2020 WORK PLAN
for the
COMMUNITY ENVIRONMENTAL MONITORING PROGRAM
of the
EAGLE MINE

SUBMITTED BY

SUPERIOR WATERSHED PARTNERSHIP
in cooperation with the
KEWEENAW BAY INDIAN COMMUNITY

December 12, 2019

www.superiorwatersheds.org
www.swpcemp.org

Commonly Used Acronyms and Abbreviations

CEMP	Community Environmental Monitoring Program
CWB	Contact Water Basins
DEQ	Michigan Department of Environmental Quality
Eagle	Eagle Mine
EPA	U.S. Environmental Protection Agency
GW	Groundwater
GWDP	Groundwater Discharge Permit
HTDF	Humboldt Tailings Disposal Facility
Foundation	Community Foundation of Marquette County
MP	Mine Permit
PM	Particulate Matter (dust) measured in microns
SWP	Superior Watershed Partnership
TBD	To Be Determined
TDRSA	Temporary Development Rock Storage Area
TWIS	Treated Water Infiltration System
WTP	Water Treatment Plant

Diagram of Eagle Mine Facilities

Diagram of Humboldt Mill Facilities

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Introduction

The Community Environmental Monitoring Program (CEMP) of the Eagle Mine is implemented by two community-based organizations; the Superior Watershed Partnership (SWP) and the Community Foundation of Marquette County (Foundation). The CEMP is defined and governed by formal agreements between these organizations and Lundin Mining, who purchased the Eagle Mine from Rio Tinto during 2013. The CEMP is designed to build a comprehensive and accurate picture of any environmental impacts that may be a result of Eagle Mine's operations at the mine site, the Humboldt Mill, and along the designated Transportation Route. The CEMP is independent, transparent, and based on the highest scientific standards.

The CEMP consists of four main components: 1) Verification Monitoring, which includes verifying the environmental monitoring done by Eagle Mine as required by its permits 2) Additional monitoring, which includes environmental monitoring done by SWP over and above the monitoring that Eagle Mine is required to do under its permits; and 3) Publication of results and ratings of Eagle Mine's environmental performance; and 4) Community Outreach, to inform the public and provide opportunities for the community to provide input regarding CEMP activities.

In July 2016, the SWP and the Foundation negotiated renewal of the CEMP Agreement with Eagle Mine to allow for continued environmental monitoring of operations at the Mine and the Humboldt Mill through 2018. Monitoring of Eagle Mine's environmental performance will continue during 2020 under a new agreement. The 2020 Work Plan marks the ninth year of CEMP monitoring and the seventh year of monitoring under the "operational" phase of production. It also marks the second year of CEMP monitoring in cooperation with the Keweenaw Bay Indian Community (KBIC).

The Work Plan is organized into three sections that describe CEMP activities 1) Annual Monitoring Objectives, 2) Monitoring Results and Performance Ratings, and 3) Community Input and Public Outreach. A summary of the annual monitoring objectives including work plan tasks, standards and frequency of activities is provided in Table 1. Community Environmental

Monitoring Program monitoring locations and parameters for laboratory analyses are provided in Figures 1-9 and Tables 2-14 respectively.

1. Annual Monitoring Objectives

1.1. Verification Monitoring and Data Review

1.1.1. Baseline Data Review

The SWP will continue to review and evaluate pre-mining (baseline) environmental data as it relates to data generated during monitoring of mining operations. The SWP recognizes that baseline data in and around the Eagle Mine includes data collected prior to September 2011. Data collected from the Humboldt Mill, Powell Township Air Station, and along the transportation route will be considered baseline through September 2014.

1.1.2. Operations Data Review

Eagle Mine will continue to provide SWP with environmental monitoring data in the form of reports, a data base or summary reports. SWP will review this data from three perspectives. The first is to verify the validity (precision, accuracy representativeness) of the data. The second is to analyze data for indications of impacts from mining operations. The last is to analyze data from background (including upgradient, baseline and reference monitoring points) for indications of local (e.g., logging), regional (e.g., atmospheric deposition) or global (e.g., climate change) impact related to other non-mine activity.

1.1.3. Procedures Review/Observations

SWP and KBIC will continue to review and observe data collection at Eagle Mine and the Humboldt Mill during 2020. The objective is to verify that the procedures used are appropriate and will result in the generation of data sets that are representative of environmental conditions.

1.1.4 Interpretations Review

SWP and KBIC will continue to interpret results of Eagle Mine's permit required environmental monitoring data. The interpretations review will focus primarily on assigning likely root cause (mine impacts, data quality issues or unrelated impacts) to

monitoring point values that exceed permit specified benchmarks or thresholds. The SWP and KBIC will utilize relevant baseline and secondary data (data from other sources) where appropriate to document interpretations of results and/or make comparisons to other local or regional environmental data.

1.1.5 Split Sampling

SWP and KBIC will carry out split sampling at permit required monitoring sites at the Eagle Mine site and the Humboldt Mill (groundwater, surface water, and facilities) in conjunction with Eagle Mine's scheduled monitoring. Split sampling is when a sample taken from a single source (e.g. a groundwater well) is divided in two, with each sample analyzed by a different certified laboratory. The objective of the split sampling is to verify that the laboratories used are appropriate and the results are representative of environmental conditions. Split samples will be conducted at Eagle Mine and the Humboldt Mill at the locations shown in Figures 1-6. The frequency and number of samples collected at each site are described in Table 2. Samples will be submitted to an independent laboratory for analyses. Analytical parameters, methods and reporting limits for split sampling are presented in Tables 3-10. The samples may be analyzed for the full parameter list or a subset of the parameters specified for that monitoring point. Results will be compared to baseline data and applicable permit benchmarks and limits.

1.2 Additional Monitoring

The CEMP Agreement and CEMP Annual Work Plan (this plan) summarize the objectives and procedures for additional (non-permit required) environmental monitoring of Eagle Mine's operations. Ongoing additional monitoring proposed for 2020 is summarized below.

1.2.1 Powell Township Air Quality Monitoring

During November of 2012, an air quality and meteorological station was installed in Powell Township per the *CEMP Agreement*. The station is located in the community of Big Bay behind Crams General Store. The objective of the Powell Township air quality monitoring station is to generate data that can be used to identify potential air quality impacts in the

community that may be a result of mining operations. Air quality data are compared to National Ambient Air Quality Standards and Michigan Air Toxic Screening Levels. The meteorological station measures wind speed and direction, temperature, barometric pressure, precipitation, solar radiation, and relative humidity on a continuous basis. During 2020, the station will monitor particulate matter (dust) in the 10 micron size range (PM10) on a continuous basis. Particulate matter filters will also be sent to a laboratory for analysis of metal concentrations (Table 11) on a quarterly basis. Modems installed at the station will provide real-time meteorological and air quality data (PM10) via the CEMP website.

1.2.2 Eagle Mine Air Quality Monitoring

Air quality will be monitored on a quarterly basis in and around the Eagle Mine site during 2020 using a portable particulate monitoring device that will measure particulate matter in the 10 micron size range (PM10). The objective of the portable air quality monitoring at the mine site is to provide data for evaluation of potential air quality impacts from mining operations. Data collected using the portable air monitoring equipment will be compared to data collected at the Powell Township air quality monitoring station and National Air Quality. Standards and locations for the air quality monitoring are included in Figure 7.

1.2.3 Edible/Traditional Plant Tissue Monitoring

Edible/traditional plant tissue monitoring began in 2015 to evaluate concerns voiced by the KBIC and other community members regarding potential impacts from mining activities on native plant species of high cultural value. The monitoring includes collection and analysis of blueberries (as an indicator species), but may also include other important species such as Juneberry, chokecherry, pin cherry, raspberry, blackberry, strawberry, thimbleberry, cranberry, juniper berry, wintergreen, and wild rice. A list of parameters for analysis are provided in Table 12. Collection sites are located within a two-mile radius of the Eagle Mine and Humboldt Mill as well as a control location (Figure 8). Berry samples will be collected and sent out for analysis at a certified laboratory and compared to guidelines and daily intake recommendations including the US Environmental Protection Agency's oral Tolerable Intake Values (TDI) and the Food and Drug Administration's

recommended Daily Values (DV). A report summarizing results will be posted to the CEMP website.

1.2.4 CEMP Groundwater Monitoring Well

On August 28-30, 2017, a CEMP groundwater monitoring well was installed near Eagle Mine to expand the existing monitoring infrastructure and further evaluate potential groundwater impacts as a result of mining activities. The CEMP well is located outside of the mine perimeter (fence) between the Treated Water Infiltration System (TWIS) and the headwaters of the East Branch of the Salmon Trout River, with a groundwater depth of 166-176 feet. Access to the site is made possible through an agreement with Lyme Great Lakes Holding LLC (formerly Weyerhaeuser Company). During 2020, groundwater data will be collected on a quarterly basis from the CEMP well (Figure 9). A list of parameters for analysis are provided in Table 13. Results of the monitoring will be compared to results from Eagle Mine's groundwater discharge permit groundwater monitoring sites.

1.2.5 Salmon Trout River Headwaters Monitoring

During 2017, CEMP in cooperation with the KBIC began water quality monitoring at 8 sites in the headwaters of the Salmon Trout River. The headwaters of the Salmon Trout River begin as "seeps" or natural springs at locations where groundwater daylights and becomes surface water (Figure 10). A list of parameters for analysis on a quarterly basis are provided in Table 14. The objective of additional monitoring of the headwaters (seeps) of the Salmon Trout River is to monitor potential water quality impacts from Eagle Mine's operations at sites previously monitored by the U.S. Geological Survey (USGS) and the Keweenaw Bay Indian Community. Results of the monitoring will be compared to Michigan surface water quality standards and used to assess potential impacts from mining activities to the Salmon Trout River.

1.2.6 Other Based on Results or New Activities

The SWP and KBIC may also collect additional data related to mining activities during 2020 based on results or new information, community input, and/or new activities. The SWP and KBIC will provide Eagle Mine with a plan (including locations, procedures,

methodologies and standards) for any additional monitoring prior to commencing with monitoring activities.

2 Monitoring Results and Performance Ratings

2.1 Data Processing/Publication

2.1.1 Data Processing

CEMP's laboratory(s) will deliver monitoring results in electronic format to SWP no later than 45 days of receipt of samples and the data will be processed by SWP within 5 working days of receipt from the laboratory. Data processing procedures will be conducted in a manner consistent with the *CEMP Agreement* and other agreed upon standards/operating procedures. Primary processing consists of verification that samples, parameters, analytical methods, and detection limits were completed as requested. Secondary processing will consist of the evaluation of laboratory quality control data and duplicate data for evidence of quality control issues. Tertiary processing consists of comparison of data to appropriate baseline data, permit specified criteria/benchmarks, or other agreed upon state or federal criteria. The final data processing step follows receipt of Eagle data and consists of the comparison of Eagle's laboratory derived values with values produced by CEMP's laboratory(s).

2.1 Performance Ratings

2.2.1 CEMP Report Card

The CEMP Report Card is located on the CEMP website and includes a red light, yellow light, and green light system used by SWP to rate Eagle Mine on its environmental performance on a quarterly basis by location (Mine or Mill) and type of monitoring. The CEMP website and Report Card will continue to be improved during 2020 to better communicate results of environmental monitoring at specific locations on a quarterly basis. In addition, the SWP will work with KBIC, Eagle Mine and additional partners to improve data interpretation and risk communication to the public, including, but not limited to, third party analysis and interpretation of data and risk communication as needed.

2.2.2 CEMP Monitoring Reports

In addition to the website and Report Card updates, CEMP will continue to periodically publish summary reports of monitoring activities and results to the CEMP website.

3. Community Outreach

The CEMP Community Outreach Plan (Figure 11) describes activities of SWP, KBIC, and the CFMC related to community outreach. The plan is to inform the public about Eagle Mine's environmental performance and to obtain input from community members regarding CEMP activities. Outreach Plan activities are tracked quarterly and include, but are not limited to:

- Direct contacts/meetings with community members and interested groups.
- Presentations to schools/universities and local, regional and Great Lakes groups.
- Data/information sharing via the CEMP website (swpcemp.org), local news/media outlets, social media, printed materials, and publications.
- Distribution of CEMP program information and findings to other communities and interested parties.

