

# Appendix 3-C

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Denitrification and Selenium  
Reduction in Unsaturated Waste Rock  
and Coal Reject - Crown Mountain  
Coking Coal Project

# Denitrification and Selenium Reduction in Unsaturated Waste Rock and Coal Reject

NWP Crown Mountain Coking Coal Project

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## Executive Summary

Laboratory studies were undertaken to determine the capacity of native microbes within coal reject (from Crown Mountain) and waste rock (from Sekunka) to reduce oxygen, nitrate, and selenium in mine-affected waste rock under unsaturated conditions. Column studies were established to mimic conditions likely to occur in a constructed waste rock facility that includes intentionally placed layers of coal reject and waste rock to create low oxygen zones with sufficient residence time to support denitrification and selenium reduction.

Both the coal reject and waste rock were capable of rapid oxygen consumption and nitrogen removal under a range of oxygen concentrations. The rate of denitrification was generally higher under low oxygen conditions although denitrification was observed under all gas conditions. Likewise, selenium reduction was observed in all influent oxygen concentrations with the highest rates of selenium removal noted in the low oxygen columns. These metabolisms were active without the addition of an external carbon or nutrient source which suggests that the carbon released from the coal reject is sufficient to support microbial reduction of oxygen, nitrogen, and selenium. Microbial community analysis demonstrates that the presence of oxygen impacts community diversity including the prevalence of denitrifying and selenium-reducing bacteria in both the coal reject and waste rock.

Rates of reduction observed in this study are significantly higher than those reported in the literature that do not account for microbial activity. These results suggest that a short time will be required to develop suboxic zones appropriate for denitrification and selenium reduction under unsaturated conditions in a full-scale waste rock facility that is constructed with layers of coal reject.

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# 1 Introduction

NWP Coal Canada Ltd (NWP) proposes to develop and operate the Crown Mountain Coking Coal Project (the Project), an open pit steelmaking coal mine located in the Elk Valley coal field of the East Kootenay Region of British Columbia (B.C.). This relatively shallow coal deposit outcrops in the eastern portion of the Elk Valley adjacent to the Alexander Creek Syncline (NWP, 2022). Enviromin, Inc., (Enviromin) was retained to conduct column tests of sub-oxic nitrate and selenate reduction in unsaturated coal mine rock storage facilities for the Project. This study informs the design of unsaturated mine rock storage facilities to achieve sub-oxic conditions in a zone with adequate hydraulic residence time (HRT) to allow for sufficient denitrification and selenium reduction to occur. Rates calculated for oxygen, nitrate and selenium reduction under these conditions have been used to design facilities based on required HRT.

## 1.1 Biogeochemistry of Nitrate and Selenium Reduction in Mined Rock

Throughout the Elk Valley, coal is mined from the Mist Mountain formation. Coal waste rock is often end dumped at a relatively steep angle of repose, which facilitates the flux of air and water through the unsaturated rock deposits. Associated oxygen promotes oxidation of sulfide minerals with associated release of selenium as selenate. Biological reduction of selenate to the insoluble form, elemental selenium, is a demonstrated method of reducing selenium mobility, but nitrate (released by blasting using ammonium nitrate) has potential to inhibit selenium reduction and attenuation. Further, biological reduction of nitrate and selenate only occurs when oxygen conditions are low. *In situ* reduction of nitrate and selenate in mine-impacted water, following reduction of oxygen concentrations, has been proven to be effective in saturated rock fills (Kirk et al., 2022), but at Crown Mountain, distance to groundwater is likely to minimize saturation. Assessment of potential for biological reduction of nitrate and selenate under sub-oxic conditions in unsaturated coal mine waste rock suggests that nitrate and selenate can also be reduced to nitrogen gas and elemental selenium in unsaturated storage facilities. This is true when facilities are constructed from the bottom up, rather than by end-dumping, using variably compacted lifts of mined and processed rock to limit gas and water flux. This is the basis of the “Layer Cake” conceptual model proposed for Crown Mountain by NWP.

## 1.2 Study Objectives

During this study, Enviromin tested the capacity of microbes to consume oxygen through biological and abiotic reaction with mined and processed rock using respirometry. The capacity of microbes to reduce nitrate and selenium in mine-affected water was also demonstrated in column pair systems comprised of coal reject and waste rock columns which were operated in series. Columns were operated in a down-flow, unsaturated configuration with controlled gasses in the headspace to mimic several potential field conditions anticipated following the construction and operation of a designed waste facility. This study quantifies the rate and extent of nitrate and selenium reduction by microbial populations present in waste rock and coarse coal rejects under several different oxygen conditions.

# 2 Operational and Analytical Methods

NWP proposes to mine coal from deposits hosted in the Mist Mountain Formation (NWP, 2022). Blasting with ammonium nitrate and movement of rock during mining increases the concentrations of oxygen and nitrate in run-of-mine waste rock. Following placement into a storage facility, mined rock is naturally inoculated by windblown and water-borne microbes. The structure of the microbial community will be influenced by the availability of carbon and electron acceptors (e.g., oxygen, nitrate, and selenate). Because the Crown Mountain deposit has never been mined, there was no existing surface deposit of mine rock to sample for this investigation. Following a review of available alternative sources of blasted coal waste rock, historically blasted, mined, and stockpiled waste rock at the Sekunka Mine was chosen to represent future Crown Mountain Coke Coal mine rock (**Appendix A**). Reject from metallurgical testing of Crown Mountain ore by SGS (Ontario, Canada) was used as coal reject for testing purposes.

## 2.1 Waste Rock and Coal Reject Composite Construction

Waste rock samples from a waste rock facility at the Sekunka mine site were collected and then preserved under vacuum seal prior to being composited under anaerobic conditions in a laboratory glove box into a total mass of approximately 6.5 kg for each column. Only rocks with a diameter under 5 cm were used to avoid preferential flow in the columns, and to achieve a compaction expected to replicate the density of waste rock in the field (1.6-1.8 g/cm<sup>3</sup>). Aseptic technique was used to avoid cross-contamination of samples.

Likewise, coarse coal reject samples from metallurgical testing were composited under conditions similar to those used for waste rock samples. Again, particle diameters under 5 cm were selected to avoid preferential flow. Each column received a mixture of material from first pass sinks and combined RO tails in a proportion similar to that formed during coal processing i.e., approximately 72% first pass sinks, 26% combined RO tails, and 2% RO tails. This proportion is based on the relative masses of sample types received from one processed core as provided by SGS.

Groundwater was collected for testing from the “Mona Lisa” monitoring well at Crown Mountain. Water was pumped into sterile carboys and preserved under zero headspace at 15 to 20°C prior to use.

Due to space limitations in the anaerobic chamber, columns were rapidly packed outside of the chamber under atmospheric conditions. Immediately after packing, columns were flushed with the appropriate gas treatment to ensure the desired oxygen conditions were achieved.

## 2.2 Material Characterization

Prior to initiating the study, and after forming composites of the waste rock and coal reject material, subsamples were taken for material characterization. These included material properties (soil texture, permeability, moisture content, specific gravity, and attenberg limits), Appendix B1; Xray diffraction analyses of primary mineralogy (Appendix B2); acid digests using 2 acid (MEMS-41) and 4 acid (MEMS-61), Appendix B3; and water quality analyses of the groundwater collected for use in columns tests (Appendix B4) . All relevant lab data are reported in **Appendix B**.

## 2.3 Bottle Roll Tests

Bottle roll tests (methodology consistent with EPA 1312) were conducted by Energy Laboratories, Inc. (Billings, Montana) on the coal reject composite to determine the amount of carbon expected to leach from coal columns during operations. Lab reports with these data are located in **Appendix C**.

## 2.4 Column Construction and Operational Conditions

Two replicate experiments were conducted during this study to assess oxygen consumption and the reduction of nitrate and selenate in columns run in series to simulate a constructed waste rock dump. The influence of oxygen concentration on reduction was assessed. These replicate experiments occurred sequentially and are identified as either Replicate 1 or Replicate 2.

Each experiment was conducted in darkness at 10 ± 1°C. The final effluent collection container was stored at 4°C to prevent ongoing biological activity. Due to very slow flow of water under unsaturated conditions, it was necessary to composite samples daily for intermittent analysis. Replicate 1 operated continuously for approximately 25 weeks (175 days), after which columns were decommissioned. Replicate 2 operated for approximately 13 weeks (90 days) after commissioning.

During Replicate 1, one set of coal reject and waste rock column pairs was established under each oxygen condition: 21% oxygen, 5% oxygen, and 0% oxygen. The oxygen percentage reflects the nitrogen gas and air mixed to create the targeted oxygen conditions. Groundwater extracted from the “Mona Lisa” well was amended to an initial concentration of 10 mg/l nitrate-N and 0.2 mg/l selenate-Se. Nitrate-N concentrations were increased periodically to determine the maximum amount of nitrate that the system can remove. In order to assess the capacity of the microbial community to reduce nitrate at potentially field relevant concentrations without the addition of an external carbon source nitrate-N concentrations were increased to 20 mg/L on day 59, and 100 mg/l on day 123. At the conclusion of Replicate 1 testing, while nitrate-N

was 100 mg/L, methanol was added to the system as an external carbon source for improved denitrification. The initial  $\text{SeO}_4\text{-Se}$  concentration was selected based on typical concentrations in the area and was not altered through the course of the study. These columns were operational from May 2018 to November 2018. Table 1 describes the column operational conditions.

During Replicate 2, one set of coal reject and waste rock column pairs was established under each of the original oxygen conditions; 21%, 5% oxygen, and 0%. During this phase of the study, an additional 10% oxygen condition was tested in duplicate. Groundwater extracted from the Mona Lisa well was amended to an initial concentration of 10 mg/l nitrate-N and 0.2 mg/l selenate-Se. Nitrate-N concentrations were increased to 20 mg/L on day 60. The  $\text{SeO}_4\text{-Se}$  concentration was not altered through the course of this replicate study. Table 1 describes the column operational conditions.

**Table 1. Replicate 1 and Replicate 2 Experimental Parameters**

	Headspace %O <sub>2</sub>	# Column Pairs	NO <sub>3</sub> -N (mg/L)	SeO <sub>4</sub> -Se (mg/L)	Flow Rate (mL/day)
Replicate 1	21	1	10, 20, 100	0.2	10
	5	1	10, 20, 100	0.2	10
	0	1	10, 20, 100	0.2	10
Replicate 2	21	1	10, 20	0.2	10
	10	2	10, 20	0.2	10
	5	1	10, 20	0.2	10
	0	1	10, 20	0.2	10

Prior to amending groundwater with nitrate and selenium, all columns were operated in an upflow configuration to saturate the rock with groundwater sparged with mixed gasses at the appropriate oxygen concentration. This initial saturation step was used to ensure that oxygen conditions were consistent throughout the entire column. After columns were saturated, they were allowed to drain and return to unsaturated conditions, replacing water volume with the appropriate mixed gas. Groundwater was then amended to the appropriate nitrate and selenate concentrations, and the columns were operated in an unsaturated, downflow configuration.

Columns were fed from the top to ensure unsaturated conditions were maintained, and a layer of glass wool (approximately 5 cm tall) was placed on top of the column material to distribute flow over the entire material surface (Figure 1). The inlet and outlet of each column were covered with polyester mesh with a pore size opening of 2 mm (McMaster-Carr, CA). A layer of glass wool (1 cm) was placed at the bottom of coal columns only to prevent the loss of fines during flow. Feed medium was degassed continually with the respective gas throughout the test. The head space of each column was also degassed continually with the respective gas to ensure the desired experimental conditions were maintained. Figure 1 shows the typical column set up for each gas condition; this approach was repeated during the replicate experiment.

As shown in Figure 2, columns were run in series, with groundwater medium fed first to the coarse coal reject column at 0.007 ml/min. Effluent from this column, which contained carbon necessary for microbial nitrate and selenium reduction in the waste rock column, was collected in a sterile, non-permeable and continuously degassed glass vessel. This vessel was sampled and then pumped out at 0.007 ml/min to the top of the waste rock column. Final effluent collection occurred in another sterile vessel.

The groundwater medium flow rate was selected based on the mean average precipitation at Crown Mountain, which is 85.4 cm/year (Ryan Williams, SRK, personal communication). Scaling this flow rate to the column surface area (approximately 81.1 cm<sup>2</sup>) and assuming approximately 50% infiltration, the weekly flow to each column was calculated as 66 ml, or approximately 0.007 ml/min. A demonstration column was used to confirm that unsaturated conditions were maintained under this flow rate.



