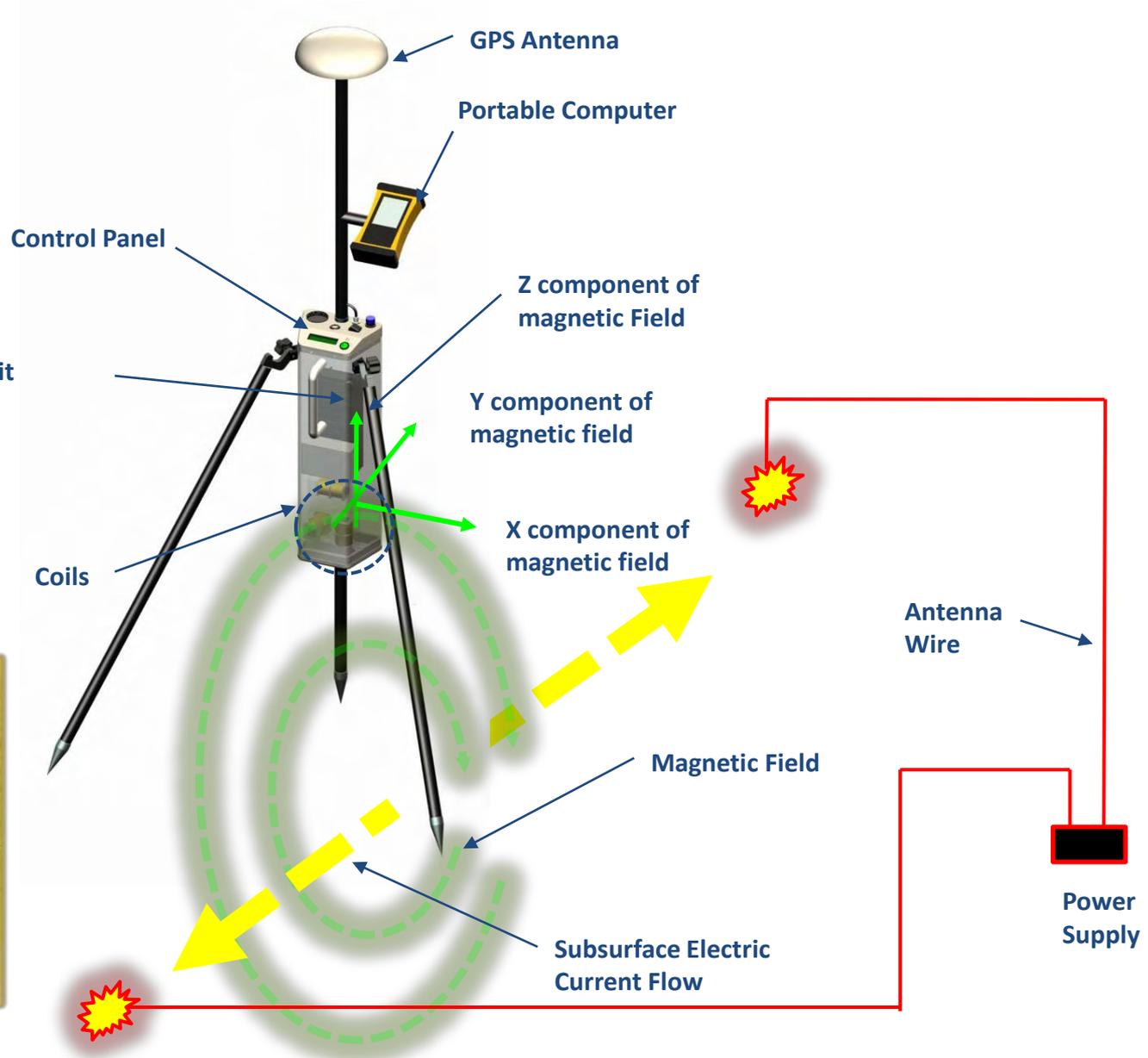
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Approach to the Work