4. CEMP 2020 Budget

PROJECT MANAGEMENT, OVERSIGHT and OUTREACH		Rate	Hours	Total
*NOTE: Fee for Service Rates for SWP staff include 10-40% in fringe benefits (health insurance, social security, workers compensation, retirement, etc.) and approximately 35% in overhead costs (lease, utilities, office equipment, liability insurance, etc.)				
KBIC Natural Resources Department (outreach, monitoring, and program review/development)				$ 50,000
SWP Senior Planner	*Fee for Service Rate	91.15	490	$ 44,660
SWP Field Technician	*Fee for Service Rate	45.00	600	$ 27,000
SWP Executive Director	*Fee for Service Rate	120.00	300	$ 36,000
SWP Data Management Specialist	*Fee for Service Rate	45.00	435	$ 19,575
SWP Administrator	*Fee for Service Rate	45.50	350	$ 15,930
TOTAL PROJECT MANAGEMENT, OVERSIGHT AND OUTREACH				**$ 193,165**
CONTRACTUAL SERVICES		**# Samples**	**Cost/Sample**	**Total**
Verification Monitoring and Data Review				
White Water - Eagle Mine Water Treatment Plant		4	$ 592	$ 2,368
White Water - Eagle Mine GWDP Groundwater		8	$ 574	$ 4,592
White Water - Eagle Mine Mine Permit Groundwater		8	$ 504	$ 4,032
White Water - Eagle Mine Mine Permit Surface Water		4	$ 660	$ 2,640
White Water - Eagle Mine Temp Development Rock Storage Area		4	$ 491	$ 1,963
White Water - Humboldt Mill Water Treatment Plant		4	$ 481	$ 1,924
White Water - Humboldt Mill Mine Permit Groundwater		8	$ 626	$ 5,008
White Water - Humboldt Mill Mine Permit Surface Water		8	$ 720	$ 5,760
Total Verification Monitoring and Data Review				*$ 28,287*
Additional Monitoring				
White Water - CEMP/KBIC Edible/Traditional Plant Study		8	$ 563	$ 4,504
White Water - CEMP Monitoring Well near Eagle Mine		3	$ 650	$ 1,950
White Water - CEMP/KBIC Salmon Trout River "Seeps"		16	$ 294	$ 4,704
Powell Township Air/Met Station and Website Maintenance		1	$ 2,000	$ 2,452
Eastern Research Group - Air Station Metals		4	$ 462	$ 1,848
Total Additional Monitoring				*$ 15,458*
TOTAL CONTRACTUAL				**$ 43,745**
OTHER				
Training/Certifications				$ 590
Cram's Store - Air Station Site Lease Fee				$ 900
Equipment Rentals (seep monitoring pump, etc.)				$ 500
Website Maintenance/Updates				$ 6,700
Additional Monitoring Reserve Fund				$ 25,000
TOTAL OTHER				**$ 33,690**
SUPPLIES AND MATERIALS				
Printing (educational materials, reports, etc.)				$ 500
Shipping - Fed Ex				$ 4,500
Field and Office Supplies				$ 1,500
	TOTAL OUTREACH & SUPPLIES			**$ 6,500**
TRAVEL				
Travel for sampling events/meetings	5,000	Miles	$ 0.580	$ 2,900
TOTAL TRAVEL				**$ 2,900**
TOTAL CEMP 2020 BUDGET				**$ 280,000**
MCCF MANAGEMENT FEE				**$ 20,000**
TOTAL 2020 BUDGET				**$ 300,000**
2019 RESERVE FUND				**$ -**
2020 FUNDING REQUEST				**$ 300,000**

Mine Permit
Surface Water
Monitoring Locations

Legend

- SW Monitoring Station
- Mine Facilities
- Road
- Hydrography
- Watershed Boundary