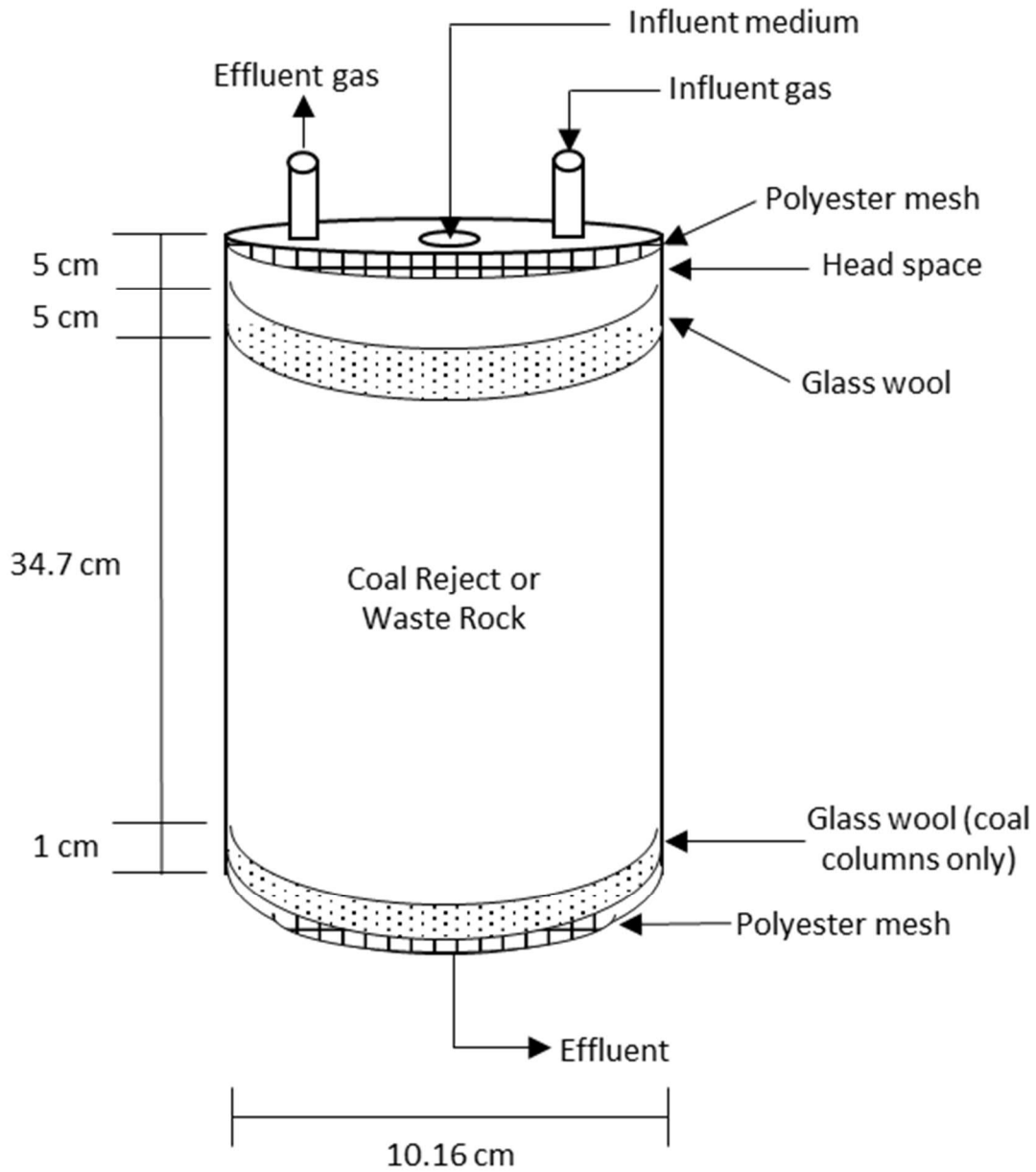


Figure 1. Detailed Column Composition

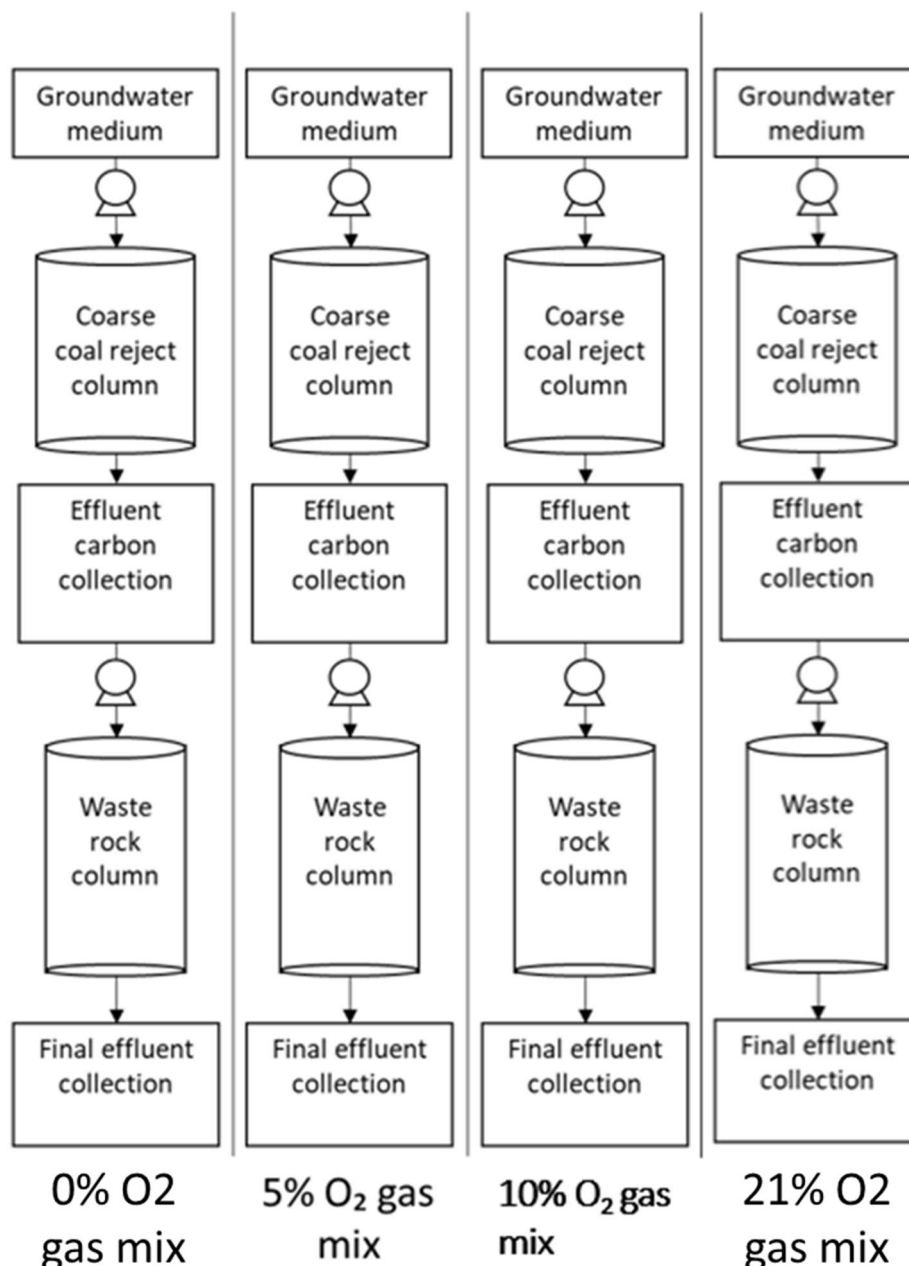


Figure 2. Column Set Up for Each Headspace Gas Treatment

### 3 Column Sampling and Analysis

Influent and effluent samples for water chemistry analysis were taken approximately twice per month for the duration of the experiment. Due to the low flow rate through each column, sample volume limits allowed a maximum sampling frequency of only twice per month. Flow rate, nitrate-N, and dissolved oxygen (DO) were measured once per week. Samples were taken from the feed medium, carbon collection, and final effluent collection vessels for dissolved organic carbon (DOC), nitrate-N, sulfate, total phosphorus, dissolved metals, and total and speciated selenium. Table 2 provides a general overview of sampling frequency, collection, storage, and analytical methods. In depth descriptions of each analytical method are provided in **Appendix D**.

**Table 2. Column Sampling and Analysis Frequency Summary**

Frequency	Analysis
Commissioning	Multielement rock digest, Molecular community analysis
Weekly	NO <sub>3</sub> -N, SO <sub>4</sub> , PO <sub>4</sub> -P, flow rate
Every other week	Dissolved oxygen SO <sub>4</sub> , PO <sub>4</sub> -P,
Monthly	Dissolved organic carbon, Dissolved metals, dissolved selenium, speciated selenium
Decommissioning	Whole rock chemistry, Molecular community analysis

Microbial community was analyzed in the waste rock composite at the time of column commissioning and in the waste rock solids removed from the columns at the time of decommissioning. DNA was extracted from the solids and directly from filters with biomass using a method optimized for low biomass samples with surface attachment. DNA was cleaned of humics and interfering compounds then quantified prior to sequencing at the Integrated Microbiome Resource at Dalhousie University. Sequencing was performed on an Illumina MiSeq instrument using primers for the V6-V8 region of the 16S rDNA gene. Sequences were compiled by Enviromin staff, cleaned, and error checked using current best practices including quality assessment using FastQC with chimera removal using the VSEARCH algorithm. Phylogeny was assigned to genus-level operational taxonomic units using SORTMERA and SUMACLUSt tools referencing the most recent Ribosomal Database Project phylogenetic database. Alpha diversity was assessed using the Microbiome Helper software suite (Comeau et al., 2017) and comparative metagenomics were performed using the Statistical Analysis of Metagenomic Profiles (STAMP) software package (Parks et al., 2014). Metabolic function was assigned using a modified FAPROTAX database (Louca et al., 2016).

## 4 Results

Enviromin Inc completed testing on effluent from the coal reject and waste columns for both Replicate 1 and Replicate 2 experiments. Results from both replicate studies are presented below. Oxygen, nitrate, and selenium removal activities in the second round of columns (Replicate 2) confirmed the trends observed in the Replicate 1 columns.

### 4.1 Oxygen Consumption

Coal reject and waste rock are capable of oxygen consumption under the established unsaturated conditions. The oxygen depletion can be observed as the groundwater flow progresses through the system. Mean dissolved oxygen concentrations for the duration of the study are presented for each sampling point in Table 3. The 5% and 10% column pairs had comparable chemistry that differed from the fully aerobic, 21% oxygen column pair. This result suggests that oxygen consumption rates are quite high for these materials and that dissolved oxygen concentration gradients in these systems could be quite steep. Independent respirometry studies have demonstrated that these materials are capable of rapid biological oxygen consumption (**Appendix E**). Oxygen consumption rates increase with temperature and higher proportions of coal reject as a carbon and nutrient source. Oxygen consumption rates of autoclave-killed coal reject and waste rock materials are significantly lower than those observed in live samples. This indicates that some portion of the oxygen is consumed through abiotic reaction with minerals, such as sulfides, but that most oxygen consumption is biotic.

**Table 3. Mean Dissolved Oxygen Concentrations (mg/L)**

	Replicate 1: 0% O <sub>2</sub>	Replicate 2: 0% O <sub>2</sub>	Replicate 1: 5% O <sub>2</sub>	Replicate 2: 5% O <sub>2</sub>	Replicate 2: 10% O <sub>2</sub>	Replicate 2: 10% O <sub>2</sub>	Replicate 1: 21% O <sub>2</sub>	Replicate 2: 21% O <sub>2</sub>
Groundwater medium								
Coarse coal reject column	0.33	0.28	2.51	2.66	3.99	4.17	7.53	8.00
Effluent carbon collection	0.05	0.09	1.13	1.27	1.71	1.69	3.87	4.11
Waste rock column	0.29	0.31	1.53	1.39	1.83	1.99	7.84	7.99
Final effluent collection	0.0	0.0	0.32	0.40	0.57	0.48	2.45	2.39

## 4.2 Nitrate Removal

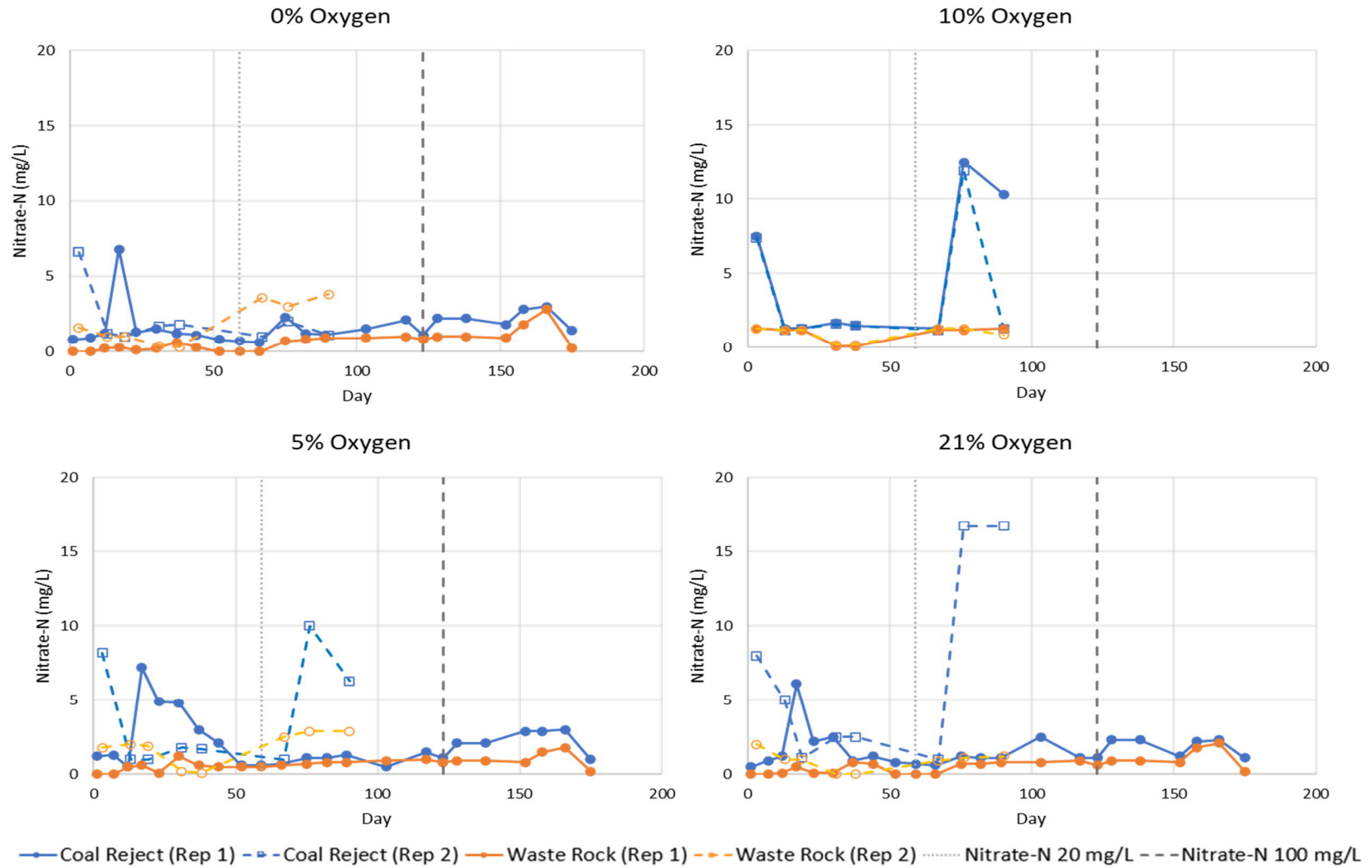
Results show that both coal reject and waste rock materials are capable of nitrate reduction under unsaturated conditions as described. Nitrate was removed from all columns, with the greatest reduction observed in the anaerobic (0% oxygen) column pairs. The majority of nitrate was removed as water passed through the coal reject column. The waste rock materials demonstrated the capacity to remove any remaining nitrate. Without addition of an external carbon source, these materials are capable of removing approximately 19 mg/L nitrate. However, following the addition of an external carbon source, approximately 97 mg/L nitrate was removed (in replicate 1 from day 123 to day 175). Effluent nitrate concentrations throughout the course of both replicates are shown in Figure 3.