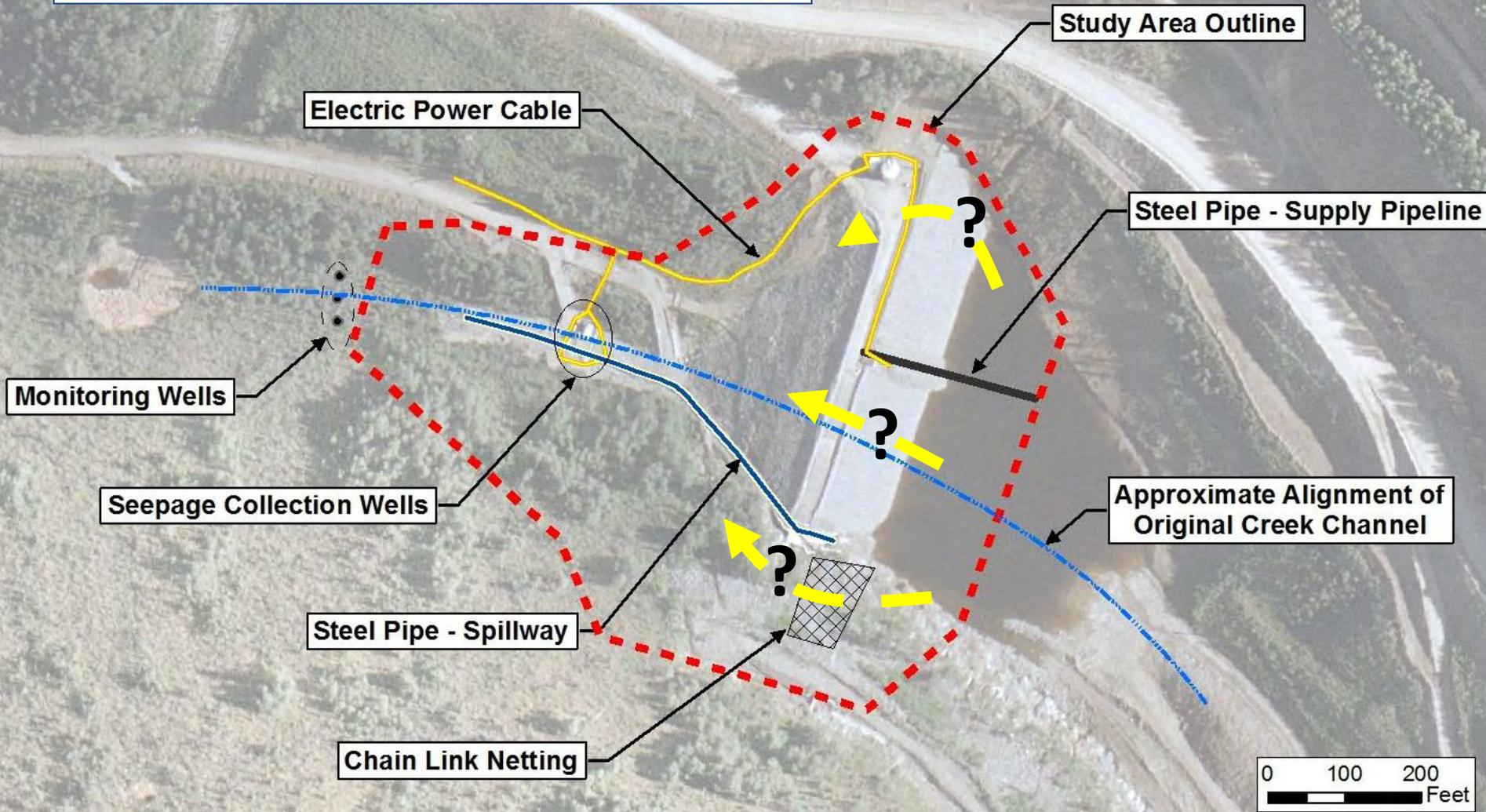
How it Works



Purpose of Investigation



✓ Identify how and where water seeps through and/or beneath the RTP dam.