Reference

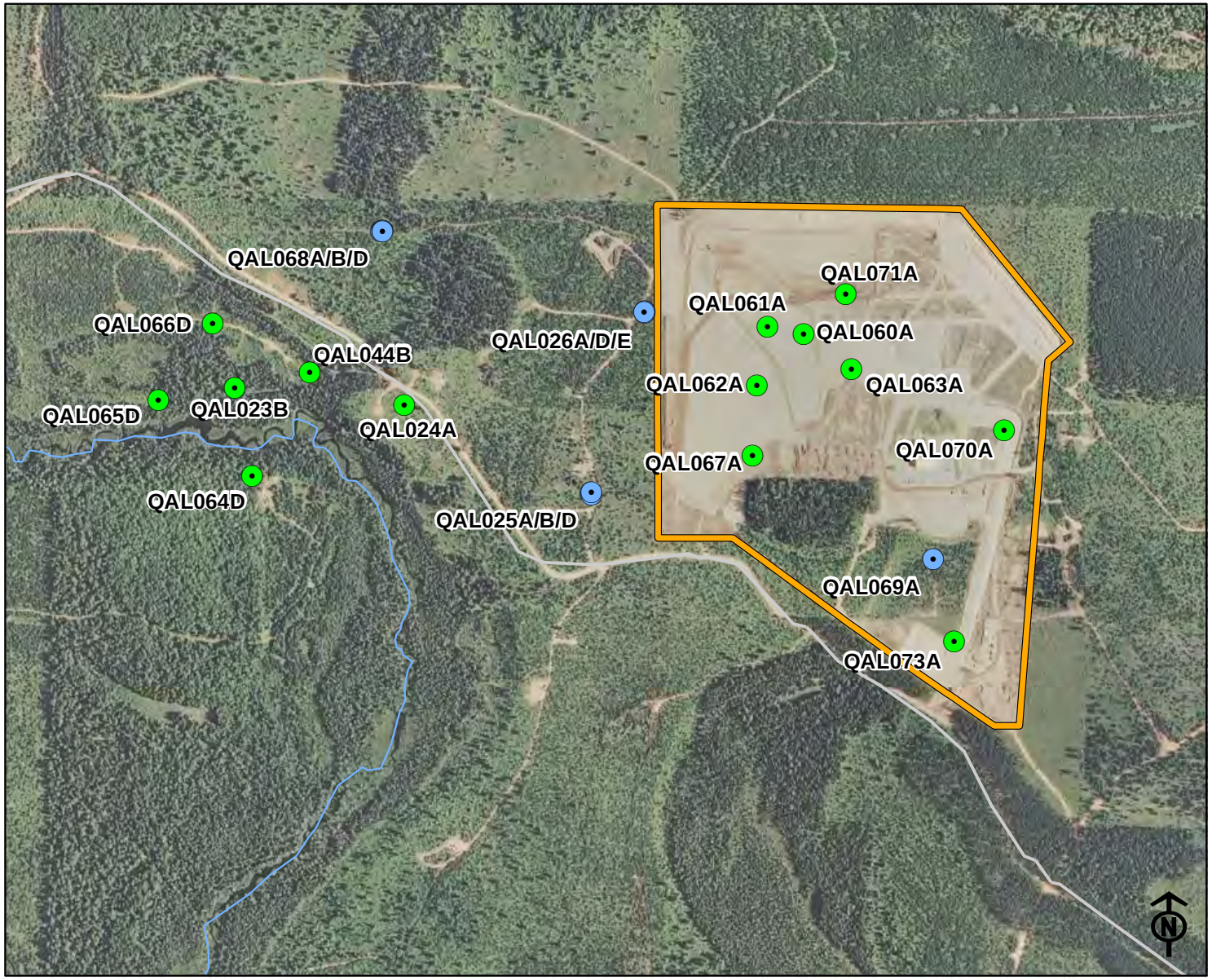
Projection & Datum: UTM NAD 83 Zone 16N

0 1.25 2.5 5 Miles

1:200,000

Community Environmental Monitoring Program

Figure: 1



Mine Permit Groundwater Monitoring Locations

Legend

- Background Well
- Compliance Well
- Mine Facilities
- Road
- Hydrography

Reference

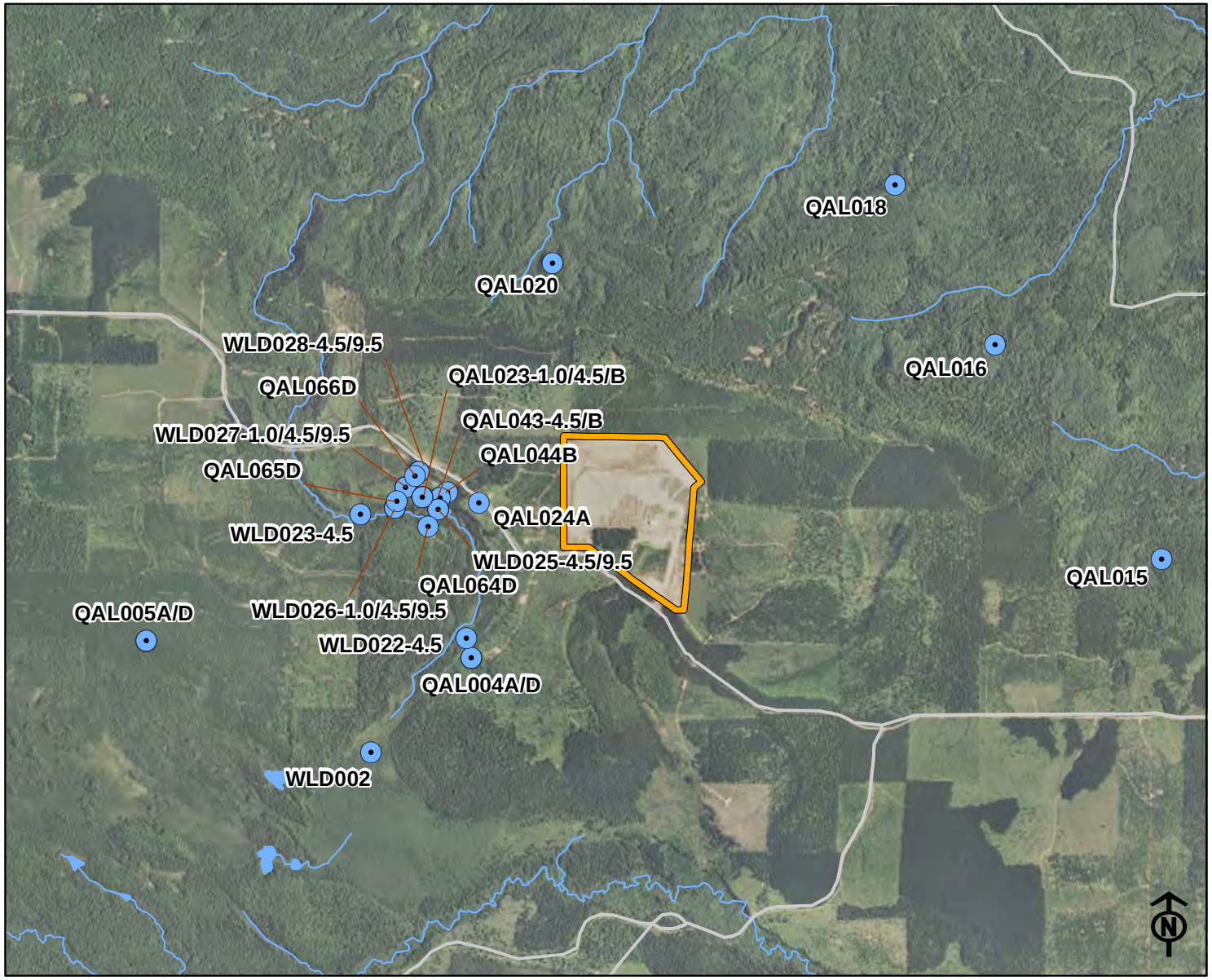
Projection & Datum: UTM NAD 83 Zone 16N

0 0.05 0.1 0.2 Miles

1:12,000

Community Environmental Monitoring Program

Figure: 2



Mine Permit Groundwater Elevation Monitoring Locations

Legend

- GW Elevation Monitoring Well
- Mine Facilities
- Road
- Hydrography

Reference

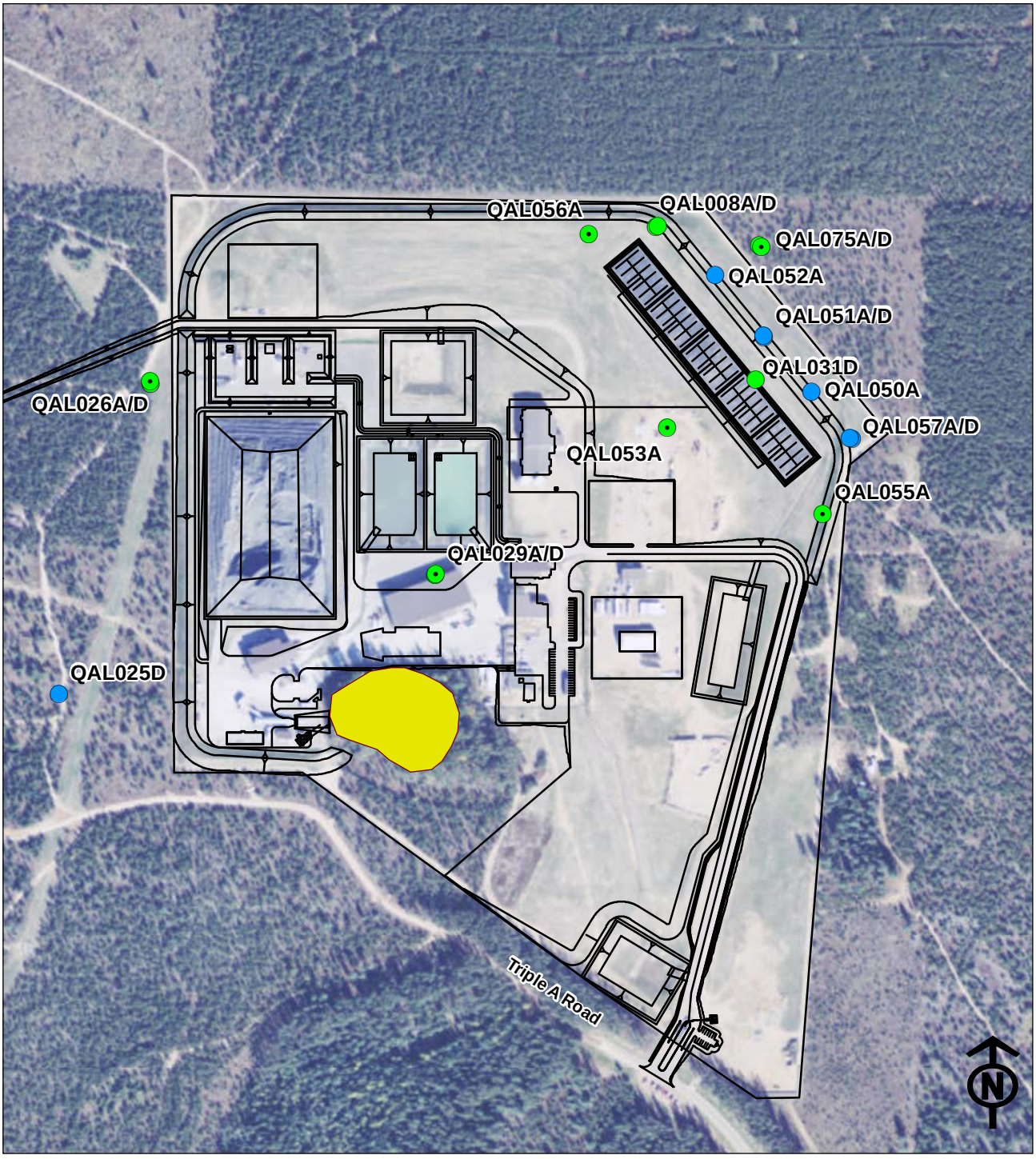
Projection & Datum: UTM NAD 83 Zone 16N

0 0.2 0.4 0.8 Miles

1:36,000

Community Environmental Monitoring Program

Figure: 3



GROUNDWATER DISCHARGE PERMIT
GROUNDWATER MONITORING LOCATIONS

- COMPLIANCE WATER QUALITY
- BACKGROUND WATER QUALITY
- ELEVATION
- *Instrumented for continuous monitoring*
- MINE FACILITIES
- OUTCROP

Reference

Data provided by Eagle Mine and North Jackson Company
Projection & Datum: UTM NAD 83 Zone 16N

0 400 800 Feet

Scale: 1:6,800

Eagle Mine
a subsidiary of Aurelian Resources

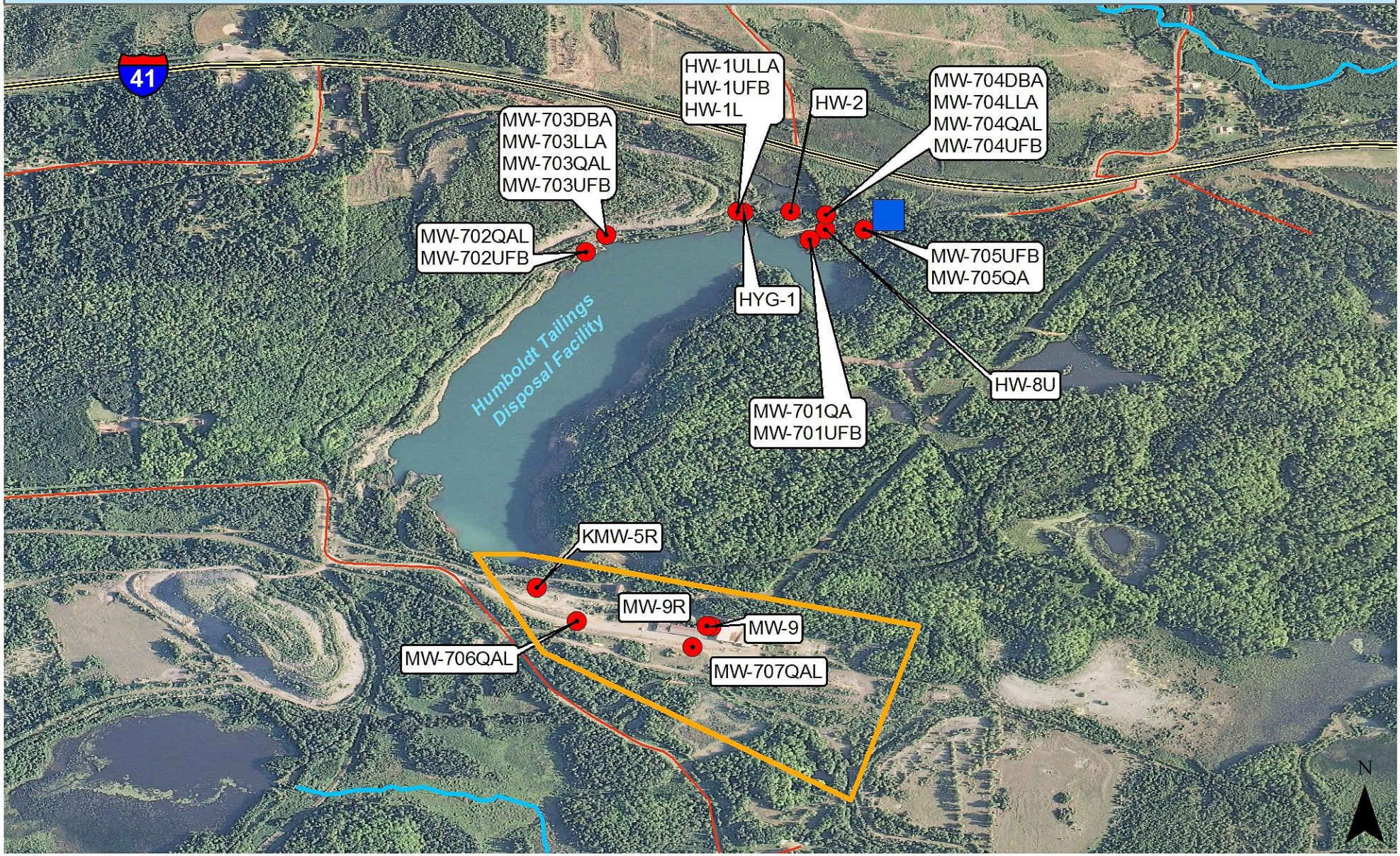
Eagle Mine
Groundwater Discharge Permit
GW1810162