Following the nitrate-N amendment increase to 20 mg/L on day 59, the Replicate 1 columns exhibited a temporary decrease in nitrate removal efficiency, followed by a resumption of complete nitrate reduction. The Replicate 2 columns, however experienced a more severe upset with only the anaerobic columns continuing to completely denitrify the influent water. This discrepancy may reflect the extended storage time for the materials used in the second replicate experiment. Results demonstrate that native microbial communities within coal reject and waste rock are capable of nitrate reduction without the addition of an external carbon source. The bulk of nitrate reduction occurs in the coal reject while remaining nitrate is removed as water contacts waste rock. The addition of carbon increased the capacity for denitrification, however.

## 4.3 Selenium Removal

Influent selenium concentration ranged between 0.372 and 0.381 mg/L in the coal reject columns. Selenium was reduced in all column pairs with a maximum efficiency of approximately 99%. The increase in effluent selenium concentration observed in coal reject columns on day 61 during the replicate 2 column pair testing is likely a result of the increased nitrate in the influent as excess nitrate can inhibit selenium reduction rates. This increase in effluent selenium concentration following the nitrate increase was not observed in replicate 1 columns. As discussed regarding nitrate removal, this discrepancy may have been due to the long storage time for materials used in the second replicate of column testing.

Results demonstrate that the microbial community present in the coal reject and waste rock is capable of selenium reduction when nitrate has been removed via denitrification. This activity was dependent on the oxygen concentration as the microbes responsible for selenium reduction are present in lower relative abundance than denitrifiers and are typically more sensitive to oxygen. When additional nitrate is present, selenium reduction rates decrease as there is insufficient carbon to support both denitrification and selenium reduction.



**Figure 3. Effluent Nitrate-N Concentration for Column Replicates 1 and 2**

*Note: All starting concentrations began at 10 mg/L.*

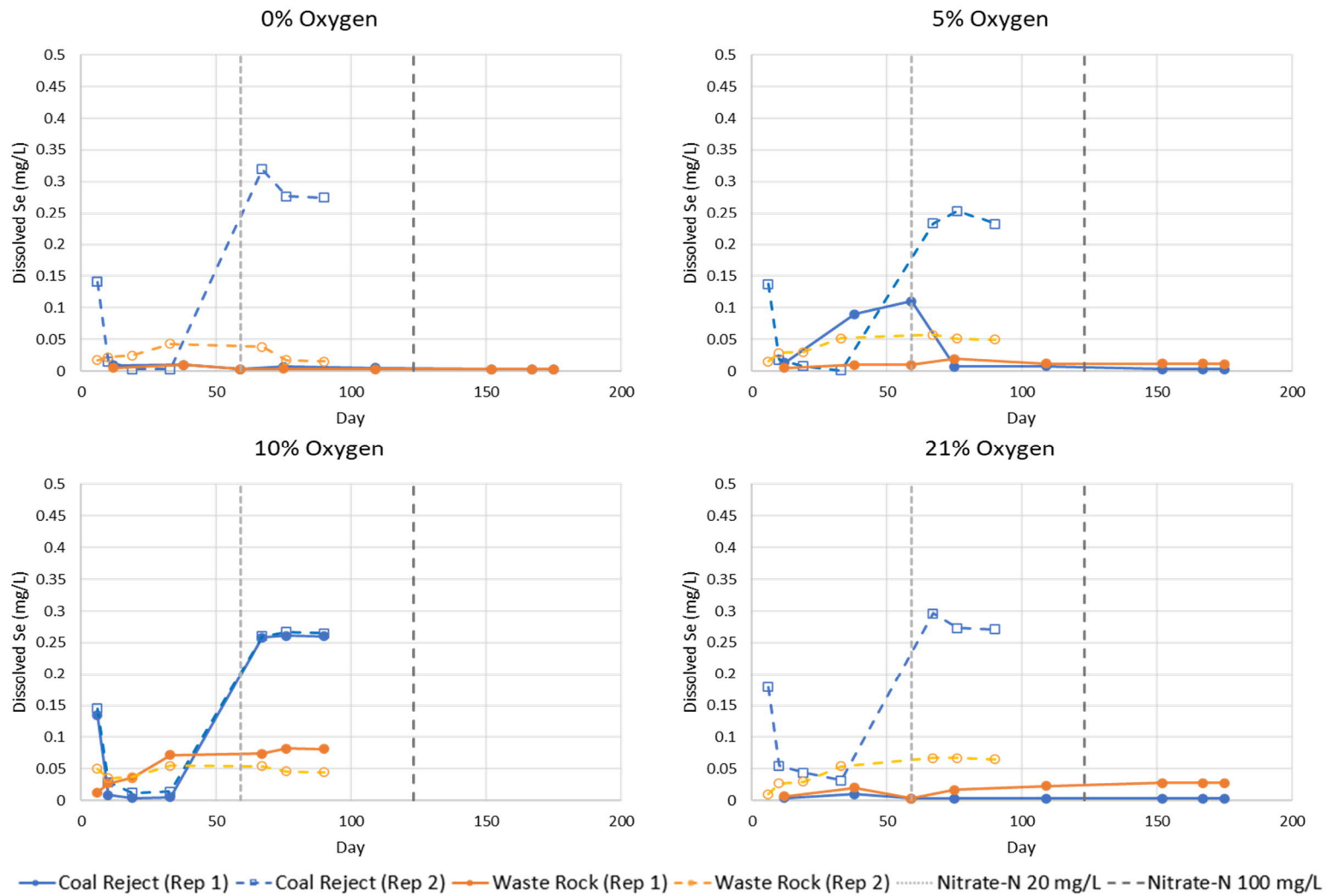


Figure 4. Effluent Dissolved Selenium Concentrations for Replicate 1 and 2 Columns

#### 4.4 Residence Time and Reduction Rates

HRT was calculated for both coal reject and waste rock columns using the porosity of rock placed into the columns, column volume, and the flow rate per the methodology below.

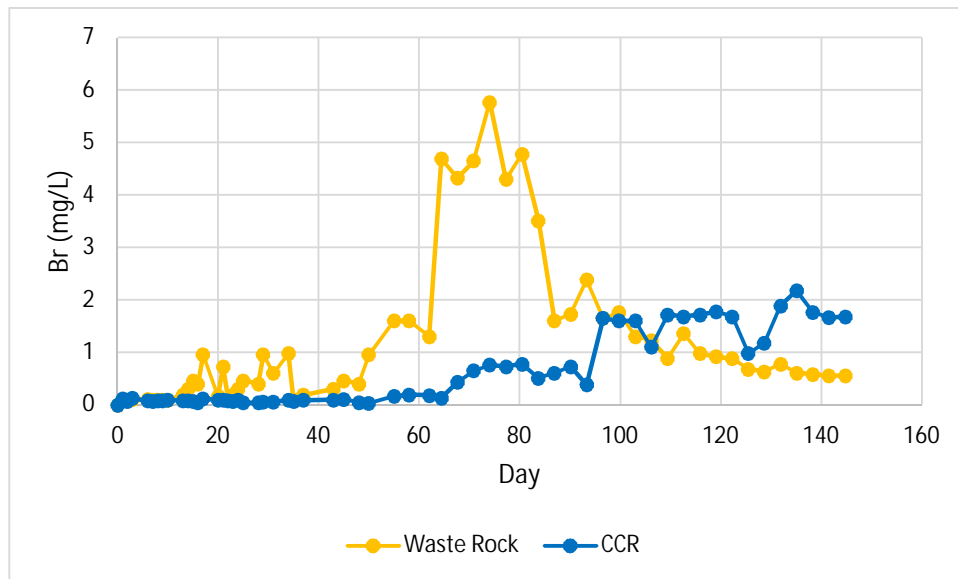
Waste Rock Column:

- Porosity is 18.8%
- Column volume is 4.013L
- Flow Rate is 0.007 mL/min
- $HRT = (Porosity * Column Volume) / Flow Rate = 74.8$  days

Coal Reject Column:

- Porosity is 34.8%
- Column Volume is 4.013L
- Flow Rate is 0.007mL/min
- $HRT = (Porosity * Column Volume) / Flow Rate = 138.5$  days

During Replicate 2 operations, a bromide tracer study was conducted on a single waste rock column and a single coarse coal reject column to evaluate HRT directly (Figure 5). The study was carried out for 145 days and was terminated at the time of column decommissioning. The mean HRT as determined by bromide tracer test was 79.7 days for the waste rock and 114 days for the coarse coal reject column. The discrepancy between the calculated and observed HRT for the coarse coal reject column is likely due to the limited run time of the bromide tracer study that did not allow for complete capture of the bromide after day 145.



**Figure 5. Effluent Bromide Concentrations During Replicate 2 Tracer Study**

Nitrate and selenium removal rates were calculated based on influent and effluent concentrations and calculated HRT (Table 4). Selenium removal rates of ND, as noted in replicate 2 waste rock columns, indicate that influent selenium concentrations were below the detection limit and could therefore not be calculated.



**Table 4. Calculated Linear Rates of Nitrate and Selenium Removal**

Replicate	Headspace %O <sub>2</sub>	Coal Reject NO <sub>3</sub> -N Removal Rate (mg/L/Day)	Waste Rock NO <sub>3</sub> -N Removal Rate (mg/L/Day)	Coal Reject SeO <sub>4</sub> -Se Removal Rate (mg/L/Day)	Waste Rock SeO <sub>4</sub> -Se Removal Rate (mg/L/Day)
Replicate 1	21	0.16	0.012	0.0033	4.52E-05
	5	0.16	0.0017	0.0015	0.0010
	0	0.16	0.012	0.0033	7.34E-05
Replicate 2	21	0.13	0.064	0.0028	ND
	10	0.14	0.043	0.0033	ND
	5	0.14	0.044	0.0033	ND
	0	0.15	0.036	0.0033	ND

## 4.5 Microbial Community

Biomass concentration in the Sekunka waste rock was low as determined by the mass of DNA extracted per gram of material. Initial assessment of the microbial communities in the Sekunka waste rock samples confirmed the presence of denitrifying and selenium-reducing bacteria. Denitrifiers and selenium-reducing bacteria were also detected in the ground water samples from the Mona Lisa monitoring well at Crown Mountain (**Appendix F**). The biomass density in the coarse coal reject samples was insufficient for nucleic acid extraction, so a community analysis of this material prior to column construction could not be obtained.

At the conclusion of the column studies, solids were removed from the waste rock and coal reject columns and preserved immediately for molecular community analysis using DNA/RNA Shield (Zymo Research). Communities were compared between headspace gas treatments, material type, and to the initial waste rock communities. A complete listing of microbes detected in the column samples is provided in **Appendix G**.

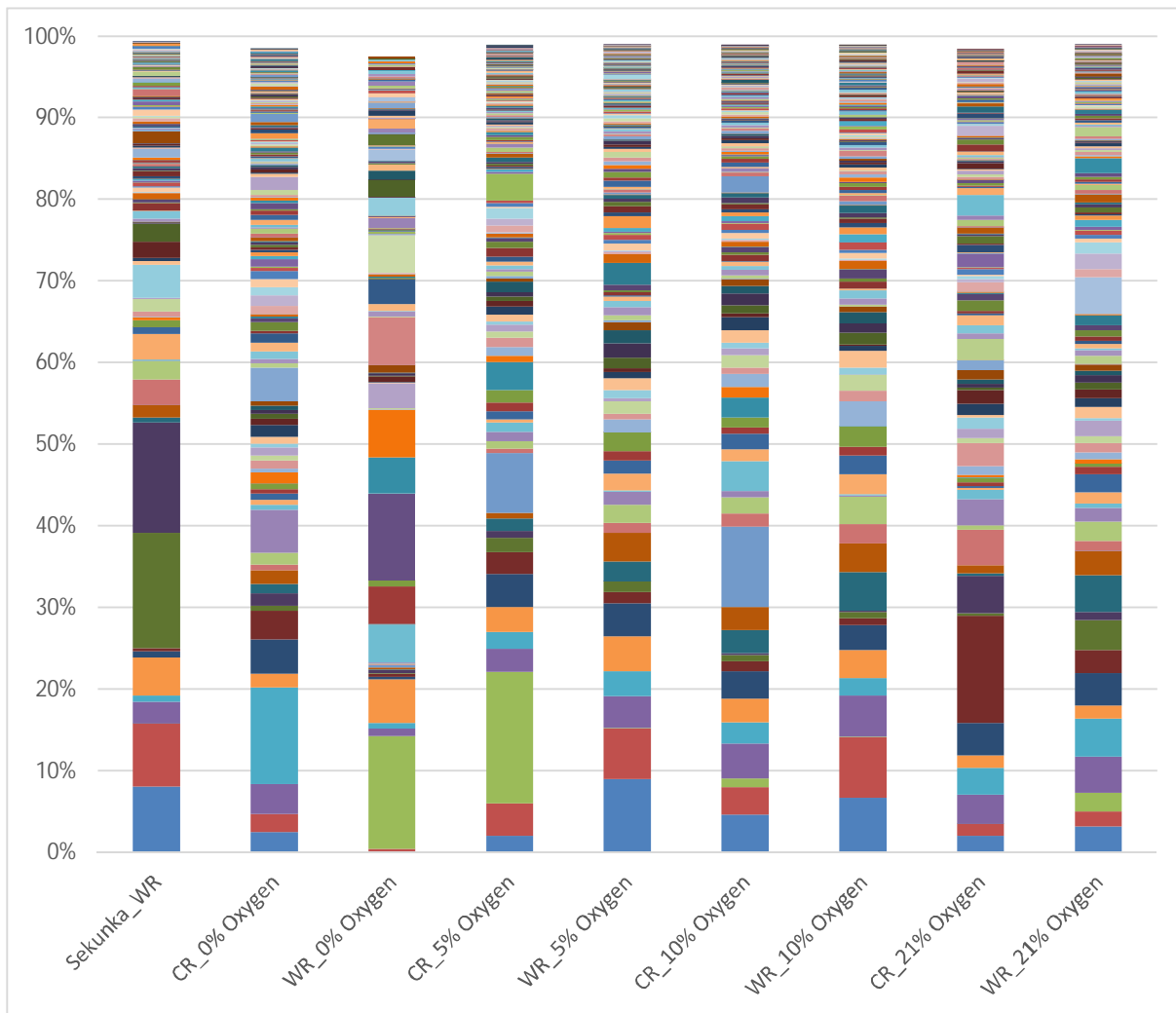
### 4.5.1 Community Diversity

The Chao1 index (Chiu and Chao, 2016) was used to estimate total microbial richness for all samples analyzed. This index assumes that operational taxonomic units (OTUs) that occur once or twice in a sequencing effort represent unaccounted-for diversity. At the depth of sequencing in this study, an OTU represents a genus-level taxonomy assignment of an organism.