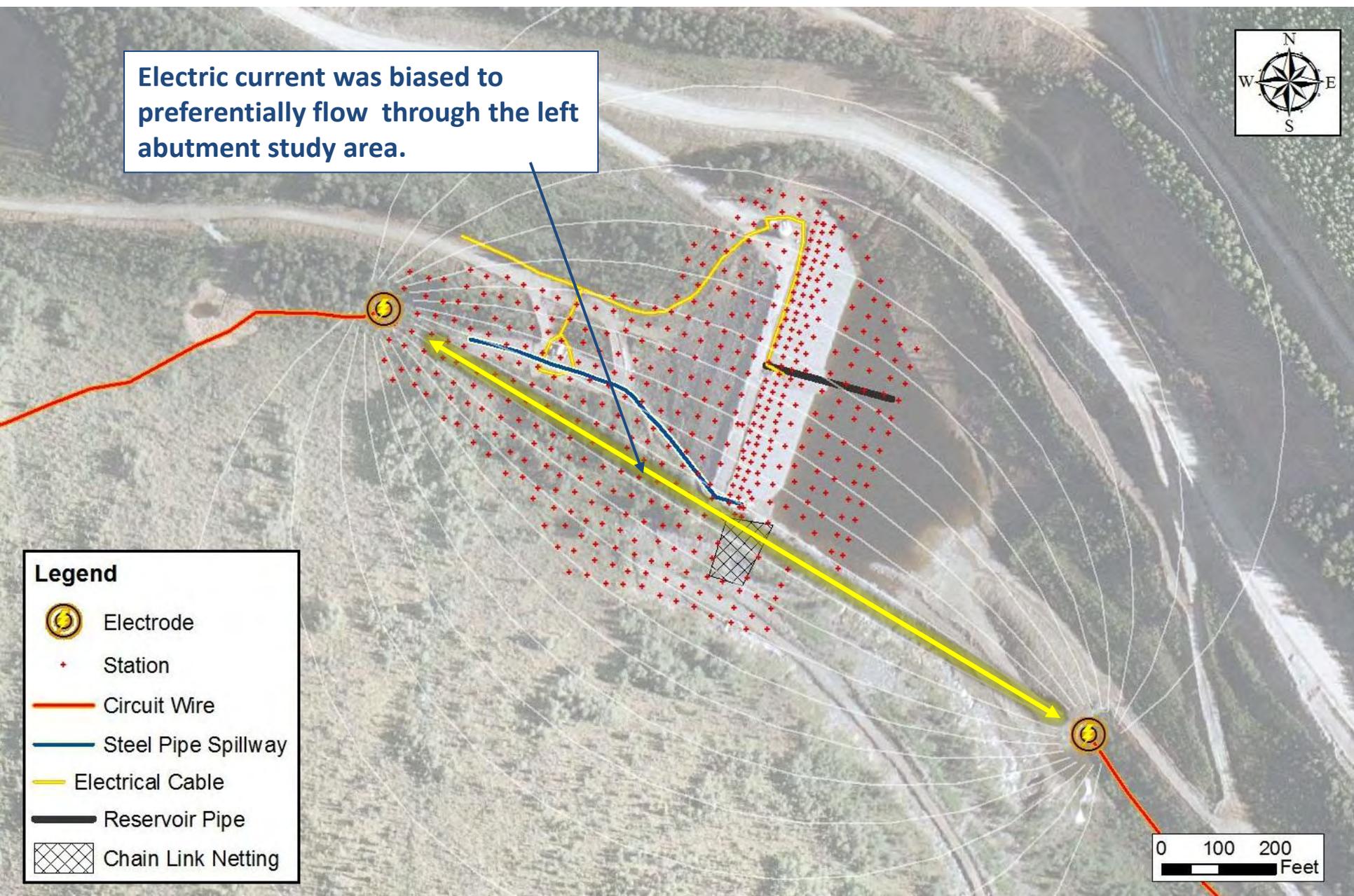
Survey Layout



Electric current was biased to preferentially flow through the left abutment study area.