North Jackson Company
ENVIRONMENTAL SCIENCE & ENGINEERING

Figure: 4

Figure: 5

Humboldt Mill
Mine Permit Groundwater
Monitoring Locations



0 0.25 0.5 Miles

1:15,000

All Roads

River

State Roads

Groundwater Monitoring Sites

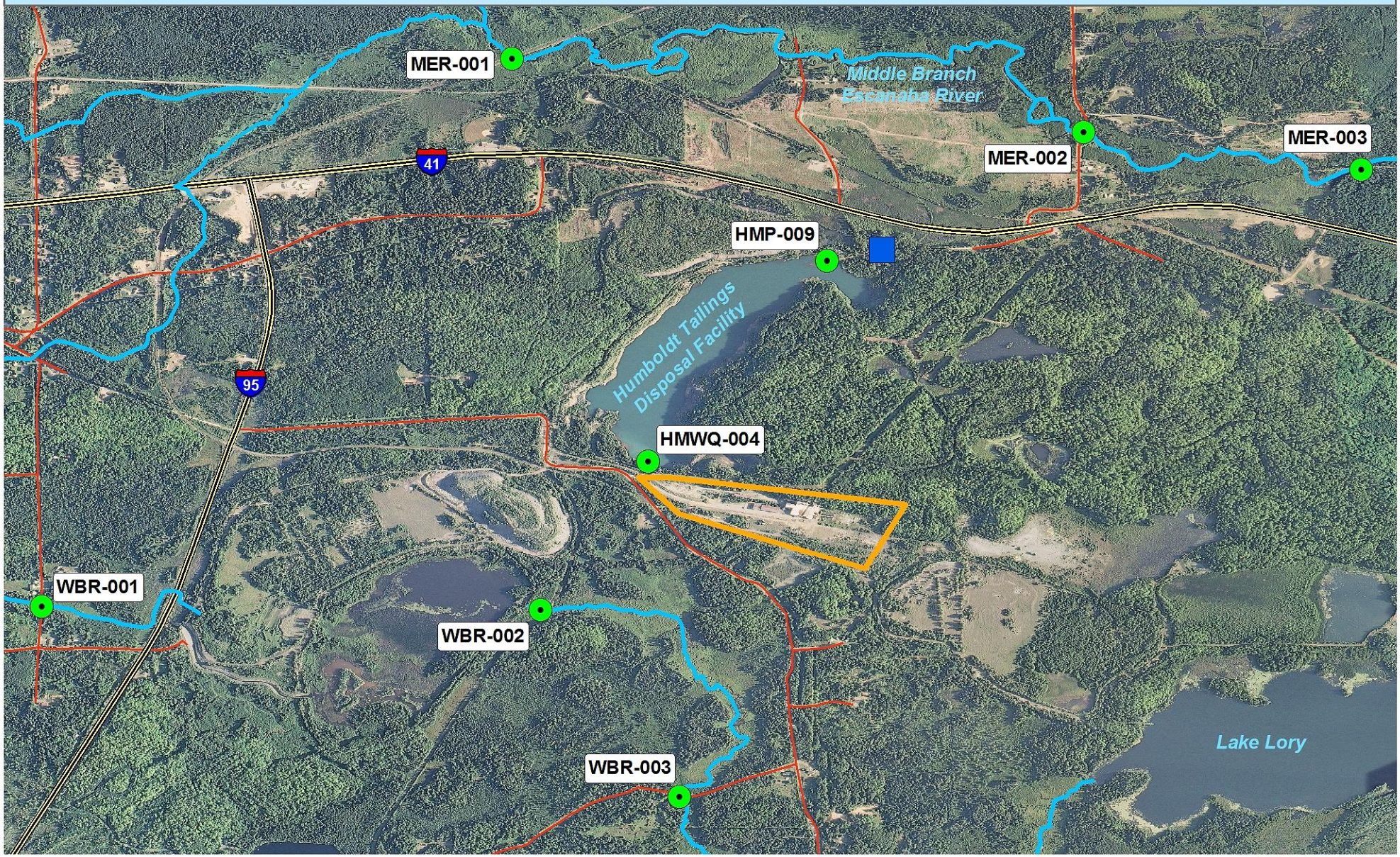
Humboldt Mill Water Treatment Plant

Humboldt Mill

SUPERIOR WATERSHED PARTNERSHIP AND LAND TRUST

Figure: 6

Humboldt Mill
Mine Permit Surface Water/Sediment Monitoring Locations



N

0 0.25 0.5 Miles

1:24,000

All Roads

River

State Roads

Surface Water/Sediment Sites

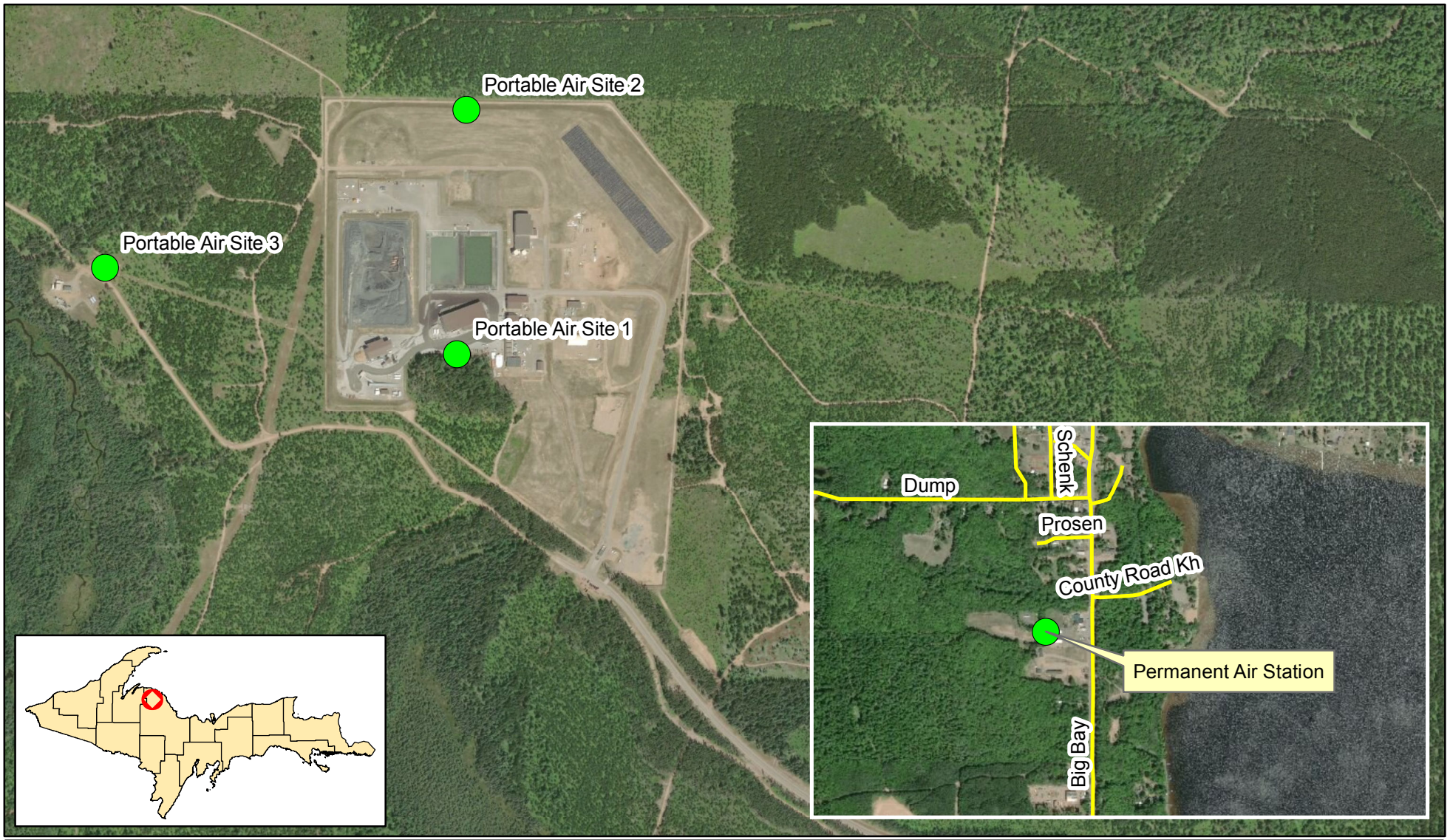
Humboldt Mill Water Treatment Plant

Humboldt Mill

SUPERIOR WATERSHED PARTNERSHIP AND LAND TRUST

Figure 7

CEMP Air Monitoring Locations



Air Monitoring Sites

0 0.25 0.5 1 Miles

N

SUPERIOR WATERSHED PARTNERSHIP AND LAND TRUST

Figure 8

Plant Tissue Analysis

Community Environmental Monitoring Program

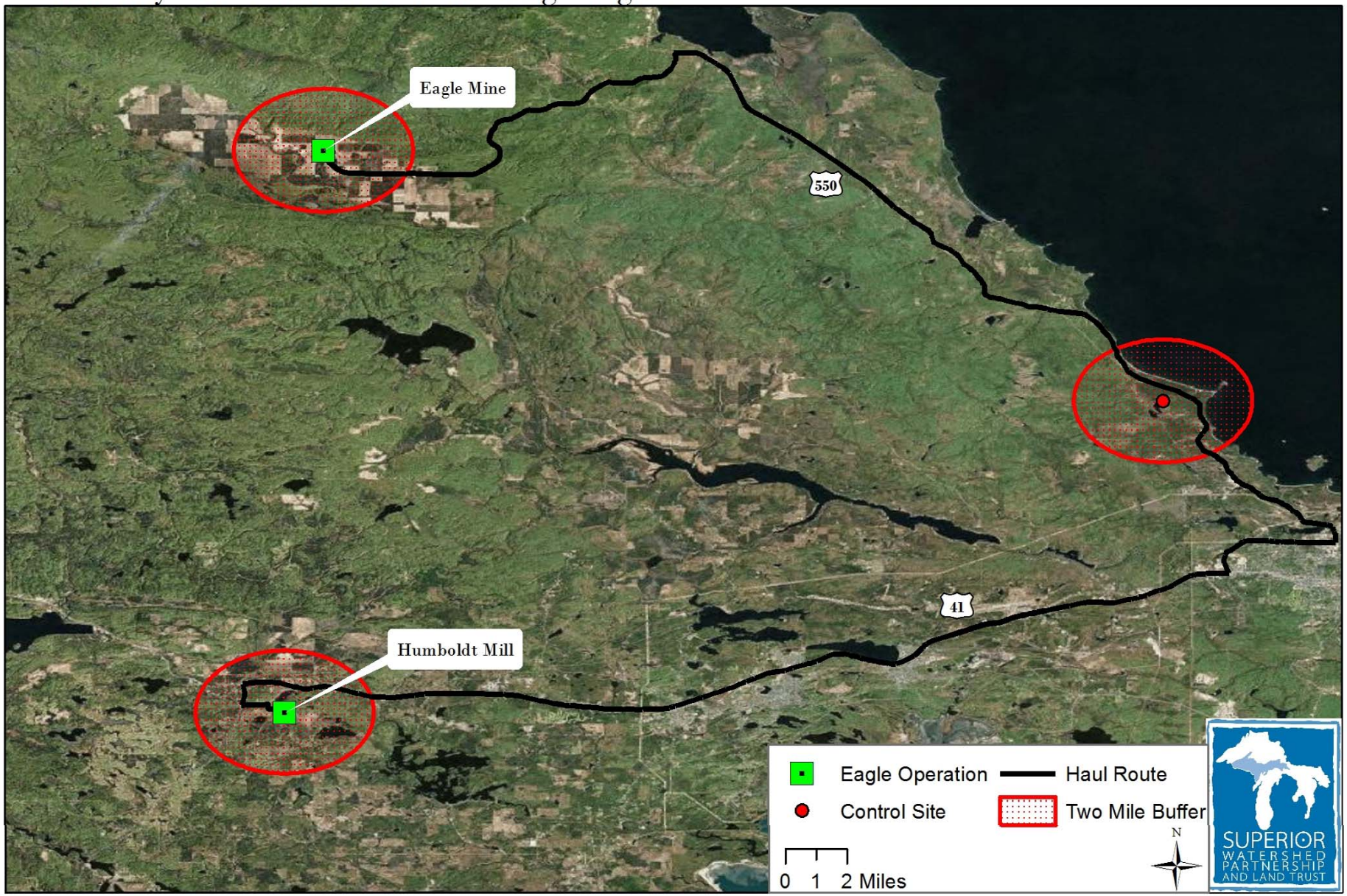
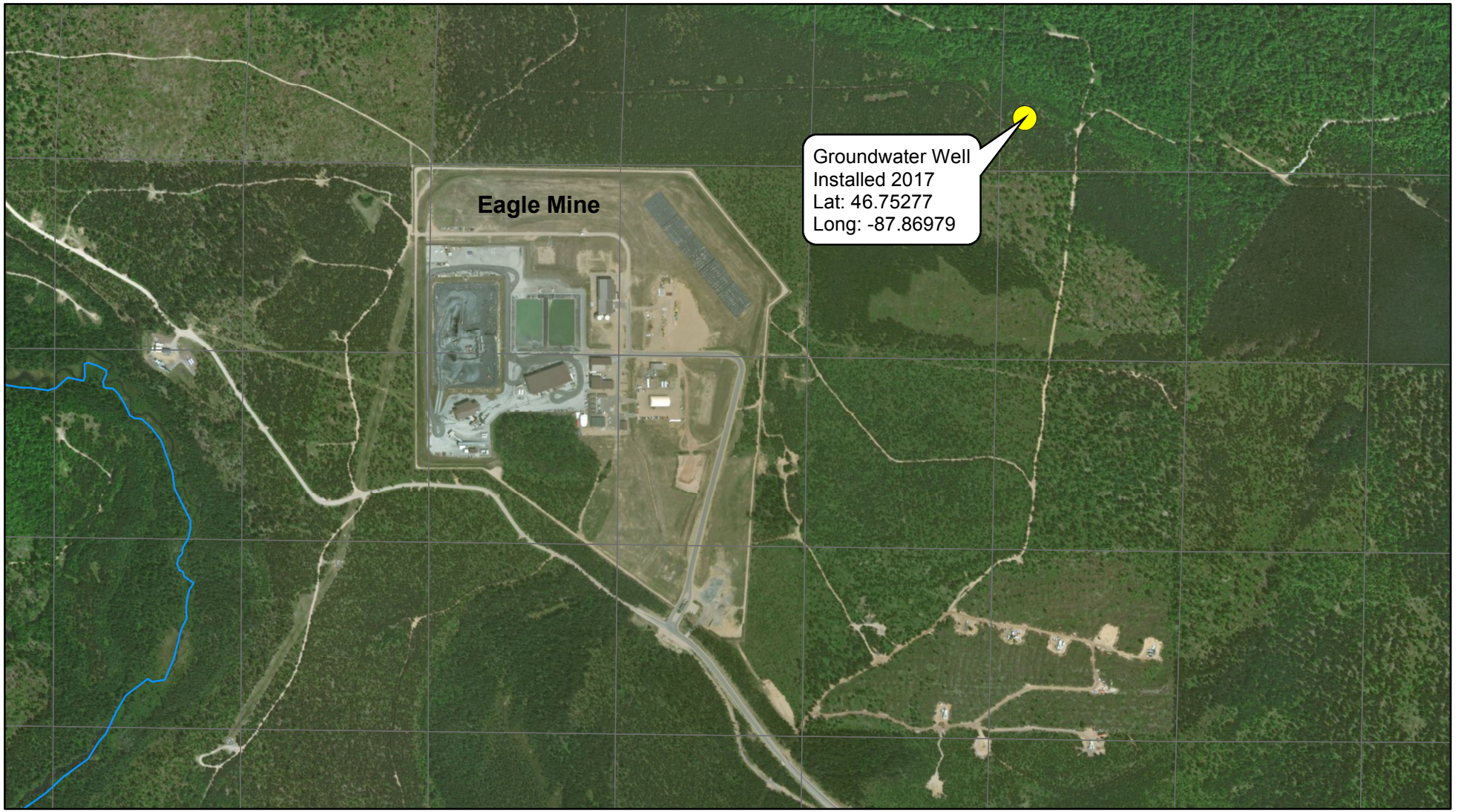