The columns operated with 5% and 10% oxygen in the headspace had the highest observed and estimated diversity (Figure 6). This higher observed diversity is likely due to these columns having the most diverse environmental conditions including both aerobic and anaerobic regions. The anaerobic waste rock column had the lowest diversity by these measures since it did not support the growth of strictly aerobic organisms (Table 5).

**Table 5. Observed and Estimated Bacterial Diversity in Field-collected and Column Materials**

Sample	Observed OTUs	Chao1 estimate
Sekunka Composite	460	689.5
0% Oxygen Coal Reject	538	724.4
0% Oxygen Waste Rock	243	369.9
5 % Oxygen Coal Reject	388	506.7
5% Oxygen Waste Rock	623	910.0
10% Oxygen Coal Reject	532	714.8
10% Oxygen Waste Rock	596	780.5
21% Oxygen Coal Reject	384	525.7
21% Oxygen Waste Rock	498	641.7



**Figure 6. Bacterial Community Diversity in Waste Rock Composite and Decommissioned Column Material**

Each color represents a unique genus-level OTU.

#### 4.5.2 Comparative Community Analysis

Significant differences were noted between the naïve Sekunka waste rock composite and the post-treatment material from the columns. These differences were most pronounced in the aerobic, heterotrophic, genera *Yonghaparkia*, *Arenimonas*, *Lamia*, *Lysobacter*, and *Thiobacillus*, which were detected in higher relative abundance in the composite from Sekunka than in the material removed from the columns after 9 months of operation. These genera are typically associated with aerobic, plant-bearing soils and are likely artifacts of the conditions of the Sekunka waste rock pile at the time of sampling.

Headspace gas conditions also resulted in some significant differences in bacterial relative abundance. Members of the genus *Parachlamydia* were detected in higher relative abundance in the 21% and 10% oxygen treatments than in lower oxygen concentration columns (Figure 7). This genus of bacteria lives intracellularly in other bacteria and more complex organisms such as paramecium that are aerobic. The denitrifying bacterium *Methylothera* was detected in higher relative abundance in the 5% and 10% oxygen headspace conditions than in other conditions (Figure 8). This group of organisms is facultatively anaerobic, capable of using either oxygen or nitrate as an electron acceptor. The microaerobic columns (5% and 10% oxygen) are more likely to have had conditions throughout the flow path that supported both *Methylothera* growth habits.

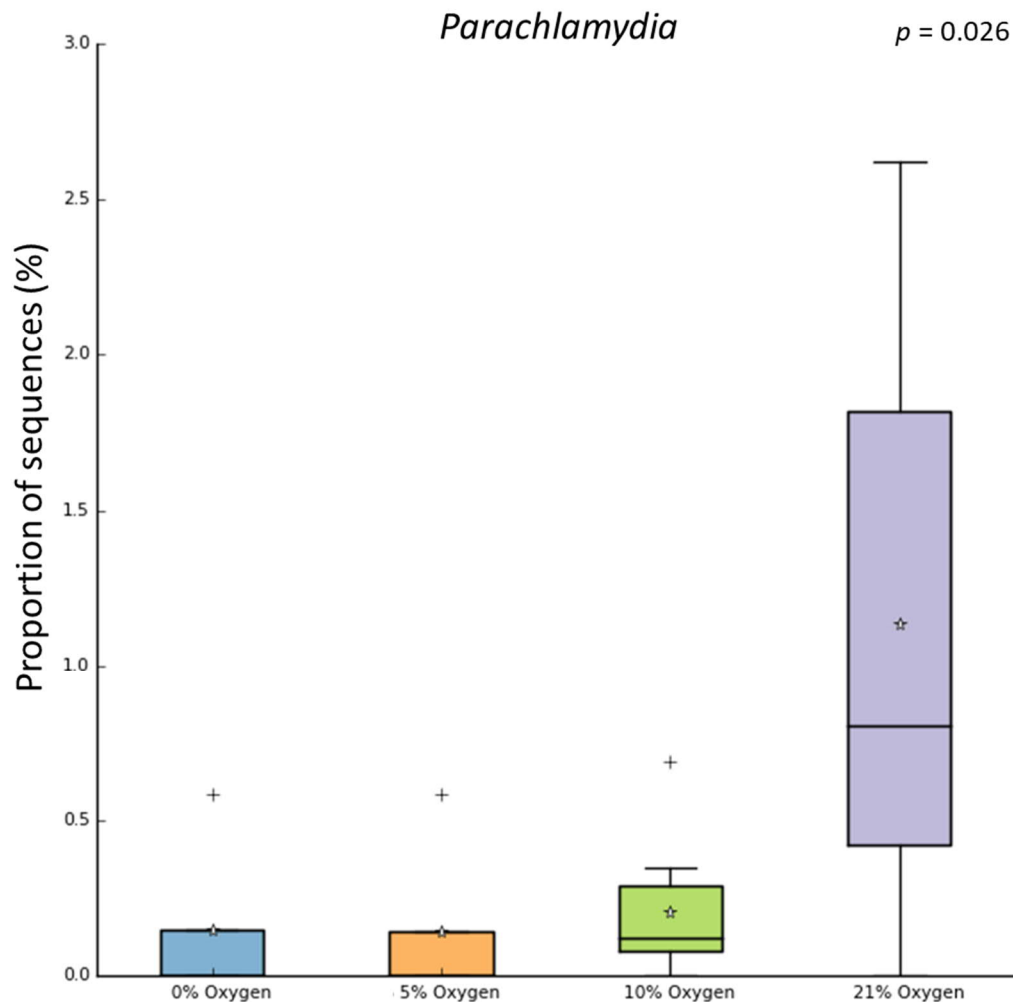


Figure 7. Relative Abundance of *Parachlamydia* in Column Samples

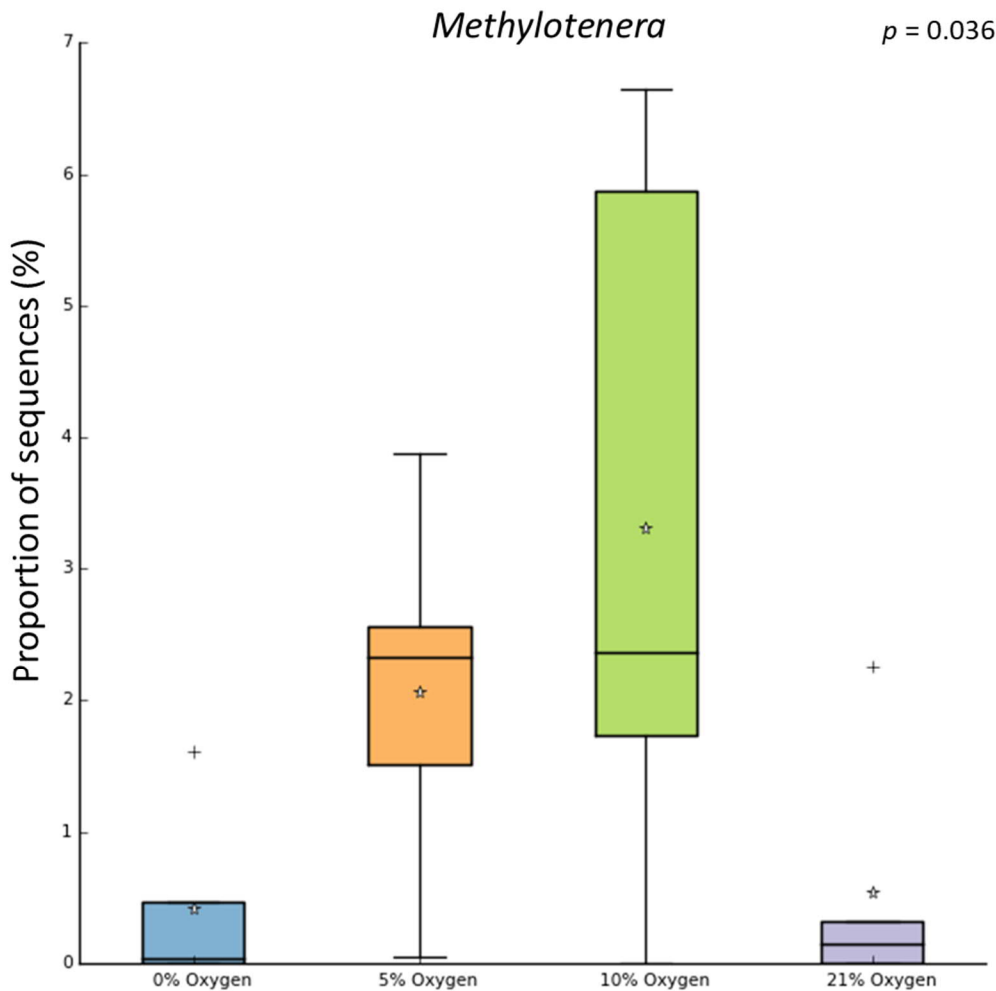


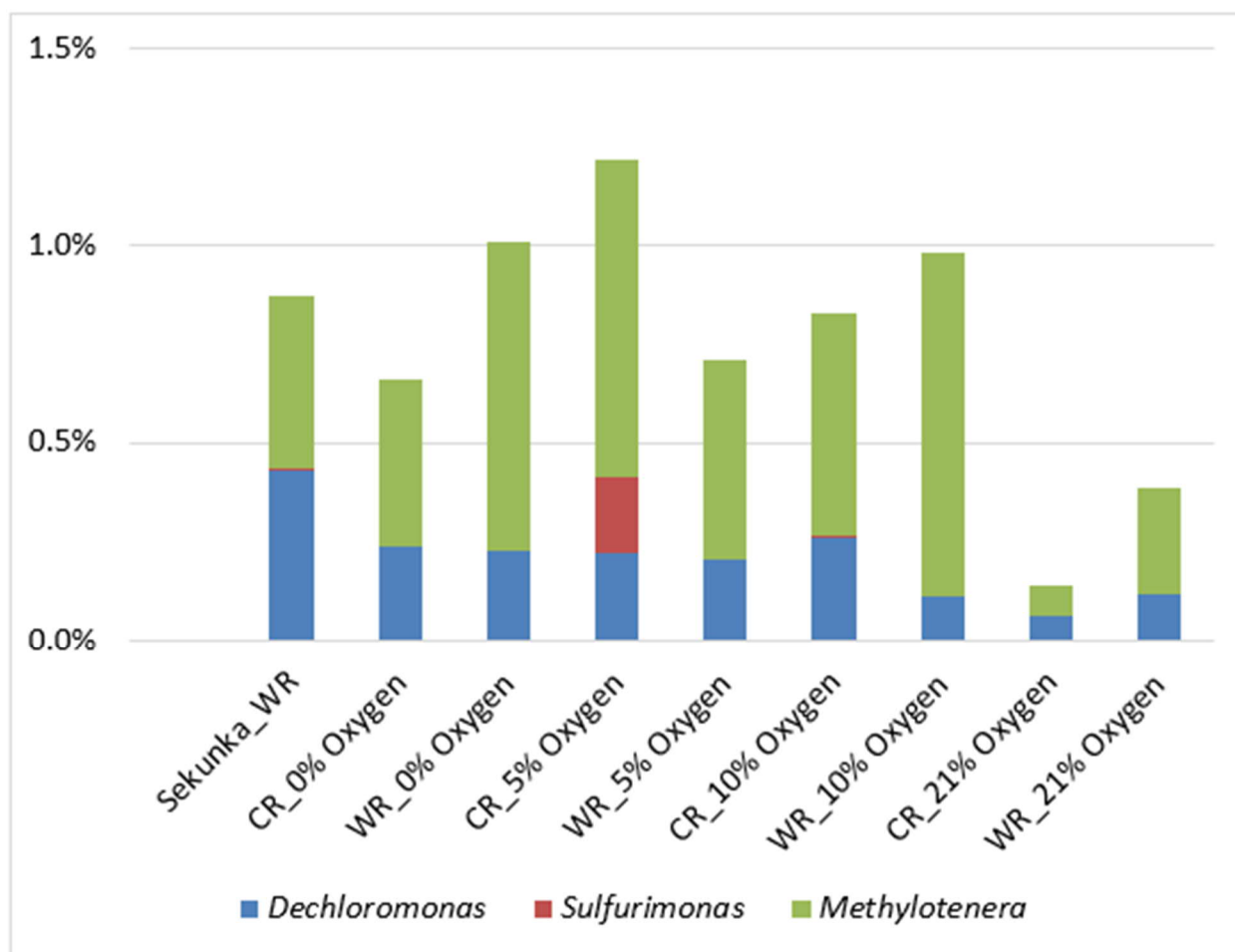
Figure 8. Relative Abundance of *Methylothera* in Column Materials

## 4.6 Functional Analysis

### 4.6.1 Denitrifying Organisms

Three denitrifying genera were detected in the Sekunka waste rock and in the column materials operation: *Dechloromonas*, *Sulfurimonas*, and *Methylothera*. These organisms were found at relative abundance in the fully aerobic (21% oxygen) columns than in the lower oxygen columns (CR coal reject; WR waste rock

Figure 9). The denitrifiers were outcompeted in aerobic environments by faster-replicating, obligately aerobic heterotrophs such as *Arthrobacter* which accounted for 7.4% of the population in the fully oxic columns. There was no significant difference in the relative abundance of denitrifiers as a function of the material in the column with relative abundance of these organisms quite similar between coal reject and waste rock with the same headspace gas composition. The similarity of microbial community observed between coal reject and waste rock in the same gas conditions is likely a function of the columns being operated in series. Essentially, a portion of the active community within the coal reject column is transported, along with nutrients, carbon, and water into the waste rock column.