Legend

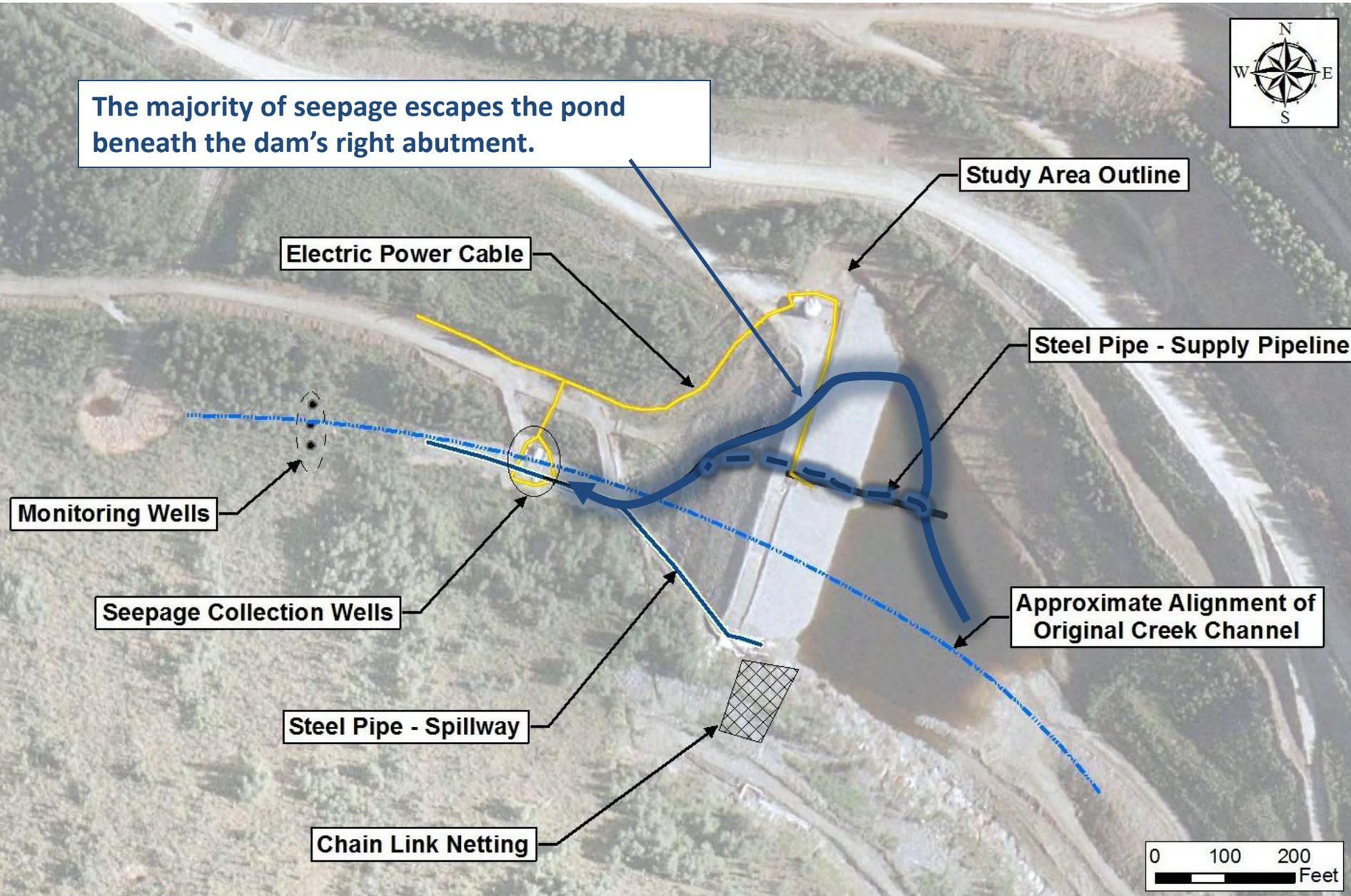
- Electrode
- Station
- Circuit Wire
- Steel Pipe Spillway
- Electrical Cable
- Reservoir Pipe
- Chain Link Netting



A Primary Seepage Flow Path was Identified beneath the Right Abutment Area of the Dam



The majority of seepage escapes the pond beneath the dam's right abutment.