Figure 9

CEMP New Groundwater Well Location



CEMP New Groundwater Well Location

River

Quarter section lines

0 0.125 0.25 0.5 Miles

N

SUPERIOR WATERSHED PARTNERSHIP

Figure 10

CEMP Seep Monitoring Locations

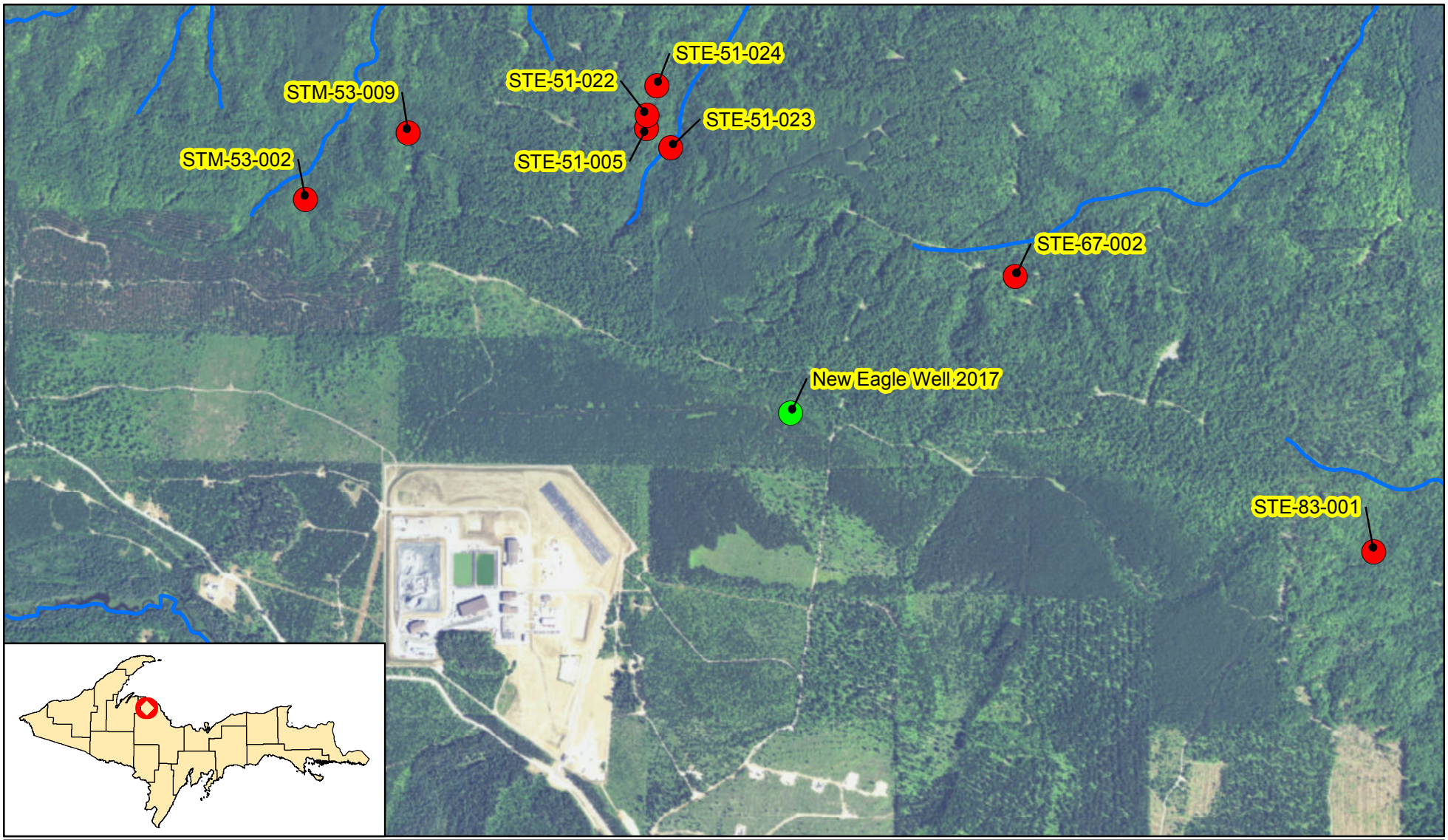


Figure 11

CEMP OUTREACH/MARKETING PLAN: SWP, KBIC, and CFMC					
CATEGORY	**ACTION**	**NOTES**	**TIMEFRAME**	**TIMELINE FOR COMPLETION**	**TRACKING METRICS**
Websites:	Update/post CEMP related information/data to respective websites	Includes Eagle Mine data, CEMP split sampling, additional monitoring data, special reports, news, etc.	Post data within 30 days of receiving results, all other ongoing	Quarterly	Number of website updates made. Use website analytics to estimate number of people reached.
Social Media:	Share CEMP news, website updates, photos, etc. through CEMP, SWP, KBIC, and CFMC social media outlets (Facebook pages, etc.)	Include short decsription of news and link to swpcemp.org as appropriate	Within 14 days of posting to website	Quarterly	Number of social media posts made including estimated number of people reached
News/Media Outlets:	Share CEMP news, report card findings, and program information through local, regional, and national media outlets: SWP, KBIC, CFMC	Post CEMP report card to newspaper, conduct radio/TV interviews, etc.	Post report card within 14 days of posting to website, all other ongoing	Annually or as needed	Number and type of media activity including estimated number of people reached
Direct Contacts:	Direct contacts through in person meetings, email, phone, mailings, etc: SWP, KBIC, CFMC	Share program data/information and obtain program feedback	Ongoing	Monthly	Number and type of direct contacts made
Presentations:	Present CEMP findings and program information to intersted parties: SWP, KBIC, CFMC	Present CEMP data/info to community groups, K-12 schools, universities, etc. as identified and/or requested	Ongoing	As needed	Number and type of presentations made, audience (local, regional, national, international), and number of people reached
Outerach Materials:	Create and Distribute Outreach Materials as needed: SWP, KBIC, CFMC	Includes presentations, poster boards, newsletters, video, etc.	Ongoing	As needed	Number and type of outreach materials developed and/or distributed, estimated number of people reached (where appropriate)
Public Engagement:	Engage the public in CEMP activities; Obtain public input and feedback related to CEMP: SWP, KBIC, CFMC	Provide opporunities for the public to get involved - citizen science, etc. Create and adverstise social survey to obtain feedback and public input on CEMP program activities.	Ongoing	Annually	Number of people engaged; Summary of survey results

Table 1.
Summary of 2020 Annual Monitoring Objectives

WORK PLAN TASK	SITE(S)	PARMETERS	STANDARDS	PERIOD	FREQUENCY
Verification Monitoring and Data Review					
Baseline Data Review	Permit compliance and background monitoring sites (Mine and Mill)	Review of pre-mining data (groundwater, surface water, air, aquatics, and flora and fauna)	Part 632 Rule and Applicable Permits (Mining, Groundwater Discharge, Inland Lakes and Streams, and NPDES)	Mine data collected prior to September 2011, Mill data through September 2014	Ongoing
Operations Data Review	Permit compliance and background monitoring sites (Mine and Mill)	Review of operations data (groundwater, surface water, and wastewater, solid waste, air, aquatics, flora and fauna)	Part 632 Rule and Applicable Permits (Mining, Groundwater Discharge, Inland Lakes and Streams, and NPDES)	Mine data collected after September 2011, Mill data collected after September 2014	Ongoing, based on Eagle Mine scheduled monitoring
Procedures Review/Observations	Permit compliance and background monitoring sites (Mine and Mill)	Review of procedures and field data collection (groundwater, surface water, and wastewater, solid waste, air, aquatics, flora and fauna)	Part 632 Rule and Applicable Permits (Mining, Groundwater Discharge, Inland Lakes and Streams, and NPDES)	2020	Ongoing, based on Eagle Mine scheduled monitoring
Interpretation Review	Permit compliance and background monitoring sites (Mine and Mill)	Interpretation of results: groundwater, surface water, and facilities wastewater (quantity, elevation, flow, and quality)	Part 632 Rule and Applicable Permits (Mining, Groundwater Discharge, Inland Lakes and Streams, and NPDES)	2020	Ongoing, based on Eagle Mine scheduled monitoring
Split Sampling	Permit compliance and background monitoring sites (Mine and Mill)	Groundwater, surface water, and facilities wastewater quality	Part 632 Rule and Applicable Permits (Mining, Groundwater Discharge, Inland Lakes and Streams, and NPDES)	2020	Ongoing, based on Eagle Mine scheduled monitoring
Additional Monitoring					
Powell Township Air Quality	Stationary Air/Meterological Station in Big Bay	PM10, metals analysis; wind speed and direction, air temperature, relative humidity, and solar radiation	National Ambient Air Quality Standards and Michigan Air Toxic Screening Levels	2012-2020	Continuous (PM10 and meterological data) and Quarterly (Metals)
Eagle Mine Air Quality	Portable Air Monitoring in and around Eagle Mine	PM10	National Ambient Air Quality and Powell Township Air Quality (PM10)	2020	Quarterly
Edible/Traditional Plant Study	Eagle Mine, Humbodlt Mill, and Control Area	Metals analysis plant tissue and fruit	US Environmental Protection Agency's (US EPA) oral tolerable intake values (TDI) and the Food and Drug Administration's (FDA) recommended Daily Values (DV)	2015-2020	Annually

Table 1.
Summary of 2020 Annual Monitoring Objectives

WORK PLAN TASK	SITE(S)	PARMETERS	STANDARDS	PERIOD	FREQUENCY
New Groundwater Monitoring Well	Eagle Mine - between TWIS and Salmon Trout River	Groundwater quality	Comparison with Eagle Mine Part 632 Mining Permit and Groundwater Discharge Permit Monitoring Sites	2017-2020	Quarterly
Salmon Trout River Headwaters "Seep" Monitoring	North of Eagle Mine - 8 sites formerly monitored by KBIC/USGS	Groundwater quality	Comparison with Eagle Mine Part 632 Mining Permit and Groundwater Discharge Permit Monitoring Sites	2017-2020	Quarterly
Other Based on Community Input, Results and/or New Activities	Sites (TBD) near Eagle Mine, Humboldt Mill, and/or Transportation Route	TBD	TBD	2020	TBD
Monitoring Results and Performance Ratings					
Data Processing/Publication	N/A	Process results from CEMP/Eagle Mine Monitoring; post summaries of results on CEMP website (www.swpcemp.org)	CEMP Agreement and Notification Plan	2020	Quartery
Performance Ratings	N/A	Report Card ratings of environmental performance on CEMP website (www.swpcemp.org)	CEMP Agreement and Notification Plan	2020	Quarterly
Community Outreach					
Public Outreach Activities	N/A	CEMP website, local news/media, email updates, social media, CEMP hotline, etc.	CEMP Agreement and Notification Plan	2020	Ongoing

Table 2
Summary of Permit Required "Split Sampling" Monitoring Sites at Eagle Mine and the Humboldt Mill