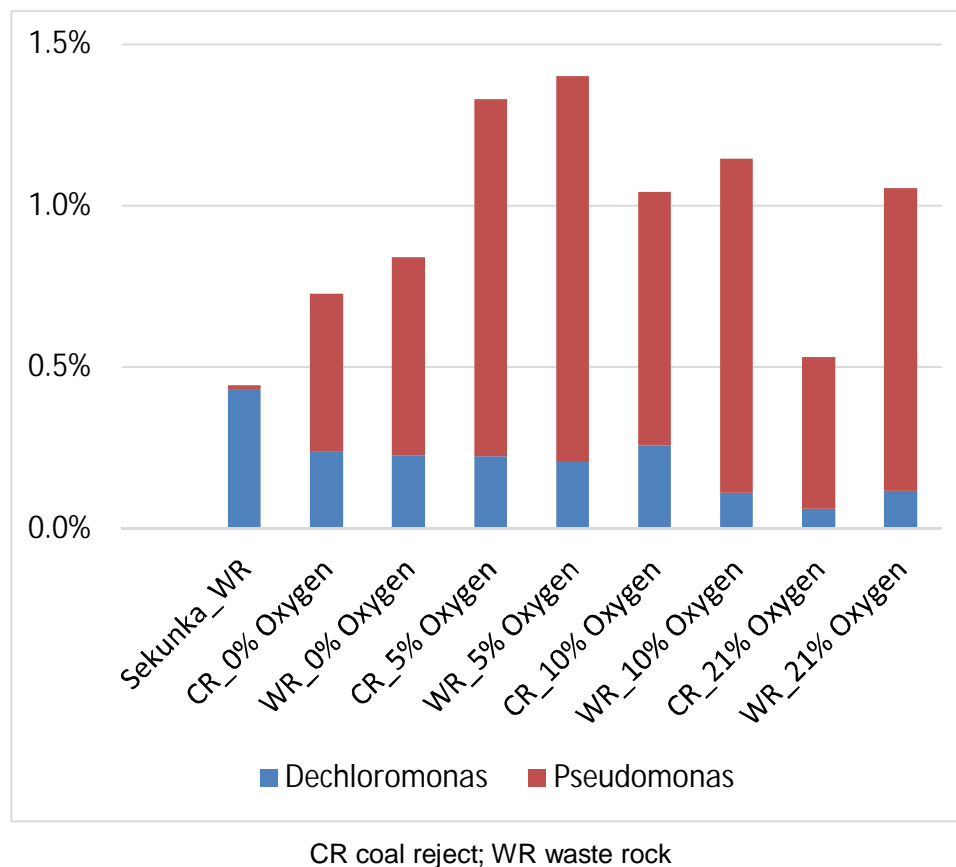


CR coal reject; WR waste rock

**Figure 9. Relative Abundance of Denitrifying Organisms in Waste Rock and Column Materials**

#### 4.6.2 Selenium Reducing Organisms

Two genera of known selenium-reducing bacteria were detected in the Sekunka waste rock and in the column material following operation: *Dechloromonas* and *Pseudomonas* (CR coal reject; WR waste rock Figure 10). In addition to denitrification as noted above (Section 4.6.1), *Dechloromonas* is a facultatively aerobic bacterium capable of selenium reduction under anaerobic conditions. *Pseudomonas*, likewise, is capable of selenium reduction under anaerobic, carbon-limited conditions (Macy et al., 1993). *Pseudomonas* is capable of aerobic, heterotrophic growth which is why it was detected in relatively high abundance even in 21% oxygen column conditions.



**Figure 10. Relative Abundance of Selenium Reducing Organisms in Waste Rock and Column Materials**

## 4.7 Selenium attenuation

Samples were collected from the Phase 2 columns at the time of decommissioning to evaluate whether changes in total Se content could be measured between columns. These data are provided in Appendix I. Unfortunately, they do not conclusively demonstrate an increase in selenium content in the solids at the end of the experiment. This is likely true because the low flow of groundwater transported a relatively small mass of selenium into the columns. At this low an accreted concentration, it is not possible to measure a difference between gas conditions.

## 5 Conclusions

Enviromin concludes that microbes in both the coal reject from Crown Mountain coal and the waste material collected at Sekunka are capable of nitrate and selenium removal, and that coal reject provides sufficient carbon for these metabolisms in both materials. Testing of multiple oxygen concentrations in column pairs, ranging from sub-oxic to aerobic, allowed quantification of how oxygen concentration affects the rates and extent of denitrification and selenium reduction. Consistent with theory, the greatest denitrification and selenium reduction rates are observed in systems with sub-oxic conditions. The data generated during this study have been provided to NWP for use in modeling and design of pilot and full-scale mine rock disposal facilities. It is important to note that the Sekunka rock was used as a proxy for waste rock to be produced at Crown Mountain in the future. The microbial community of waste rock produced at Crown Mountain should be compared with that observed at Sekunka once it is available for analysis.

## 6 References

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**Appendix A – Technical Memorandum Re: Waste Rock  
Sample Collection, Sukunka Chamberlain Exploration Site,  
NWP Jamison Project**





524 Professional Drive  
Bozeman, MT 59718  
406-581-8261

## DRAFT TECHNICAL MEMORANDUM

February 7, 2018

**TO:** Seth D'Imperio  
Enviromin, Inc.

**FROM:** Mike Ellerd  
Enviromin, Inc.

**RE:** Waste Rock Sample Collection  
Sukunka Chamberlain Exploration Site  
NWP Jamison Project

Among the work that Enviromin, Inc. (Enviromin) is performing on the NWP Jamison project is a series of laboratory column studies to evaluate the potential for nitrate and selenium reduction in coal mine waste rock. Waste rock samples for those column studies were collected by Enviromin at a bituminous coal exploration site in northeast British Columbia in November 2017. The waste rock source from which the samples were collected is considered similar in composition to waste rock at the NWP Jamison site in southeast British Columbia. Enviromin was assisted in sampling by personnel from Working Man Industries (WMI), a local service contractor familiar with the site.

A map showing the location of the site is presented in Attachment A. Selected photographs of sampling activities are presented in Attachment B.

This memorandum details the collection site, sample collection, handling and shipping.

### Site Location and Description

The samples were collected at the Glencore Chamberlain exploration site located approximately 52 kilometers south of Chetwynd above the Sukunka River Valley in the Peace River Region of northeast British Columbia (Site Location Map, Attachment A). The approximate geographic coordinates of the site are 55° 13' 50" latitude and 121° 36' 10" longitude. The elevation of the waste rock pile is approximately 1,240 meters above mean sea level.

Vehicle access to the Chamberlain site from Chetwynd is south on BC Hwy 29 approximately 25 km to Sukunka Forest Service Road, then south on Sukunka Forest Service Road approximately 37 km to Chamberlain Road, then approximately 4 km on Chamberlain road to D-Road, then another approximately 4 km on D-road to the site. Grades on all roads except the D-Road are generally flat, but the D-Road has some steep grades which Enviromin estimated at 10 percent or greater in places.

The Sukunka Forest Service Road is an active coal mine haul road and is maintained for winter travel to and beyond the turnoff to the Chamberlain road, but the Chamberlain road and the D-road are not currently maintained in the winter. Therefore, prior to Enviromin's arrival, WMI plowed the Chamberlain Road to the D-Road, then plowed the D-Road to the site using a John Deere 9620 four-wheel drive (4WD) tractor (Photographs 1 and 2).

Exploration coal at the Chamberlain site was excavated on the uphill side of the access road into the site on a north-northeast facing hillside. Coaly waste and waste rock left over from the exploration were stockpiled on the downhill side of the access road (Photographs 3 and 4).

### **Sample Collection**

Samples were collected on November 30, 2017. After purchasing some sampling supplies in Chetwynd, Enviromin and Working Man Industries personnel traveled to the site in two pickup trucks, one pulling a trailer carrying a Bobcat E35 mini-excavator equipped with a blade, arriving onsite at 12:05 pm local time. Because of steep grades on the D-Road, the 4WD tractor was used to pull the pickup and trailer with the mini-excavator up the D-Road to the site (see Photograph 1).

Upon arrival at the Chamberlain site, weather conditions were mostly cloudy with light wind and temperatures hovering around 0°C. There was approximately 1 meter of snow on the level (see Photographs 2 and 3).

WMI identified for Enviromin three rock piles at the site, two consisting of coaly waste and the third waste rock. A location in the waste rock pile for collecting representative samples had previously been selected by WMI (see Photographs 3 and 5).

The mini-excavator was first used to clear snow off of the waste rock pile at the sampling location. The mini-excavator was then used to gather waste rock in the excavator bucket from which the samples were hand-collected (see Photographs 5 and 6). Enviromin used nitrile gloves in hand-collecting all samples. New gloves were donned approximately every 10 samples. After donning the gloves, the gloves were rinsed 3 percent hydrogen peroxide solution. Enviromin also donned Level D personal protective equipment while onsite, i.e., hard hat, safety glasses, steel-toed boots, a reflective vest and appropriate winter clothing (see Photograph 6).

In collecting samples from the bucket, only material in the interior of the bucket was collected, i.e., no material in contact with the bucket itself was selected in order to prevent cross-contamination. Additionally, even though snow had been removed from the area of the waste rock pile where samples were collected, some snow was occasionally picked up in the bucket. In such cases, care was taken to exclude any snow from the samples.

Samples were collected by Enviromin in 1-liter sterile 8x10-inch 5-mil nylon poly standard vacuum pouch bags. Each bag was immediately vacuum sealed by WMI following sample collection using a Sinbo DZ-280/2SE vacuum sealer.

Once vacuum sealed, the bags were sequentially placed in a 35-gallon Ropak HDPE open top drum in the back of one of the WMI pickup trucks. The drum was equipped with an HDPE lid and associated locking metal band (see Photograph 7). Prior to sampling, the interior of the drum was wiped throughout with 3 percent hydrogen peroxide solution. The bottom and sidewall of the drum were then lined with bubble wrap.

During sampling the individual samples were identified numerically in the order in which they were collected, i.e., Samples 1 through 70, by marking the outside of the bag with an indelible ink pen. While the samples were considered equally representative of the waste rock and would eventually be composited for laboratory testing, higher sample numbers would generally indicate sampling from a deeper depth within the waste rock pile.

After collecting the last sample, the remaining void space above the samples in the drum, approximately 25 cm, was packed with bubble wrap and the lid secured with the locking metal band.

The quality of material in the individual buckets varied considerably. Specifically, in some buckets there were not enough fines to collect a full single samples, whereas in other buckets there sufficient fines for up to four and even five samples.

Using the Wentworth grain size classification scale (Wentworth, 1922), Enviromin field personnel estimated the particle size in the waste rock pile ranged from cobbles (64 – 256 mm) to very fine gravel (2 – 4 mm). In hand-collecting the samples, Enviromin preferentially selected for fines and attempted to reject anything beyond medium gravel (8 – 16 mm), although invariably some larger particles were inadvertently included in some samples. The color of the waste rock varied slightly from dark grey to dark grey with a slight brown tint.

The discarded material was stockpiled behind the mini-excavator during sampling and at the conclusion of sampling that material along with material hand-discarded by Enviromin was bladed back into the waste rock pile using the mini-excavator.

Samples were collected continuously over a total period of 3 hours and 34 minutes (214 minutes total), with the first sample collected at 1:05 pm and the last at 4:35 pm. Thus samples were collected at a rate of slightly over three minutes each. During sampling, Enviromin marked the collection time on sample bags approximately every 10 samples. The following table indicates the collection time of those seven samples.

#### **Periodic Sample Collection Times**

<b>Sample No.</b>	<b>Collection Time</b>
1	1:01 pm
11	1:25 pm
21	1:59 pm
30	2:21 pm
40	2:49 pm
51	3:30 pm
60	3:59 pm
70	4:35 pm

Throughout sampling the temperature appeared to drop slightly and the wind increased moderately at times. There were also occasional snow squalls.

On leaving the site on the D-Road at the conclusion of sampling, the back of the trailer was strapped to the slow plow tractor and the pickup truck and trailer were suspended down the D-Road by the tractor to prevent runaway.

#### **Sample Handling and Shipping**

By the time Enviromin and WMI returned to Chetwynd the office of the shipper, Rosenau Transport, Ltd. (Rosenau), had closed for the day. Therefore, WMI held the samples overnight and shipped them via Rosenau the next day, December 1. According to the bill of lading, the total weight of the drum was 113 kg (250 lbs).

However, there was a mix-up in shipping and the sample drum remained at Rosenau in Chetwynd until January 8, 2018 when they were finally shipped. The sample drum was kept inside a warehouse so the samples did not freeze during the time they were held in Chetwynd. The samples were delivered to the Enviromin office in Bozeman, Montana, USA on January 11, 2018.