Study Area Outline

Electric Power Cable

Steel Pipe - Supply Pipeline

Monitoring Wells

Seepage Collection Wells

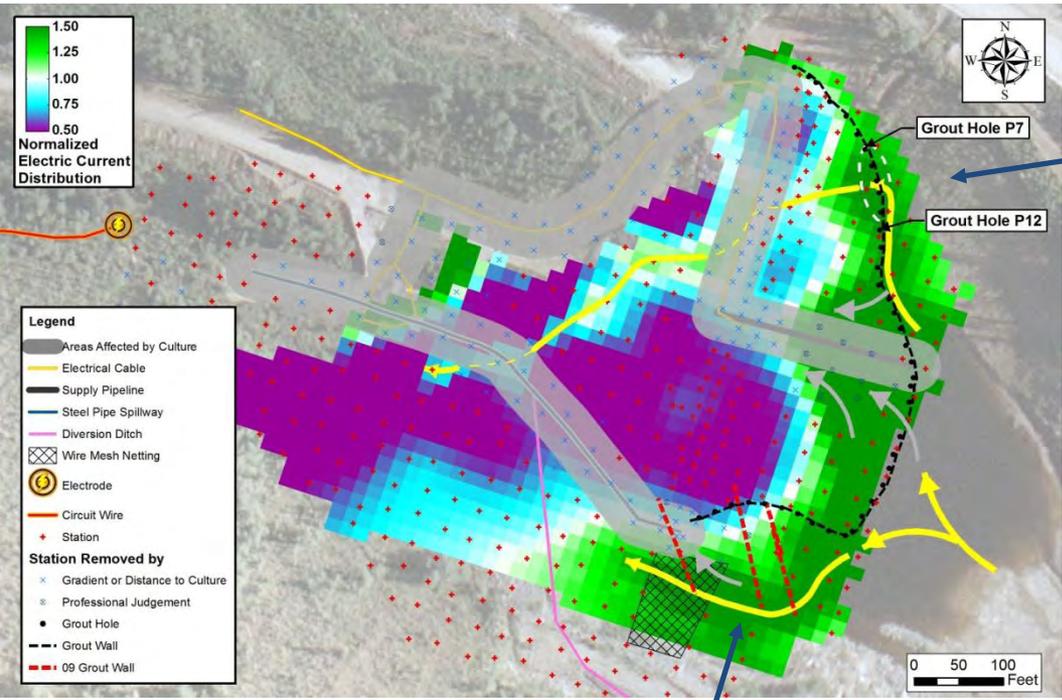
Approximate Alignment of Original Creek Channel