Monitoring Location/Type	Data Range (years)	Permit	Frequency	Number of Monitoring Sites	2020 CEMP Samples/Year
EAGLE MINE					
Surface Water	2002-2018	Mine Permit	Quarterly	11	4
Groundwater	2011-2018	Mine Permit	Quarterly	24 (10 background and 14 compliance)	8
Facilities: Temporary Development Rock Storage Area (TDRSA) Contact Water Sump and Leak Detection Sump, Contact Water Basins/WTP Influent	2012-2018	Mine Permit	Quarterly (Varies)	4	4
Facilities: Water Treatment Facility Effluent	2012-2018	Groundwater Discharge Permit	Weekly	2	4
Groundwater	2008-2018	Groundwater Discharge Permit	Quarterly	15 (7 background and 8 compliance)	8
Total Eagle Mine				**55**	**28**

Monitoring Location/Type	Data Range (years)	Permit	Frequency	Number of Monitoring Sites	2020 CEMP Samples/Year
HUMBOLDT MILL					
Groundwater	2014-2018	Mine Permit	Quarterly	23	8
Surface Water	2014-2018	Mine Permit	Quarterly	8	8
Facilities: Water Treatment Facility	2014-2018	Surface Water Discharge Permit	Monthly	2	4
Total Humboldt Mill				**35**	**20**

2019 Additional Monitoring

- Powell Township Air Station Metals: 1 sample/quarter = 4 samples/year.
- Berry Study (Year 4): Mine, Mill, Control = 8 berry samples/year. Note: additional sites bay be added.
- CEMP Groundwater Well at Eagle Mine: 1 sample per quarter for three quarters = 3 water samples/year.
- Salmon Trout River Headwaters Monitoring (Year 2): 8 samples two times per year = 16 samples/year.
- Additional monitoring TDB

Total Additional Monitoring: 31 samples/year

Table 3
Eagle Mine - Mine Permit Surface Water Monitoring
Parameters, Frequency, Analytical Method and Laboratory Reporting Limits

		White Water Associates Laboratory			
Parameters	**Eagle Frequency**	**Analytical Method[1]**	**Limit of Detection (LOD)**	**Units**	**Unit Price**
Field					
Temperature	Quarterly	Field	na	^{o}C	-
Dissolved Oxygen	Quarterly	Field	na	mg/L	-
Flow	Quarterly	Field	na	cfs	-
pH	Quarterly	Field	na	SU	-
Specific Conductance	Quarterly	Field	na	umhos/cm	-
Anions					
Alkalinity, Bicarbonate	Annual	310.2	2	mg/L	$12
Alkalinity Carbonate	Annual	310.2	2	mg/L	$12
Chloride	Annual	4500-Cl- E	3	mg/L	$12
Flouride	Annual	300.0	0.017	mg/L	$25
Nitrate Nitrogen	Annual	4500-NO3-	0.1	mg/L	$15
Sulfate	Quarterly	4500-SO4-	2.5	mg/L	$15
Cations					
Calcium	Annual	200.7	0.03	mg/L	$10
Magnesium	Annual	200.7	0.04	mg/L	$10
Potassium	Annual	200.7	0.12	mg/L	$10
Sodium	Annual	200.7	0.15	mg/L	$10
General					
Total Dissolved Solids	Quarterly	2540C	10	mg/L	$12
Metals					
Aluminum	Annual	200.7	50	ug/L	$10
Antimony	Annual	200.8/6020	0.1	ug/L	$10
Arsenic	Quarterly	200.8/6020	0.17/0.17	ug/L	$10
Barium	Annual	200.7	0.3	ug/L	$10
Beryllium	Annual	200.7	0.2	ug/L	$10
Boron	Quarterly	200.7	20	ug/L	$10
Cadmium	Annual	200.8/6020	0.10/0.10	ug/L	$10
Chromium	Annual	200.7	0.6	ug/L	$10
Cobalt	Quarterly	200.7	2	ug/L	$10
Copper	Quarterly	200.7	1	ug/L	$10
Iron	Quarterly	200.7	10	ug/L	$10
Lead	Annual	200.8/6020	0.3/0.3	ug/L	$10
Lithium	Annual	200.7	6	ug/L	$10
Manganese	Quarterly	200.7	0.2	ug/L	$10
Mercury	Quarterly	1631E	0.1	ng/L	$110
Molybdenum	Annual	200.7	3	ug/L	$10
Nickel	Quarterly	200.7	2	ug/L	$10
Selenium	Quarterly	200.8/6020	1.4/0.5	ug/L	$10
Silver	Annual	200.8/6020	0.2 /0.2	ug/L	$10
Zinc	Quarterly	200.7	10	ug/L	$10

Table 4
Eagle Mine - Mine Permit Groundwater Monitoring
Parameters, Frequency, Analytical Methods, and Laboratory Reporting Limits

		White Water Associates Laboratory			
Parameters	**Eagle Frequency of Analysis**	**White Water Associates Analytical Method**	**Limit of Detection (LOD)**	**Units**	**Unit Price**
Field					
Static Water Elevation	Quarterly	Field	--	ft/msl	-
Redox	Quarterly	Field	--	meV	-
Temperature	Quarterly	Field	--	^{o}C	-
Dissolved Oxygen	Quarterly	Field	--	mg/L	-
pH	Quarterly	Field	--	su	-
Specific Conductance	Quarterly	Field	--	umhos/cm	-
Anions					
Alkalinity, Bicarbonate	Quarterly	310.2	2.0	mg/L	$12
Alkalinity Carbonate	Quarterly	310.2	2.0	mg/L	$12
Nitrate Nitrogen	Quarterly	4500-NO3- F	0.100	mg/L	$15
Sulfate	Quarterly	4500-SO4- E	2.5	mg/L	$15
Flouride	Annual	300.0	0.017	mg/L	$25
Chloride	Quarterly	4500-Cl- E	3	mg/L	$12
Cations					
Calcium	Annual	200.7	0.03	mg/L	$10
Sodium	Quarterly	200.7	0.15	mg/L	$10
Magnesium	Annual	200.7	0.04	mg/L	$10
Potassium	Annual	200.7	0.12	mg/L	$10
Metals					
Aluminum	Annual	200.7	50	ug/L	$10
Antimony	Annual	200.8/6020	0.1	ug/L	$10
Arsenic	Quarterly	200.8/6020	0.17/0.17	ug/L	$10
Barium	Annual	200.7	0.3	ug/L	$10
Beryllium	Annual	200.7	0.2	ug/L	$10
Boron	Quarterly	200.7	20	ug/L	$10
Cadmium	Annual	200.8/6020	0.10/0.10	ug/L	$10
Chromium	Annual	200.7	0.6	ug/L	$10
Cobalt	Annual	200.7	2	ug/L	$10
Copper	Quarterly	200.7	1	ug/L	$10
Iron	Quarterly	200.7	10	ug/L	$10
Lead	Annual	200.8/6020	0.3/0.3	ug/L	$10
Lithium	Annual	200.7	6	ug/L	$10
Manganese	200.7	0.2	ug/L	ug/L	$10
Mercury	Quarterly	1631E	0.1	ng/L	$110
Molybdenum	Annual	200.7	3	ug/L	$10
Nickel	Quarterly	200.7	2	ug/L	$10
Selenium	Quarterly	200.8/6020	1.4/0.5	ug/L	$10
Silver	Annual	200.8/6020	0.2 /0.2	ug/L	$10
Strontium	Annual	200.7	0.2	ug/L	$10
Thallium	Annual	200.8/6020	0.3/0.3	ug/L	$10
Vanadium	Annual	200.8/6020	0.3/0.3	ug/L	$10
Zinc	Quarterly	200.7	10	ug/L	$10

Table 5
Eagle Mine - Mine Permit Facilities (TDRSA and CWB) Monitoring
Parameters, Frequency, Analytical Methods, and Laboratory Reporting Limits

		White Water Associates Laboratory			
Parameters	**Eagle Frequency of Analysis**	**Analytical Method[1]**	**Limit of Detection (LOD)**	**Units**	**Unit Price**
Field					
pH	Quarterly	Field	--	su	-
Specific Conductance	Quarterly	Field	--	umhos/cm	-
Metals					
Aluminum	Annual	200.7	50	ug/L	$10
Antimony	Annual	200.8/6020	0.1	ug/L	$10
Arsenic	Quarterly	200.8/6020	0.17/0.17	ug/L	$10
Barium	Annual	200.7	0.3	ug/L	$10
Beryllium	Annual	200.7	0.2	ug/L	$10
Boron	Quarterly	200.7	20	ug/L	$10
Cadium	Annual	200.8/6020	0.10/0.10	ug/L	$10
Chromium	Annual	200.7	0.6	ug/L	$10
Cobalt	Annual	200.7	2	ug/L	$10
Copper	Quarterly	200.7	1	ug/L	$10
Iron	Quarterly	200.7	10	ug/L	$10
Lead	Annual	200.8/6020	0.3/0.3	ug/L	$10
Lithium	Annual	200.7	6	ug/L	$10
Manganese	Quarterly	200.7	0.2	ug/L	$10
Mercury	Quarterly	1631E	0.1	ng/L	$110
Molybdenum	Annual	200.7	3	ug/L	$10
Nickel	Quarterly	200.7	2	ug/L	$10
Selenium	Quarterly	200.8/6020	1.4/0.5	ug/L	$10
Silver	Annual	200.8/6020	0.2 /0.2	ug/L	$10
Strontium	Annual	200.7	0.2	ug/L	$10
Thallium	Annual	200.8/6020	0.3/0.3	ug/L	$10
Vanadium	Annual	200.8/6020	0.3/0.3	ug/L	$10
Zinc	Quarterly	200.7	10	ug/L	$10
Major Anions					
Alkalinity, Bicarbonate	Quarterly	310.2	2	mg/L	$12
Alkalinity Carbonate	Quarterly	310.2	2	mg/L	$12
Chloride	Quarterly	4500-Cl- E	3	mg/L	$12
Flouride	Annual	300.0	0.017	mg/L	$25
Nitrogen, Ammonia	Quarterly	350.1	0.2	mg/L	$15
Nitrogen, Nitrate	Quarterly	4500-NO3- F	0.1	mg/L	$15
Nitrogen, Nitrite	Quarterly	4500-NO3- F	0.01	mg/L	$15
Sulfate	Quarterly	4500-SO4- E	2.5	mg/L	$15
Major Cations					
Calcium	Annual	200.7	0.03	mg/L	$10
Magnesium	Annual	200.7	0.04	mg/L	$10
Potassium	Annual	200.7	0.12	mg/L	$10
Sodium	Annual	200.7	0.15	mg/L	$10

Table 6
Eagle Mine - Groundwater Discharge Permit WTP Effluent Monitoring
Parameters, Frequency, Analytical Methods, and Laboratory Reporting Limits