The sample drum was fully intact with no evidence of any damage (Photograph 7). Enviromin unpacked all 70 samples and organized the samples in numerical order (Photograph 8, increasing sample number from lower right to upper left).

Upon subsequent inspection, all but three sample bags were completely sealed. Those three samples were rejected by Enviromin because the air-tight seal had been compromised. Specifically while being unpacked from the shipping drum and inspected, the sample bags for Samples 19 and 42 had small punctures, and Sample 51 had an incomplete seal. Thus all three either were or had the potential to be contaminated with atmospheric air.

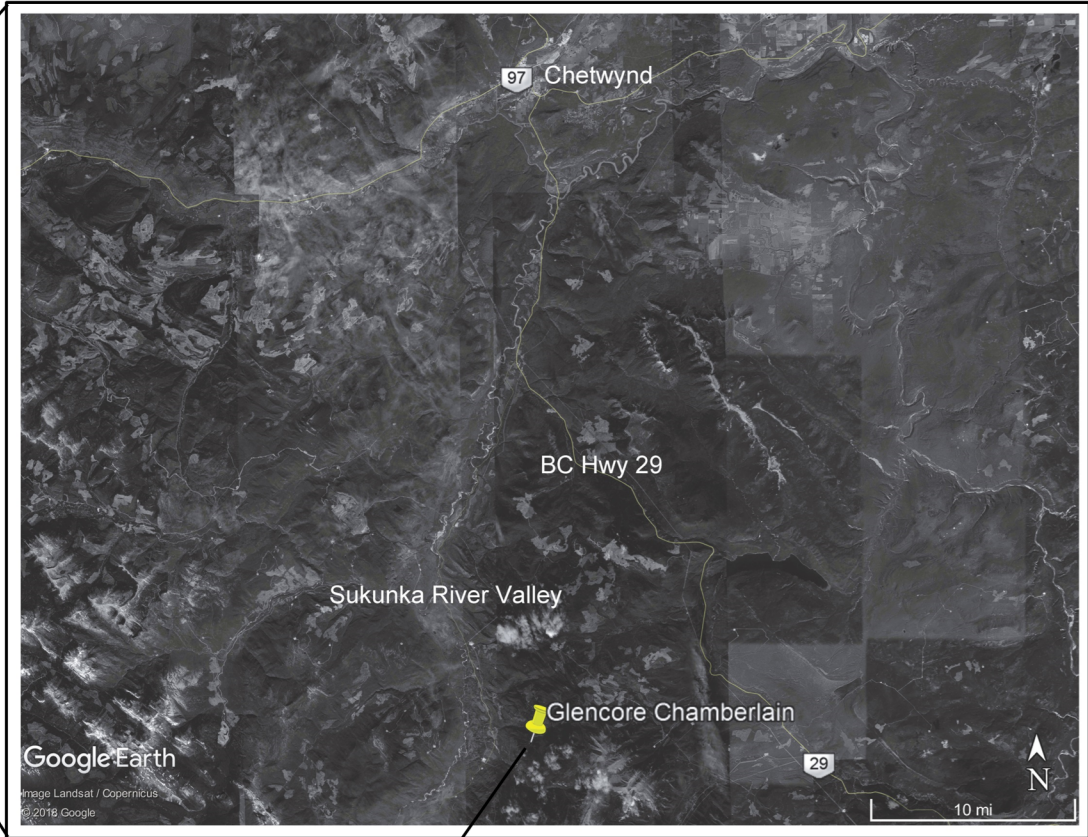
## REFERENCES

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# Attachment A Site Location Map



Elections Canada



Glencore Chamberlain Exploration Site  
 Chetwynd, British Columbia  
 Latitude: 55° 13' 50"  
 Longitude: 121° 36' 10"  
 Elevation: 1,240 meters amsl



Site Location Map  
 Glencore Chamberlain Exploration Site

# Attachment B Photographs



Photograph 1. Snowplow connected to a pickup truck and trailer with mini-excavator at the intersection of Chamberlain Road with the D-Road preparing for the last leg of the trip to the Chamberlain site. Photograph looking south-southwest. November 30, 2017.





Photograph 2. Snowplow clearing a pathway to waste rock pile (on opposite side of snowplow). Stockpile in foreground in center-left of the photograph is one of two coaly waste piles at the site. Photograph looking east-northeast. November 30, 2017.



Photograph 3. Mini-excavator clearing snow from the waste rock pile prior to sample collection. Photograph looking east-northeast. November 30, 2017.



Photograph 4. Exploration area opposite from waste rock and coaly waste stockpiles. Photograph looking south. November 30, 2017.



Photograph 5. Area of waste rock stockpile from where samples were collected. Photograph looking northeast. November 30, 2017.



Photograph 6. Samples being hand-selected for fines from the mini-excavator bucket by Enviromin. Photograph looking southeast. November 30, 2017.



Photograph 7. HDPE drum in which samples were shipped. Photograph taken at Enviromin's laboratory. January 30, 2018.



Photograph 8. All 70 sample bags as received at Enviromin's laboratory. Sample numbers increase from lower right across rows to the upper left. January 12, 2018.

## **Appendix B – Material Characterization**

### **B1 – Material Properties**

### **B2 – Mineralogy**

### **B3 – Chemistry/Multi-Acid Digests**

### **B4 – Background Water Quality**

## **Appendix B1 – Material Properties**

# Laboratory Report for Enviromin, Inc.

Project: NWP Column Study

March 27, 2018



*Daniel B. Stephens & Associates, Inc.*

4400 Alameda Blvd. NE, Suite C • Albuquerque, New Mexico 87113



March 27, 2018

Kylie Bodle  
Enviromin, Inc.  
524 Professional Drive  
Bozeman, MT 59718  
(406) 581-8261

Re: DBS&A Laboratory Report for the Enviromin, Inc. NWP Column Study Project

Dear Ms. Bodle:

Enclosed is the report for the Enviromin, Inc. NWP Column Study project samples. Please review this report and provide any comments as samples will be held for a maximum of 30 days. After 30 days samples will be returned or disposed of in an appropriate manner.

All testing results were evaluated subjectively for consistency and reasonableness, and the results appear to be reasonably representative of the material tested. However, DBS&A does not assume any responsibility for interpretations or analyses based on the data enclosed, nor can we guarantee that these data are fully representative of the undisturbed materials at the field site. We recommend that careful evaluation of these laboratory results be made for your particular application.

The testing utilized to generate the enclosed report employs methods that are standard for the industry. The results do not constitute a professional opinion by DBS&A, nor can the results affect any professional or expert opinions rendered with respect thereto by DBS&A. You have acknowledged that all the testing undertaken by us, and the report provided, constitutes mere test results using standardized methods, and cannot be used to disqualify DBS&A from rendering any professional or expert opinion, having waived any claim of conflict of interest by DBS&A.

We are pleased to provide this service to Enviromin, Inc. and look forward to future laboratory testing on other projects. If you have any questions about the enclosed data, please do not hesitate to call.

Sincerely,

DANIEL B. STEPHENS & ASSOCIATES, INC.  
SOIL TESTING & RESEARCH LABORATORY

Joleen Hines  
Laboratory Manager

Enclosure

*Daniel B. Stephens & Associates, Inc.*  
*Soil Testing & Research Laboratory*

4400 Alameda Blvd. NE, Suite C  
Albuquerque, NM 87113

505-889-7752  
FAX 505-889-0258



## **Summaries**



### Summary of Tests Performed

Laboratory Sample Number	Initial Soil Properties <sup>1</sup>			Saturated Hydraulic Conductivity <sup>2</sup>			Moisture Characteristics <sup>3</sup>							Particle Size <sup>4</sup>			Specific Gravity <sup>5</sup>		Air Permeability	Atterberg Limits	Proctor Compaction		
	G	VM	VD	CH	FH	FW	HC	PP	FP	DPP	RH	EP	WHC	K <sub>unsat</sub>	DS	WS	H	F				C	
Waste Rock Composite A																X	X	X	X			X	
Waste Rock Composite A (2.15 g/cc)	X	X			X		X	X		X	X	X	X	X									
Waste Rock Composite B																X	X	X	X			X	
Waste Rock Composite B (2.13 g/cc)	X	X			X		X	X		X	X	X	X	X									
Coal Composite A																X	X	X				X	
Coal Composite A (1.27 g/cc)	X	X		X			X	X		X	X	X	X	X									
Coal Composite B																X	X	X				X	
Coal Composite B (1.27 g/cc)	X	X		X			X	X		X	X	X	X	X									

<sup>1</sup> G = Gravimetric Moisture Content, VM = Volume Measurement Method, VD = Volume Displacement Method  
<sup>2</sup> CH = Constant Head Rigid Wall, FH = Falling Head Rigid Wall, FW = Falling Head Rising Tail Flexible Wall  
<sup>3</sup> HC = Hanging Column, PP = Pressure Plate, FP = Filter Paper, DPP = Dew Point Potentiometer, RH = Relative Humidity Box, EP = Effective Porosity, WHC = Water Holding Capacity, K<sub>unsat</sub> = Calculated Unsaturated Hydraulic Conductivity  
<sup>4</sup> DS = Dry Sieve, WS = Wet Sieve, H = Hydrometer  
<sup>5</sup> F = Fine (<4.75mm), C = Coarse (>4.75mm)



## Notes

### **Sample Receipt:**

Four samples were received on February 5, 2018. Two of the samples were each double bagged in a 2-gallon plastic bag, and were delivered in a 5-gallon bucket sealed with a lid and tape. The remaining two samples were received each in five quart size plastic bags double bagged in a 2-gallon plastic bag, and were packaged inside a 5-gallon bucket sealed with a lid and tape. All samples were received in good order.

### **Sample Preparation and Testing Notes:**

All samples were subjected to particle size analysis, Atterberg limits testing and specific gravity testing of the <4.75mm fraction. Two samples were also subjected to specific gravity testing of the >4.75mm fraction.

A portion of the samples was also remolded into a 6" diameter test ring to target a 'firm' compactive state (or ~95% of an estimated modified proctor compaction test maximum dry bulk density) based on technician judgement and experience. The actual dry bulk density achieved in g/cm<sup>3</sup> was added to each sub-sample ID. Each of these remolded sub-samples was subjected to initial properties analysis, saturated hydraulic conductivity testing, and the hanging column and pressure chamber portions of the moisture retention and water holding capacity testing.

Separate sub-samples were obtained for the dewpoint potentiometer and relative humidity chamber portions of the moisture retention, effective porosity, and water holding capacity testing.

Particles larger than 3/4" were removed from the bulk material prior to remolding the sub-samples. Oversize correction calculations are not provided since the removed fraction is less than 5% of the bulk sample mass.



**Summary of Sample Preparation/Volume Changes**

Sample Number	Target Remold Parameters <sup>1</sup>		Actual Remold Data			Volume Change Post Saturation <sup>2</sup>			Volume Change Post Drying Curve <sup>3</sup>		
	Moisture Content (%)	Dry Bulk Density (g/cm <sup>3</sup> )	Moisture Content (%)	Dry Bulk Density (g/cm <sup>3</sup> )	% of Target Density (%)	Dry Bulk Density (g/cm <sup>3</sup> )	% Volume Change (%)	% of Initial Density (%)	Dry Bulk Density (g/cm <sup>3</sup> )	% Volume Change (%)	% of Initial Density (%)
Waste Rock Composite A (2.15 g/cc)	AR	Firm	7.8	2.15	NA	2.15	---	100%	2.15	---	100%
Waste Rock Composite B (2.13 g/cc)	AR	Firm	7.9	2.13	NA	2.13	---	100%	2.13	---	100%
Coal Composite A (1.27 g/cc)	AR	Firm	12.1	1.27	NA	1.27	---	100%	1.27	---	100%
Coal Composite B (1.27 g/cc)	AR	Firm	13.4	1.27	NA	1.27	---	100%	1.27	---	100%

<sup>1</sup>Target Remold Parameters: Provided by the client: Remold to 'Firm', approximating 95% of modified proctor compaction maximum dry bulk density at the as received moisture content.

<sup>2</sup>Volume Change Post Saturation: Volume change measurements were obtained after saturated hydraulic conductivity testing.

<sup>3</sup>Volume Change Post Drying Curve: Volume change measurements were obtained throughout hanging column and pressure plate testing. The 'Volume Change Post Drying Curve' values represent the final sample dimensions after the last pressure plate point.

Notes:

"+" indicates sample swelling, "-" indicates sample settling, and "---" indicates no volume change occurred.