Steel Pipe - Spillway

Chain Link Netting

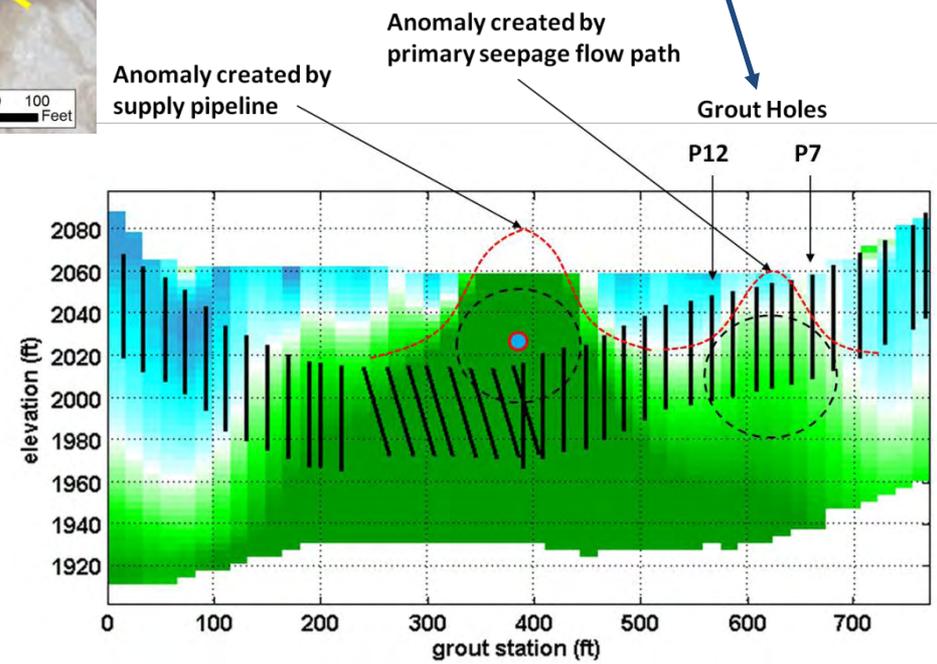
0 100 200 Feet

Summary of Investigation



Seepage appears to be escaping the impoundment beneath the grout curtain between grout holes P7 and P12. Grout holes may not have adequately intercepted joints and fractures likely existing in the dam's foundation in this area.

A very subtle seepage flow path possibly exists around the south abutment, however, this flow path appears to be cut-off by the secondary grout curtains.



Reclaim Tailings Pond (RTP) Bypass

- In 2011, the RTP was intentionally filled to enable Pogo to conduct a Hydro-geophysical survey of the RTP area.
- In August the Hydro-geophysical survey was completed.
- In September 2011 excess water in the mine prompted Pogo to request permission to bypass treatment for RTP Water.
- Pogo bypassed a total of 2,884,421 gallons RTP water in Oct and Nov.
- Bypassed water met Outfall 011 and Outfall 001 effluent standards.



Permit Update



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Current Permit Activities

- Pogo was issued ADEC APDES Permit #AK0053341 on May 1, 2011.
- In support of Pogo's ADNR Plan of Operations Approval F200365000, the following documents were updated:
 - Pogo Plan of Operations
 - Pogo Quality Assurance Plan
 - Pogo Mine Monitoring Plan
 - Pogo Reclamation and Closure Plan and Cost Model
 - Pogo DSTF Construction and Maintenance Plan
 - Pogo RTP Operating and Maintenance Plan
- In support of Right-of-Way Permits, the following documents were updated:
 - As-built survey drawings



Future Permit Activities

- Renew ADEC Waste Disposal Permit 0131-BA002.
Waste Management Permit No. 2011DB0012 was issued on February 7, 2012.
- Renew ADNR Plan of Operations Approval F20036500.
Plan of Operation Approval F20129500 issued on February 7, 2012.
- Amend US Army COE Section 404 Permit Q-1996-0211 to expand DSTF to 20 million tons.
Amendment Approved on February 23, 2012.
- Amend Plan of Operations Approval F20129500 for DSTF Expansion and Updated Cost Model.
- Amend Plan of Operations Approval F20129500 to change Cost Model to SRCE Model.
- Amend Plan of Operations Approval F20129500 for East Deep Expansion.