		White Water Associates Laboratory			
Parameters	**Eagle Frequency of Analysis**	**Analytical Method[1]**	**Limit of Detection (LOD)**	**Units**	**Unit Price**
pH (Minimum)	Continuous Measurement	-	-	SU	-
pH (Maximum)	Continuous Measurement	-	-	SU	-
Dissolved Oxygen	Weekly	-	-	mg/l	-
Specific Conductance	Continuous Measurement	-	-	umhos/cm	
Inffluent Flow	Daily	-	-	GPD	-
Effluent Flow	Daily	-	-	GPD	-
Biochemical Oxygen	Weekly	-	-	mg/l	-
Ammonia Nitrogen	Weekly	350.1	0.2	mg/L	$15
Nitrate Nitrogen	Weekly	4500-NO3- F	0.1	mg/L	$15
Nitriite Nitrogen	Weekly	4500-NO3- F	0.01	mg/L	$15
Total Phosphorus	Weekly	4500-P	0.01	mg/L	$15
Total Aluminum	Weekly	200.7	50	ug/L	$10
Total Antimony	Weekly	200.8/6020	0.1	ug/L	$10
Total Arsenic	Weekly	200.8/6020	0.17/0.17	ug/L	$10
Total Barium	Weekly	200.7	0.3	ug/L	$10
Total Beryllium	Weekly	200.7	0.2	ug/L	$10
Total Boron	Weekly	200.7	20	ug/L	$10
Total Cadmium	Weekly	200.8/6020	0.10/0.10	ug/L	$10
Total Chloride	Weekly	4500-Cl- E	3	mg/L	$12
Total Chromium	Weekly	200.7	0.6	ug/L	$10
Total Cobalt	Weekly	200.7	2	ug/L	$10
Total Copper	Weekly	200.7	1	ug/L	$10
Total Fluoride	Weekly	300.0	0.017	mg/L	$25
Total Iron	Weekly	200.7	10	ug/L	$10
Total Lead	Weekly	200.8/6020	0.3/0.3	ug/L	$10
Total Lithium	Weekly	200.7	6	ug/L	$10
Total Manganese	Weekly	200.7	0.2	ug/L	$10
Total Mercury	Weekly	1631E	0.1	ng/L	$110
Total Molybdenum	Weekly	200.7	3	ug/L	$10
Total Nickel	Weekly	200.7	2	ug/L	$10
Total Potassium	Weekly	200.7	0.12	mg/L	$10
Total Selenium	Weekly	200.8/6020	1.4/0.5	ug/L	$10
Total Silver	Weekly	200.8/6020	0.2 /0.2	ug/L	$10
Total Sodium	Weekly	200.7	0.15	mg/L	$10
Total Strontium	Weekly	200.7	0.2	ug/L	$10
Total Sulfate	Weekly	4500-SO4- E	2.5	mg/L	$15
Total Thallium	Weekly	200.8/6020	0.3/0.3	ug/L	$10
Total Uranium	Weekly	200.8	0.0007	ug/L	$45
Total Vanadium	Weekly	200.8/6020	0.3/0.3	ug/L	$10
Total Zinc	Weekly	200.7	10	ug/L	$10

Table 7
Eagle Mine - Groundwater Discharge Permit Groundwater Monitoring Parameters, Analytical Methods, and Laboratory Reporting Limits

	Eagle			White Water Associates Laboratory			
Parameters	**Frequency of Analysis**	**Maximum Daily Limit**	**Unit**	**Analytical Method**	**Limit of Detection (LOD)**	**Units**	**Unit Price**
Field							
Static Water Elevation	Quarterly	Report	USGS-Ft	Field		USGS-Ft	-
Dissolved Oxygen	Quarterly	Report	mg/l	Field		mg/l	-
pH (Minimum)	Quarterly	6.5	S.U.	Field		S.U.	-
pH (Maximum)	Quarterly	9.7	S.U.	Field		S.U.	-
Specific Conductance	Quarterly	Report	umhos/cm	Field		umhos/cm	-
Anions							
Bicarbonate Alkalinity	Quarterly	Report	mg/l	310.2	2	mg/L	$12
Chloride	Quarterly	Report	mg/l	4500-Cl- E	3	mg/L	$12
Ammonia Nitrogen	Quarterly	10.0	mg/l	350.1	0.2	mg/L	$15
Nitrate Nitrogen	Quarterly	10.0	mg/l	4500-NO3- F	0.1	mg/L	$15
Nitrite Nitrogen	Quarterly	Report	mg/l	4500-NO3- F	0.01	mg/L	$15
Total Phosphorus	Quarterly	Report	mg/l	4500-P	0.01	mg/L	$15
Sulfate	Quarterly	250	mg/l	4500-SO4- E	2.5	mg/L	$15
Cations							
Calcium	Quarterly	Report	mg/l	200.7	0.03	mg/L	$10
Sodium	Quarterly	Report	mg/l	200.7	0.15	mg/L	$10
Magnesium	Quarterly	Report	mg/l	200.7	0.04	mg/L	$10
Potassium	Quarterly	Report	mg/l	200.7	0.12	mg/L	$10
Metals							
Aluminum	Quarterly	150	ug/l	200.7	50	ug/L	$10
Antimony	Quarterly	5.0	ug/l	200.8/6020	0.1	ug/L	$10
Arsenic	Quarterly	6.0	ug/l	200.8/6020	0.17/0.17	ug/L	$10
Barium	Quarterly	1000	ug/l	200.7	0.3	ug/L	$10
Beryllium	Quarterly	3	ug/l	200.7	0.2	ug/L	$10
Boron	Quarterly	285	ug/l	200.7	20	ug/L	$10
Cadium	Quarterly	3.0	ug/l	200.8/6020	0.10/0.10	ug/L	$10
Chromium	Quarterly	52	ug/l	200.7	0.6	ug/L	$10
Cobalt	Quarterly	23	ug/l	200.7	2	ug/L	$10
Copper	Quarterly	10	ug/l	200.7	1	ug/L	$10
Fluoride, Total	Quarterly	1000	ug/l	300.0	0.017	mg/L	$25
Iron	Quarterly	Report	ug/l	200.7	10	ug/L	$10
Lead	Quarterly	3.0	ug/l	200.8/6020	0.3/0.3	ug/L	$10
Lithium	Quarterly	88	ug/l	200.7	6	ug/L	$10
Manganese	Quarterly	50	ug/l	200.7	0.2	ug/L	$10
Mercury	Quarterly	Report	ug/l	1631E	0.1	ng/L	$110
Molybdenum	Quarterly	22	ug/l	200.7	3	ug/L	$10
Nickel	Quarterly	57	ug/l	200.7	2	ug/L	$10
Selenium	Quarterly	5.0	ug/l	200.8/6020	1.4/0.5	ug/L	$10
Silver	Quarterly	0.4	ug/l	200.8/6020	0.2 /0.2	ug/L	$10
Strontium	Quarterly	2300	ug/l	200.7	0.2	ug/L	$10
Thallium	Quarterly	1	ug/l	200.8/6020	0.3/0.3	ug/L	$10
Uranium	Quarterly	Report	ug/l	200.8	0.0007	ug/L	$45
Vanadium	Quarterly	3.1*	ug/l	200.8/6020	0.3/0.3	ug/L	$10
Zinc	Quarterly	1200	ug/l	200.7	10	ug/L	$10

* MWs QAL008A, QAl051A are report only for vanadium

Table 8
Humboldt Mill - Mine Permit Groundwater Monitoring
Parameters, Frequency of Analysis, Analytical Methods, and Laboratory Reporting Limits

	Eagle		White Water Associates Laboratory		
Parameters	**Frequency of Analysis**	**Sample Type**	**Analytical Method**	**Limit of Detection (LOD)**	**Units**
Field					
Static Water Elevation	Quarterly	Measured	Field	NA	ft/msl
ORP	Quarterly	Measured	Field	NA	mV
Temperature	Quarterly	Measured	Field	NA	°C
Dissolved Oxygen	Quarterly	Measured	Field	NA	ppm
pH	Quarterly	Grab	Field	NA	SU
Turbidity	Quarterly	Grab	Field	NA	NTU
Specific Conductance	Quarterly	Grab	Field	--	umhos/cm
Anions					
Alkalinity, Bicarbonate	Quarterly	Grab	310.2	2	mg/L
Alkalinity Carbonate	Quarterly	Grab	310.2	2	mg/L
Chloride	Quarterly	Grab	4500-Cl- E	3	mg/L
Fluoride	Quarterly	Grab	300.0	0.017	mg/L
Nitrogen, Ammonia	Quarterly	Grab	350.1	0.2	mg/L
Nitrate Nitrogen	Quarterly	Grab	4500-NO3- F	0.1	mg/L
Nitrite Nitrogen	Quarterly	Grab	4500-NO3- F	0.01	mg/L
Sulfate	Quarterly	Grab	4500-SO4- E	2.5	mg/L
Sulfide	Quarterly	Grab	376.1	0.67	mg/L
Cations					
Calcium	Quarterly	Grab	200.7	0.03	mg/L
Sodium	Quarterly	Grab	200.7	0.15	mg/L
Magnesium	Quarterly	Grab	200.7	0.04	mg/L
Potassium	Quarterly	Grab	200.7	0.12	mg/L
General					
Hardness	Quarterly	Grab	2340B	0.3	mg/L
Metals					
Aluminum	Annual	Grab	200.7	50	ug/L
Antimony	Annual	Grab	200.8/6020	0.1	ug/L
Arsenic	Quarterly	Grab	200.8/6020	0.17/0.17	ug/L
Barium	Annual	Grab	200.7	0.3	ug/L
Beryllium	Annual	Grab	200.7	0.2	ug/L
Boron	Annual	Grab	200.7	20	ug/L
Cadium	Annual	Grab	200.8/6020	0.10/0.10	ug/L
Chromium	Annual	Grab	200.7	0.6	ug/L
Cobalt	Annual	Grab	200.7	2	ug/L
Copper	Quarterly	Grab	200.7	1	ug/L
Iron	Quarterly	Grab	200.7	10	ug/L
Lead	Quarterly	Grab	200.8/6020	0.3/0.3	ug/L
Lithium	Annual	Grab	200.7	6	ug/L
Manganese	Quarterly	Grab	200.7	0.2	ug/L
Mercury	Quarterly	Grab	1631E	0.1	ng/L
Molybdenum	Annual	Grab	200.7	3	ug/L
Nickel	Quarterly	Grab	200.7	2	ug/L
Selenium	Annual	Grab	200.8/6020	1.4/0.5	ug/L
Silver	Annual	Grab	200.8/6020	0.2 /0.2	ug/L
Thallium	Annual	Grab	200.8/6020	0.3/0.3	ug/L
Vanadium	Annual	Grab	200.8/6020	0.3/0.3	ug/L
Zinc	Quarterly	Grab	200.7	10	ug/L

Table 9
Humboldt Mill - Mine Permit Surface Water Monitoring
Parameters, Frequency of Analysis, Analytical Methods, and Laboratory Reporting Limits

	Eagle		White Water Associates Laboratory		
Parameter	**Frequency of Analysis**	**Sample Type**	**Analytical Method**	**Limit of Detection (LOD)**	**Units**
Field					
Flow	Quarterly	Grab	Field	NA	cfs
Temperature	Quarterly	Grab	Field	NA	°C
Dissolved Oxygen	Quarterly	Grab	Field	NA	mg/L
Specific Conductance	Quarterly	Grab	Field	NA	µmhos/cm
pH	Quarterly	Grab	Field	NA	S.U.
ORP	Quarterly	Grab	Field	NA	mV
Turbidity	Quarterly	Grab	Field	NA	NTU
Metals					
Aluminum	Annually	Grab	200.7	50	ug/L
Antimony	Annually	Grab	200.8/6020	0.1	ug/L
Arsenic	Quarterly	Grab	200.8/6020	0.17/0.17	ug/L
Barium	Annually	Grab	200.7	0.3	ug/L
Beryllium	Annually	Grab	200.7	0.2	ug/L
Boron	Annually	Grab	200.7	20	ug/L
Cadmium	Annually	Grab	200.8/6020	0.10/0.10	ug/L
Chromium	Annually	Grab	200.7	0.6	ug/L
Cobalt	Annually	Grab	200.7	2	ug/L
Copper	Quarterly	Grab	200.7	1	ug/L
Iron	Quarterly	Grab	200.7	10	ug/L
Lead	Quarterly	Grab	200.8/6020	0.3/0.3	ug/L
Lithium	Annually	Grab	200.7	6	ug/L
Manganese	Quarterly	Grab	200.7	0.2	ug/L
Mercury (low level)	Quarterly	Grab	1631E	0.1	ng/L
Molybdenum	Annually	Grab	200.7	3	ug/L
Nickel	Quarterly	Grab	200.7	2	ug/L
Selenium	Annually	Grab	200.8/6020	1.4/0.5	ug/L
Silver	Annually	Grab	200.8/6020	0.2 /0.2	ug/L
Thallium	Annually	Grab	200.8/6020	0.3/0.3	ug/L
Uranium			200.8	0.0007	ug/L
Vanadium	Annually	Grab	200.8/6020	0.3/0.3	ug/L
Zinc	Quarterly	Grab	200.7	10	ug/L
Anions					
Alkalinity, Bicarbonate	Quarterly	Grab	310.2	2	mg/L
Alkalinity, Carbonate	Quarterly	Grab	310.2	2	mg/L
Chloride	Quarterly	Grab	4500-Cl- E	3	mg/L
Fluoride	Quarterly	Grab	300.0	0.017	mg/L
Nitrate	Quarterly	Grab	4500-NO3- F	0.1	mg/L
Nitrite	Quarterly	Grab	4500-NO3- F	0.01	mg/L
Nitrogen, Ammonia	Quarterly	Grab	350.1	0.2	mg/L
Sulfate	Quarterly	Grab	4500-SO4- E	2.5	mg/L
Sulfide	Quarterly	Grab	376.1	0.67	mg/L
Cations					
Calcium (Total)	Quarterly	Grab	200.7	0.03	mg/L
Sodium (Total)	Quarterly	Grab	200.7	0.15	mg/L
Magnesium (Total)	Quarterly	Grab	200.7	0.04	mg/L
Potassium	Quarterly	Grab	200.7	0.12	mg/L
General Chemistry					
Hardness	Quarterly	Grab	2340B	0.3	mg/L
Total Dissolved Solids	Quarterly	Grab	2540C	10	mg/L
Total Suspended Solids	Quarterly	Grab	2540D	1	mg/L