**Summary of Initial Moisture Content, Dry Bulk Density  
Wet Bulk Density and Calculated Porosity**

Sample Number	Moisture Content				Dry Bulk Density (g/cm <sup>3</sup> )	Wet Bulk Density (g/cm <sup>3</sup> )	Calculated Porosity (%)
	As Received		Remolded				
	Gravimetric (%, g/g)	Volumetric (%, cm <sup>3</sup> /cm <sup>3</sup> )	Gravimetric (%, g/g)	Volumetric (%, cm <sup>3</sup> /cm <sup>3</sup> )			
Waste Rock Composite A (2.15 g/cc)	NA	NA	7.8	16.6	2.15	2.31	18.4
Waste Rock Composite B (2.13 g/cc)	NA	NA	7.9	16.9	2.13	2.30	19.2
Coal Composite A (1.27 g/cc)	NA	NA	12.1	15.4	1.27	1.42	34.7
Coal Composite B (1.27 g/cc)	NA	NA	13.4	17.1	1.27	1.45	34.9

NA = Not analyzed

--- = This sample was not remolded



**Summary of Saturated Hydraulic Conductivity Tests**

Sample Number	K <sub>sat</sub> (cm/sec)	Oversize Corrected K <sub>sat</sub> (cm/sec)	Method of Analysis	
			Constant Head	Falling Head
Waste Rock Composite A (2.15 g/cc)	1.0E-06	---		X
Waste Rock Composite B (2.13 g/cc)	2.7E-06	---		X
Coal Composite A (1.27 g/cc)	2.2E-04	---	X	
Coal Composite B (1.27 g/cc)	3.1E-04	---	X	

--- = Oversize correction is unnecessary since coarse fraction < 5% of composite mass  
 NR = Not requested  
 NA = Not applicable



### Summary of Moisture Characteristics of the Initial Drainage Curve

Sample Number	Pressure Head (-cm water)	Moisture Content (%, cm <sup>3</sup> /cm <sup>3</sup> )
Waste Rock Composite A (2.15 g/cc)	0	18.0
	20	16.9
	73	16.4
	150	16.0
	337	15.5
	4283	7.9
	15297	5.0
	78933	2.9
	351729	2.0
846993	1.5	
Waste Rock Composite B (2.13 g/cc)	0	18.6
	20	17.3
	73	16.4
	156	16.1
	337	15.7
	3671	7.6
	24067	3.8
	118297	2.3
	384873	1.7
846993	1.3	
Coal Composite A (1.27 g/cc)	0	35.1
	11	34.4
	35	34.0
	101	32.9
	337	20.7
	2855	19.0
	6527	14.8
	78015	11.3
	498172	8.2
846993	8.0	

## Volume adjustments are applicable at this matric potential (see data sheet for this sample).



**Summary of Moisture Characteristics  
of the Initial Drainage Curve (Continued)**

Sample Number	Pressure Head (-cm water)	Moisture Content (%, $\text{cm}^3/\text{cm}^3$ )
Coal Composite B (1.27 g/cc)	0	35.3
	14	35.1
	35	34.8
	106	32.1
	337	20.5
	1836	18.4
	6323	15.0
	34673	11.3
	361519	8.7
	846993	7.5

---

## Volume adjustments are applicable at this matric potential (see data sheet for this sample).





### Summary of Calculated Unsaturated Hydraulic Properties

Sample Number	$\alpha$ ( $\text{cm}^{-1}$ )	<b>N</b> (dimensionless)	$\theta_r$ (% vol)	$\theta_s$ (% vol)	Oversize Corrected	
					$\theta_r$ (% vol)	$\theta_s$ (% vol)
Waste Rock Composite A (2.15 g/cc)	0.0022	1.3404	0.00	17.25	---	---
Waste Rock Composite B (2.13 g/cc)	0.0025	1.3588	0.00	17.62	---	---
Coal Composite A (1.27 g/cc)	0.0152	1.2617	5.95	35.59	---	---
Coal Composite B (1.27 g/cc)	0.0143	1.3118	6.71	36.13	---	---

--- = Oversize correction is unnecessary since coarse fraction < 5% of composite mass  
 NR = Not requested  
 NA = Not applicable



**Summary of Moisture Retention (Effective Porosity)**

Sample Number	Calculated Total Porosity (%, cm <sup>3</sup> /cm <sup>3</sup> )	-15 Bar Point Volumetric Water Content <sup>1</sup> (%, cm <sup>3</sup> /cm <sup>3</sup> )	Effective Porosity (%, cm <sup>3</sup> /cm <sup>3</sup> )	Oversize Corrected		
				Calculated Total Porosity (%, cm <sup>3</sup> /cm <sup>3</sup> )	-15 Bar Point Volumetric Water Content (%, cm <sup>3</sup> /cm <sup>3</sup> )	Effective Porosity (%, cm <sup>3</sup> /cm <sup>3</sup> )
Waste Rock Composite A (2.15 g/cc)	18.4	5.0	13.4	---	---	---
Waste Rock Composite B (2.13 g/cc)	19.2	4.7	14.6	---	---	---
Coal Composite A (1.27 g/cc)	34.7	13.5	21.2	---	---	---
Coal Composite B (1.27 g/cc)	34.9	12.8	22.1	---	---	---

1 = Volume adjusted, if applicable

--- = Oversize correction is unnecessary since coarse fraction < 5% of composite mass

NA = Not applicable

NR = Not requested



**Summary of Moisture Retention (1/3, 15 Bar Points and Water Holding Capacity\*)**

Sample Number	1/3 Bar Point Volumetric (%, cm <sup>3</sup> /cm <sup>3</sup> )	15 Bar Point Volumetric (%, cm <sup>3</sup> /cm <sup>3</sup> )	Water Holding Capacity (%, cm <sup>3</sup> /cm <sup>3</sup> )	Oversize Corrected		
				1/3 Bar Point Volumetric (%, cm <sup>3</sup> /cm <sup>3</sup> )	15 Bar Point Volumetric (%, cm <sup>3</sup> /cm <sup>3</sup> )	Water Holding Capacity (%, cm <sup>3</sup> /cm <sup>3</sup> )
Waste Rock Composite A (2.15 g/cc)	15.5	5.0	10.6	---	---	---
Waste Rock Composite B (2.13 g/cc)	15.7	4.7	11.1	---	---	---
Coal Composite A (1.27 g/cc)	20.7	13.5	7.2	---	---	---
Coal Composite B (1.27 g/cc)	20.5	12.8	7.7	---	---	---

\*Water Holding Capacity (WHC) is defined here as the difference in the moisture content of the sample at -1/3 bar of water potential (commonly referred to as 'Field Capacity') and the moisture content of the sample at -15 bars of water potential (commonly referred to as 'Wilting Point').

--- = Oversize correction is unnecessary since coarse fraction < 5% of composite mass

NA = Not applicable

NR = Not requested



### Summary of Particle Size Characteristics

Sample Number	d <sub>10</sub> (mm)	d <sub>50</sub> (mm)	d <sub>60</sub> (mm)	C <sub>u</sub>	C <sub>c</sub>	Method	ASTM Classification	USDA Classification
Waste Rock Composite A	0.038	3.1	4.7	124	6.8	WS/H	Poorly-graded sand with clay and gravel (SP-SC)g	Sandy Loam †
Waste Rock Composite B	0.062	3.8	5.6	90	4.9	WS/H	Poorly-graded gravel with clay and sand (GP-GC)s	Sandy Loam †
Coal Composite A	0.026	0.51	0.92	35	0.32	WS/H	Silty sand (SM)	Loamy Sand †
Coal Composite B	0.024	0.47	0.90	38	0.34	WS/H	Silty sand (SM)	Loamy Sand †

d<sub>50</sub> = Median particle diameter

Est = Reported values for d<sub>10</sub>, C<sub>u</sub>, C<sub>c</sub>, and soil classification are estimates, since extrapolation was required to obtain the d<sub>10</sub> diameter

$$C_u = \frac{d_{60}}{d_{10}}$$

$$C_c = \frac{(d_{30})^2}{(d_{10})(d_{60})}$$

DS = Dry sieve

H = Hydrometer

WS = Wet sieve

† Greater than 10% of sample is coarse material



**Percent Gravel, Sand, Silt and Clay\***

Sample Number	% Gravel (>4.75mm)	% Sand (<4.75mm, >0.075mm)	% Silt (<0.075mm, >0.002mm)	% Clay (<0.002mm)
Waste Rock Composite A	39.7	48.4	9.5	2.4
Waste Rock Composite B	45.5	43.7	8.6	2.3
Coal Composite A	3.5	68.8	27.6	0.1
Coal Composite B	4.9	67.2	27.8	0.1

\*USCS classification does not classify clay fraction based on particle size. USDA definition of clay (<0.002mm) used in this table.



### Summary of Atterberg Tests

Sample Number	Liquid Limit	Plastic Limit	Plasticity Index	Classification
Waste Rock Composite A	25	20	5	CL-ML
Waste Rock Composite B	24	20	4	CL-ML
Coal Composite A	---	---	---	ML
Coal Composite B	---	---	---	ML

---

--- = Soil requires visual-manual classification due to non-plasticity



### Summary of Specific Gravity Tests

Sample Number	<4.75 mm Fraction			>4.75 mm Fraction			Bulk Sample	
	Specific Gravity	Particle Size	% of Bulk Sample	Specific Gravity	Particle Size	% of Bulk Sample	Specific Gravity	
Waste Rock Composite A	2.61	<4.75 mm	60.3%	2.68	>4.75 mm	39.7%	2.63	*
Waste Rock Composite B	2.57	<4.75 mm	54.5%	2.72	>4.75 mm	45.5%	2.64	*
Coal Composite A	1.94	<4.75 mm	96.5%	---	>4.75 mm	3.5%	1.94	**
Coal Composite B	1.96	<4.75 mm	95.1%	---	>4.75 mm	4.9%	1.96	**

\* Weighted average

\*\* = Based on specific gravity of material < 4.75 mm

--- = Unnecessary since specified fraction <5% of composite mass

NR = Not requested

NA = Not applicable

## **Initial Properties**





**Summary of Initial Moisture Content, Dry Bulk Density  
Wet Bulk Density and Calculated Porosity**

Sample Number	Moisture Content				Dry Bulk Density (g/cm <sup>3</sup> )	Wet Bulk Density (g/cm <sup>3</sup> )	Calculated Porosity (%)
	As Received		Remolded				
	Gravimetric (%, g/g)	Volumetric (%, cm <sup>3</sup> /cm <sup>3</sup> )	Gravimetric (%, g/g)	Volumetric (%, cm <sup>3</sup> /cm <sup>3</sup> )			
Waste Rock Composite A (2.15 g/cc)	NA	NA	7.8	16.6	2.15	2.31	18.4
Waste Rock Composite B (2.13 g/cc)	NA	NA	7.9	16.9	2.13	2.30	19.2
Coal Composite A (1.27 g/cc)	NA	NA	12.1	15.4	1.27	1.42	34.7
Coal Composite B (1.27 g/cc)	NA	NA	13.4	17.1	1.27	1.45	34.9

NA = Not analyzed

--- = This sample was not remolded



**Data for Initial Moisture Content,  
Bulk Density, Porosity, and Percent Saturation**

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Waste Rock Composite A (2.15 g/cc)  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18

	<u>As Received</u>	<u>Remolded</u>
Test Date:	NA	7-Feb-18
Field weight* of sample (g):		5449.20
Tare weight, ring (g):		286.77
Tare weight, pan/plate (g):		0.00
Tare weight, other (g):		0.00
Dry weight of sample (g):		4790.81
Sample volume (cm <sup>3</sup> ):		2232.68
Measured particle density (g/cm <sup>3</sup> ):		2.63
<hr/>		
Gravimetric Moisture Content (% g/g):		7.8
Volumetric Moisture Content (% vol):		16.6
Dry bulk density (g/cm <sup>3</sup> ):		2.15
Wet bulk density (g/cm <sup>3</sup> ):		2.31
Calculated Porosity (% vol):		18.4
Percent Saturation:		90.5
<hr/>		
Laboratory analysis by:		D. O'Dowd
Data entered by:		D. O'Dowd
Checked by:		J. Hines

Comments:

- \* Weight including tares
- NA = Not analyzed
- = This sample was not remolded



**Data for Initial Moisture Content,  
Bulk Density, Porosity, and Percent Saturation**

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Waste Rock Composite B (2.13 g/cc)  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18

	<u>As Received</u>	<u>Remolded</u>
Test Date:	NA	7-Feb-18
Field weight* of sample (g):		5419.20
Tare weight, ring (g):		289.72
Tare weight, pan/plate (g):		0.00
Tare weight, other (g):		0.00
Dry weight of sample (g):		4752.56
Sample volume (cm <sup>3</sup> ):		2234.97
Measured particle density (g/cm <sup>3</sup> ):		2.63
<hr/>		
Gravimetric Moisture Content (% g/g):		7.9
Volumetric Moisture Content (% vol):		16.9
Dry bulk density (g/cm <sup>3</sup> ):		2.13
Wet bulk density (g/cm <sup>3</sup> ):		2.30
Calculated Porosity (% vol):		19.2
Percent Saturation:		87.7
<hr/>		
Laboratory analysis by:		D. O'Dowd
Data entered by:		D. O'Dowd
Checked by:		J. Hines

Comments:

- \* Weight including tares
- NA = Not analyzed
- = This sample was not remolded



Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Enviromin, Inc.
Job Number: DB18.1057.00
Sample Number: Coal Composite A (1.27 g/cc)
Project Name: NWP Column Study
Date Sampled: 1/30/18

Table with columns: Test Date, As Received, Remolded. Rows include Field weight\* of sample (g), Tare weight, ring (g), Tare weight, pan/plate (g), Tare weight, other (g), Dry weight of sample (g), Sample volume (cm³), Measured particle density (g/cm³), Gravimetric Moisture Content (% g/g), Volumetric Moisture Content (% vol), Dry bulk density (g/cm³), Wet bulk density (g/cm³), Calculated Porosity (% vol), Percent Saturation, Laboratory analysis by, Data entered by, Checked by.

Comments:

- \* Weight including tares
NA = Not analyzed
--- = This sample was not remolded



Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Enviromin, Inc.
Job Number: DB18.1057.00
Sample Number: Coal Composite B (1.27 g/cc)
Project Name: NWP Column Study
Date Sampled: 1/30/18

Table with columns: Test Date, As Received, Remolded. Rows include: Field weight\* of sample (g), Tare weight, ring (g), Tare weight, pan/plate (g), Tare weight, other (g), Dry weight of sample (g), Sample volume (cm^3), Measured particle density (g/cm^3), Gravimetric Moisture Content (% g/g), Volumetric Moisture Content (% vol), Dry bulk density (g/cm^3), Wet bulk density (g/cm^3), Calculated Porosity (% vol), Percent Saturation, Laboratory analysis by, Data entered by, Checked by.