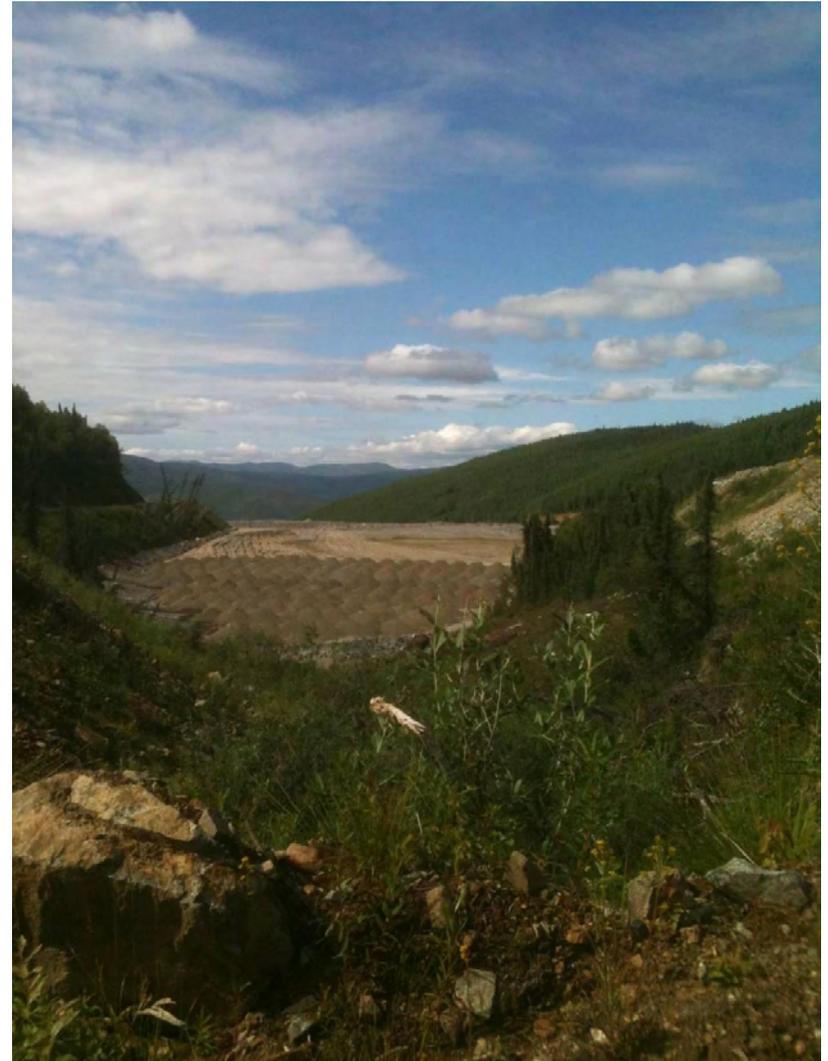
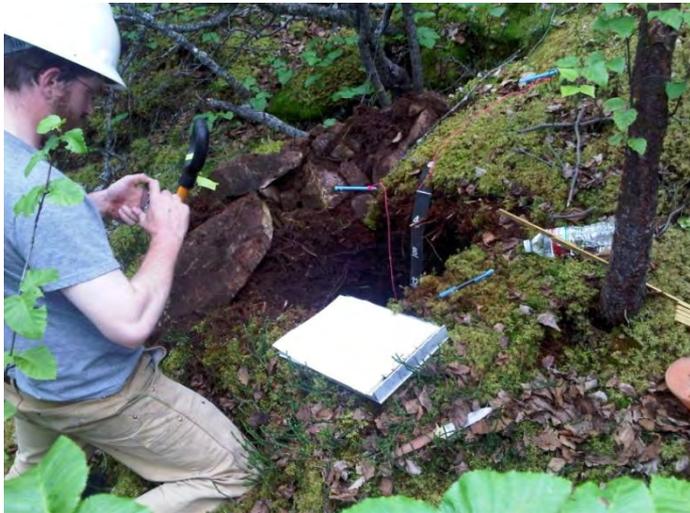
Other Activities



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Wetlands Survey DSTF Area



Cultural Survey at Pogo Road



New Meteorological Stations



Airstrip MET Station



Pogo Ridge MET Station



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New Incinerator and Building



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Two New Monitoring Wells



MW11-001A & MW11-001B



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Replaced MW99-216 with MW11-216



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Pogo Mine Environmental Staff



Rick Wilbur, Luke Walker, Leonard Hanson, Sally McLeod, Julia Andoe, Stacy Staley, and Ben Farnham.



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MINING IN HARMONY WITH ENVIRONMENT



Photo by Dave Brown