Table 10
Humboldt Mill - NPDES Permit Water Treatment Plant Effluent Monitoring
Parameters, Frequency of Analysis, Analytical Methods, and Laboratory Reporting Limits

	Eagle		White Water Associates Laboratory		
WTP Effluent	**Frequency of Analysis**	**Sample Type**	**Analytical Methods**	**Limit of Detection (LOD)**	**Units**
Field					
Dissolved Oxygen	Daily	Grab	Field	NA	mg/l
Outfall Observation	Daily	Grab	Field	-	-
pH	Daily	Grab	Field	NA	SU
Temperature	Continuous	Grab	Field	NA	^{o}C
Other					
Acute Toxicity	Monthly	Grab	-	-	-
Biochemical Oxygen Demand (BOD)	2 x Month	Grab	5210B	5210B	mg/L
Chronic Toxicity	Monthly	Grab	-	-	-
Total Dissolved Solids	Weekly	Grab	2540C	2540C	mg/L
Total Hardness	Monthly	Grab	2340B	0.3	mg/L
Total Suspended Solids	Weekly	Grab	2540D	1	mg/L
Anions					
Alkalinity (Bicarb and Carb)		Grab	310.2	2	mg/L
Ammonia Nitrogen	2 x Month	Grab	350.1	0.2	mg/L
Available Cyanide	Weekly	Grab	-	-	-
Chloride		Grab	4500-CL-E	3	mg/L
Fluoride	2 x Month	Grab	300.0	0.017	mg/L
Nitrate		Grab	4500-NO3- F	0.1	mg/L
Sulfate	Weekly	Grab	4500-SO4- E	2.5	mg/L
Total Phosphorus	Weekly	Grab	4500-P	0.01	mg/L
Total Residual Chlorine	Daily	Grab	-	-	-
Metals					
Total Aluminum		Grab	200.7	50	ug/L
Total Antimony	2 x Month	Grab	200.8/6020	0.1	ug/L
Total Arsenic	Weekly	Grab	200.8/6020	0.17/0.17	ug/L
Total Barium	2 x Month	Grab	200.7	0.3	ug/L
Total Beryllium		Grab	200.7	0.2	ug/L
Total Boron	2 x Month	Grab	200.7	20	ug/L
Total Cadmium	Weekly	Grab	200.8/6020	0.10/0.10	ug/L
Total Chromium	2 x Month	Grab	200.7	0.6	ug/L
Total Cobalt	Weekly	Grab	200.7	2	ug/L
Total Copper	Weekly	Grab	200.7	1	ug/L
Total Iron		Grab	200.7	1,000	ug/L
Total Lead	Weekly	Grab	200.8/6020	0.3/0.3	ug/L
Total Lithium	2 x Month	Grab	200.7	6	ug/L
Total Manganese	Weekly	Grab	200.7	0.2	ug/L
Total Mercury	Weekly	Grab	1631E	0.1	ng/L
Total Molybdenum	2 x Month	Grab	200.7	3	ug/L
Total Nickel	Weekly	Grab	200.7	2	ug/L
Total Selenium	Weekly	Grab	200.8/6020	1.4/0.5	ug/L
Total Silver		Grab	200.8/6020	0.2	ug/L
Total Strontium	2 x Month	Grab	200.7	0.2	ug/L
Total Thallium		Grab	200.8/6020	0.3	ug/L
Total Vanadium		Grab	200.8/6020	0.3	ug/L
Total Zinc	Weekly	Grab	200.7	10	ug/L

Orange shading indicates additional parameters added by CEMP

Table 11
Powell Township Air Station – Air Metals Monitoring
Parameters, Analytical Methods, and Laboratory Reporting Limits

Eastern Research Group
601 Keystone Park Drive
Suite 700
Morrisville, NC 27560

2013 Metals MDL - Compendium Method IO-3.5

Element	47 mm Teflon		8x10" Quartz	
	ng/filter	ng/m3 (assuming 24.04m3)	ng/filter	ng/m3 (assuming 2000 m3)
Aluminum	1481	61.6	41816	20.9
Antimony	1.14	0.048	30.0	0.015
Arsenic	4.77	0.198	140	0.070
Barium	3.14	0.130	5839	2.92
Beryllium	0.374	0.016	5.17	0.003
Cadmium	0.340	0.014	19.4	0.010
Calcium	2539	106	394287	197
Chromium	408	17.0	4912	2.46
Cobalt	0.560	0.023	31.4	0.016
Copper	10.2	0.424	2866	1.43
Iron	376	15.6	33496	16.7
Lead	2.44	0.102	241	0.121
Magnesium	193	8.05	79243	39.6
Manganese	3.25	0.135	260	0.130
Mercury	0.60	0.025	8.91	0.004
Molybdenum	2.44	0.102	278	0.139
Nickel	6.01	0.250	2481	1.24
Rubidium	0.241	0.010	22.4	0.011
Selenium	7.27	0.302	54.9	0.027
Strontium	2.02	0.084	475	0.238
Thallium	0.036	0.001	0.867	0.0004
Thorium	0.354	0.015	3.79	0.002
Uranium	0.020	0.001	11.6	0.006
Zinc	222	9.25	14372	7.19

Table 12
Parameters and Analytical Methods for Edible/Traditional Plant Tissue Monitoring

Parameter	Method
Aluminum	200.7
Antimony	200.8/6020
Arsenic	200.8/6020
Barium	200.7
Beryllium	200.7
Boron	200.7
Cadmium	200.8/6020
Calcium	200.7
Chromium	200.7
Cobalt	200.7
Copper	200.7
Iron	200.7
Lead	200.8/6020
Lithium	200.7
Magnesium	200.7
Manganese	200.7
Mercury	245.1/7470A
Molybdenum	200.7
Nickel	200.7
Potassium	200.7
Selenium	200.8/6020
Sodium	200.7
Strontium	200.7
Thallium	200.8/6020
Vanadium	200.8/6020
Zinc	200.7
Ammonia	350.1
Nitrate/Nitrite Nitrogen	4500-NO3- F
Total Organic Nitrogen - TKN	351.2
Sulfate	4500-SO4- E
Sulfur	200.7
Total Phosphorus	4500-P
Uranium	200.8

Table 13
CEMP Groundwater Monitoring Well near Eagle Mine
Parameters, Analytical Methods, and Laboratory Reporting Limits

Parameters	Frequency of Analysis	Analytical Method	Maximum Daily Limit	Units
Field				
Static Water Elevation	Quarterly	Field	Report	USGS-Ft
Dissolved Oxygen	Quarterly	Field	Report	mg/l
pH (Minimum)	Quarterly	Field	6.5	S.U.
pH (Maximum)	Quarterly	Field	9.7	S.U.
Specific Conductance	Quarterly	Field	Report	umhos/cm
Anions				
Bicarbonate	Quarterly	--	Report	mg/l
Chloride	Quarterly	--	Report	mg/l
Ammonia Nitrogen	Quarterly	--	10.0	mg/l
Nitrate Nitrogen	Quarterly	--	10.0	mg/l
Nitrite Nitrogen	Quarterly	--	Report	mg/l
Total Phosphorus	Quarterly	--	Report	mg/l
Sulfate	Quarterly	--	250	mg/l
Cations				
Calcium	Quarterly	--	Report	mg/l
Sodium	Quarterly	--	Report	mg/l
Magnesium	Quarterly	--	Report	mg/l
Potassium	Quarterly	--	Report	mg/l
Metals				
Aluminum	Quarterly	--	150	ug/l
Antimony	Quarterly	200.8/6020	5.0	ug/l
Arsenic	Quarterly	200.8/6020	6.0	ug/l
Barium	Quarterly	200.8/6020	1000	ug/l
Beryllium	Quarterly	200.8/6020	3	ug/l
Boron	Quarterly	200.8/6020	285	ug/l
Cadium	Quarterly	200.8/6020	3.0	ug/l
Chromium	Quarterly	200.8/6020	52	ug/l
Cobalt	Quarterly	200.8/6020	23	ug/l
Copper	Quarterly	200.8/6020	10	ug/l
Fluoride, Total	Quarterly	--	1000	ug/l
Iron	Quarterly	--	Report	ug/l
Lead	Quarterly	200.8/6020	3.0	ug/l
Lithium	Quarterly	200.8/6020	88	ug/l
Manganese	Quarterly	200.8/6020	50	ug/l
Mercury	Quarterly	1631/----	Report	ug/l
Molybdenum	Quarterly	200.8/6020	22	ug/l
Nickel	Quarterly	200.8/6020	57	ug/l
Selenium	Quarterly	200.8/6020	5.0	ug/l
Silver	Quarterly	200.8/6020	0.4	ug/l
Strontium	Quarterly	200.8/6020	2300	ug/l
Thallium	Quarterly	200.8/6020	1	ug/l
Uranium	Quarterly	--	Report	ug/l
Vanadium	Quarterly	200.8/6020	3.1*	ug/l
Zinc	Quarterly	200.8/6020	1200	ug/l

Table 14
CEMP Seeps
Parameters and Analytical Methods

Parameters	Frequency of Analysis	Analytical Method	Units
Field			
Dissolved Oxygen	Quarterly	Field	mg/l
pH	Quarterly	Field	S.U.
Specific Conductance	Quarterly	Field	umhos/cm
Anions			
Bicarbonate	Quarterly	--	mg/l
Chloride	Quarterly	--	mg/l
Nitrate Nitrogen	Quarterly	--	mg/l
Sulfate	Quarterly	--	mg/l
Cations			
Sodium	Quarterly	--	mg/l
Metals (Dissolved)			
Arsenic	Quarterly	200.8/6020	ug/l
Copper	Quarterly	200.8/6020	ug/l
Iron	Quarterly	--	ug/l
Mercury	Quarterly	1631/----	ug/l
Nickel	Quarterly	200.8/6020	ug/l
Uranium	Quarterly	--	ug/l
Vanadium	Quarterly	200.8/6020	ug/l
Organic Carbon	Quarterly		

Table 15
Humboldt Mill - NPDES Permit Water Treatment Plant Influent Monitoring

	Eagle		White Water Associates Laboratory		
WTP Influent		**Sample Type**	**Analytical Methods**	**Limit of Detection (LOD)**	**Units**
Other					
Total Dissolved Solids		Grab	2540C	2540C	10
Total Suspended Solids		Grab	2540D	1	mg/L
Anions					
Sulfate		Grab	4500-SO4- E	2.5	mg/L
Metals					
Total Cobalt		Grab	200.7	2	ug/L
Total Copper		Grab	200.7	1	ug/L
Total Manganese		Grab	200.7	0.2	ug/L
Total Mercury		Grab	1631E	0.1	ng/L
Total Nickel		Grab	200.7	2	ug/L
Total Selenium		Grab	200.8/6020	1.4/0.5	ug/L

Orange shading indicates additional parameters added by CEMP