Comments:

- \* Weight including tares
NA = Not analyzed
--- = This sample was not remolded

## **Saturated Hydraulic Conductivity**



### Summary of Saturated Hydraulic Conductivity Tests

Sample Number	K <sub>sat</sub> (cm/sec)	Oversize Corrected K <sub>sat</sub> (cm/sec)	Method of Analysis	
			Constant Head	Falling Head
Waste Rock Composite A (2.15 g/cc)	1.0E-06	---		X
Waste Rock Composite B (2.13 g/cc)	2.7E-06	---		X
Coal Composite A (1.27 g/cc)	2.2E-04	---	X	
Coal Composite B (1.27 g/cc)	3.1E-04	---	X	

--- = Oversize correction is unnecessary since coarse fraction < 5% of composite mass  
 NR = Not requested  
 NA = Not applicable



### Saturated Hydraulic Conductivity Falling Head Method

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Waste Rock Composite A (2.15 g/cc)  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18

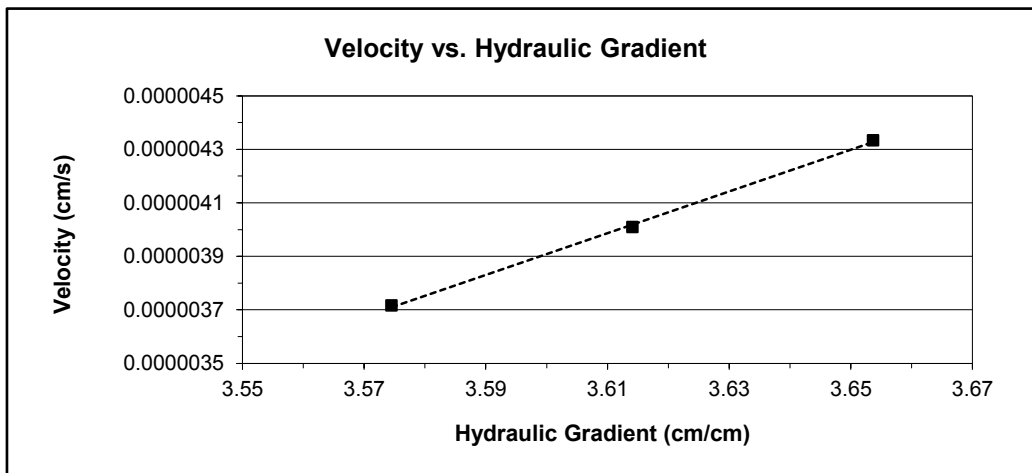
Type of water used: TAP  
 Backpressure (psi): 0.0  
 Offset (cm): 5.2  
 Sample length (cm): 12.63  
 Sample x-sectional area (cm<sup>2</sup>): 176.76  
 Reservoir x-sectional area (cm<sup>2</sup>): 0.70

Date	Time	Temp (°C)	Reservoir head (cm)	Corrected head (cm)	Elapsed time (sec)	Ksat (cm/sec)	Ksat @ 20°C (cm/sec)
Test # 1:							
9-Feb-18	10:42:54	23.0	51.6	46.4	457	1.2E-06	1.1E-06
9-Feb-18	10:50:31	23.0	51.1	45.9			
Test # 2:							
9-Feb-18	10:50:31	23.0	51.1	45.9	494	1.1E-06	1.0E-06
9-Feb-18	10:58:45	23.0	50.6	45.4			
Test # 3:							
9-Feb-18	10:58:45	23.0	50.6	45.4	533	1.0E-06	9.7E-07
9-Feb-18	11:07:38	23.0	50.1	44.9			

**Average Ksat (cm/sec): 1.0E-06**  
**Upsize Corrected Ksat (cm/sec): ---**

**Comments:**

--- = Upsize correction is unnecessary since coarse fraction < 5% of composite mass



Laboratory analysis by: D. O'Dowd  
 Data entered by: D. O'Dowd  
 Checked by: J. Hines





### Saturated Hydraulic Conductivity Falling Head Method

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Waste Rock Composite B (2.13 g/cc)  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18

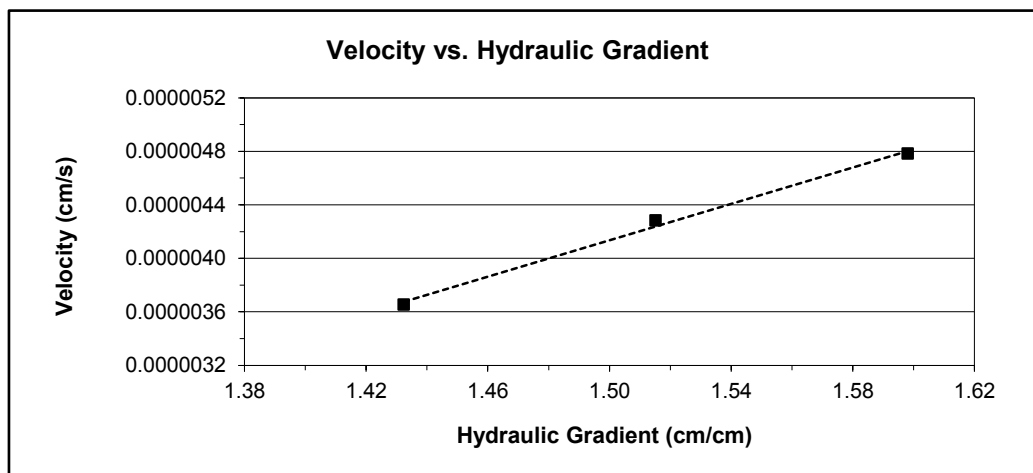
Type of water used: TAP  
 Backpressure (psi): 0.0  
 Offset (cm): 5.2  
 Sample length (cm): 12.67  
 Sample x-sectional area (cm<sup>2</sup>): 176.38  
 Reservoir x-sectional area (cm<sup>2</sup>): 0.70

Date	Time	Temp (°C)	Reservoir head (cm)	Corrected head (cm)	Elapsed time (sec)	Ksat (cm/sec)	Ksat @ 20°C (cm/sec)
Test # 1:							
12-Feb-18	14:14:20	22.0	26	20.8	913	3.0E-06	2.9E-06
12-Feb-18	14:29:33	22.0	24.9	19.7			
Test # 2:							
12-Dec-18	14:29:33	22.0	24.9	19.7	927	2.8E-06	2.7E-06
12-Dec-18	14:45:00	22.0	23.9	18.7			
Test # 3:							
12-Feb-18	14:45:00	22.0	23.9	18.7	1195	2.6E-06	2.4E-06
12-Feb-18	15:04:55	22.0	22.8	17.6			

**Average Ksat (cm/sec): 2.7E-06**  
**Oversize Corrected Ksat (cm/sec): ---**

**Comments:**

--- = Oversize correction is unnecessary since coarse fraction < 5% of composite mass



Laboratory analysis by: D. O'Dowd  
 Data entered by: D. O'Dowd  
 Checked by: J. Hines



### Saturated Hydraulic Conductivity Constant Head Method

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Coal Composite A (1.27 g/cc)  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18

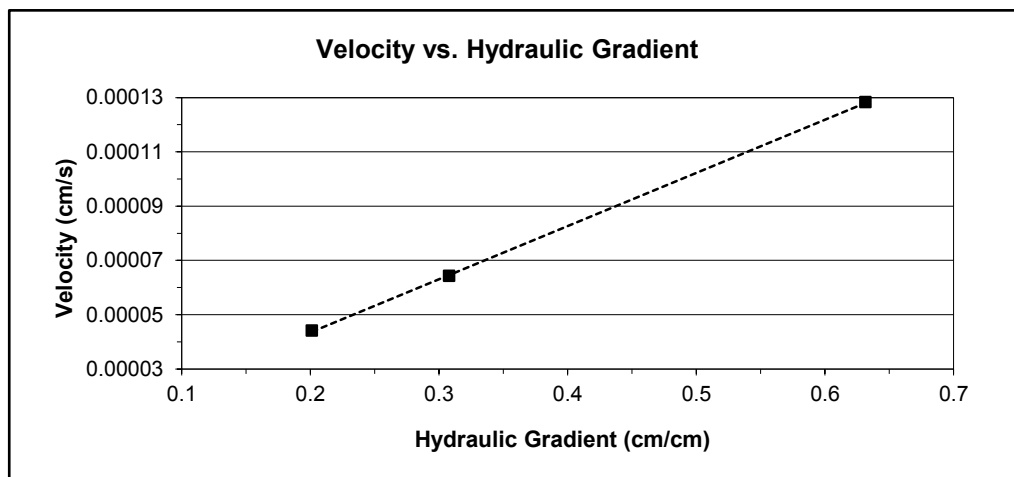
Type of water used: TAP  
 Collection vessel tare (g): 10.96  
 Sample length (cm): 12.66  
 Sample diameter (cm): 14.98  
 Sample x-sectional area (cm<sup>2</sup>): 176.34

Date	Time	Temp (°C)	Head (cm)	Q + Tare (g)	Q (cm <sup>3</sup> )	Elapsed time (sec)	Ksat (cm/sec)	Ksat @ 20°C (cm/sec)
Test # 1:								
9-Feb-18	10:27:00	19.0	8	15.03	4.1	180	2.0E-04	2.1E-04
9-Feb-18	10:30:00							
Test # 2:								
9-Feb-18	10:40:00	19.0	3.9	13.00	2.0	180	2.1E-04	2.1E-04
9-Feb-18	10:43:00							
Test # 3:								
9-Feb-18	10:53:00	19.0	2.55	12.36	1.4	180	2.2E-04	2.2E-04
9-Feb-18	10:56:00							

Average Ksat (cm/sec): 2.2E-04  
 Oversize Corrected Ksat (cm/sec): ---

Comments:

--- = Oversize correction is unnecessary since coarse fraction < 5% of composite mass



Laboratory analysis by: D. O'Dowd  
 Data entered by: D. O'Dowd  
 Checked by: J. Hines



### Saturated Hydraulic Conductivity Constant Head Method

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Coal Composite B (1.27 g/cc)  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18

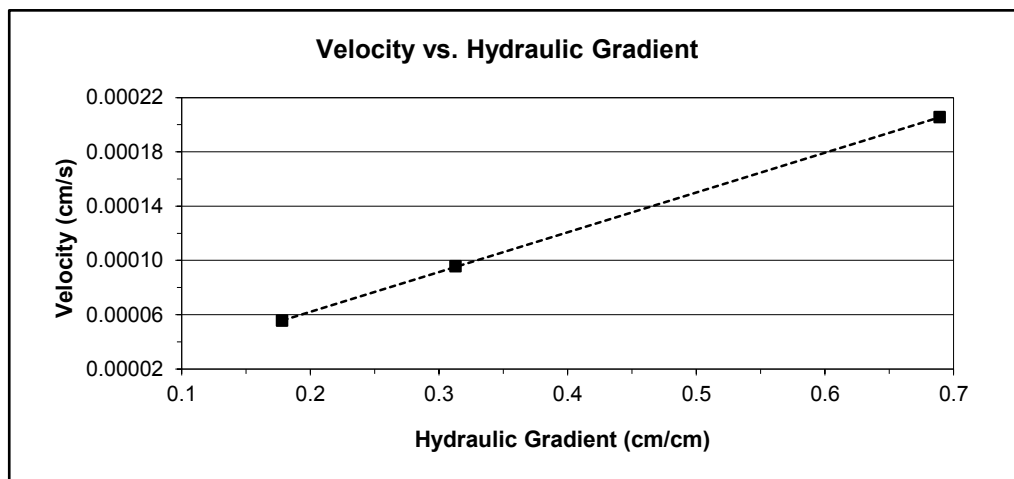
Type of water used: TAP  
 Collection vessel tare (g): 11.02  
 Sample length (cm): 12.62  
 Sample diameter (cm): 14.98  
 Sample x-sectional area (cm<sup>2</sup>): 176.31

Date	Time	Temp (°C)	Head (cm)	Q + Tare (g)	Q (cm <sup>3</sup> )	Elapsed time (sec)	Ksat (cm/sec)	Ksat @ 20°C (cm/sec)
Test # 1:								
9-Feb-18	10:27:30	19.0	8.7	17.54	6.5	180	3.0E-04	3.1E-04
9-Feb-18	10:30:30							
Test # 2:								
9-Feb-18	10:40:30	19.0	3.95	14.05	3.0	180	3.1E-04	3.1E-04
9-Feb-18	10:43:30							
Test # 3:								
9-Feb-18	10:53:30	19.0	2.25	12.78	1.8	180	3.1E-04	3.2E-04
9-Feb-18	10:56:30							

Average Ksat (cm/sec): 3.1E-04  
 Oversize Corrected Ksat (cm/sec): ---

Comments:

--- = Oversize correction is unnecessary since coarse fraction < 5% of composite mass



Laboratory analysis by: D. O'Dowd  
 Data entered by: D. O'Dowd  
 Checked by: J. Hines

## **Moisture Retention Characteristics**



### Summary of Moisture Characteristics of the Initial Drainage Curve

Sample Number	Pressure Head (-cm water)	Moisture Content (%, cm <sup>3</sup> /cm <sup>3</sup> )
Waste Rock Composite A (2.15 g/cc)	0	18.0
	20	16.9
	73	16.4
	150	16.0
	337	15.5
	4283	7.9
	15297	5.0
	78933	2.9
	351729	2.0
846993	1.5	
Waste Rock Composite B (2.13 g/cc)	0	18.6
	20	17.3
	73	16.4
	156	16.1
	337	15.7
	3671	7.6
	24067	3.8
	118297	2.3
	384873	1.7
846993	1.3	
Coal Composite A (1.27 g/cc)	0	35.1
	11	34.4
	35	34.0
	101	32.9
	337	20.7
	2855	19.0
	6527	14.8
	78015	11.3
	498172	8.2
846993	8.0	

## Volume adjustments are applicable at this matric potential (see data sheet for this sample).



**Summary of Moisture Characteristics  
of the Initial Drainage Curve (Continued)**

Sample Number	Pressure Head (-cm water)	Moisture Content (%, $\text{cm}^3/\text{cm}^3$ )
Coal Composite B (1.27 g/cc)	0	35.3
	14	35.1
	35	34.8
	106	32.1
	337	20.5
	1836	18.4
	6323	15.0
	34673	11.3
	361519	8.7
	846993	7.5

## Volume adjustments are applicable at this matric potential (see data sheet for this sample).



### Summary of Calculated Unsaturated Hydraulic Properties

Sample Number	$\alpha$ ( $\text{cm}^{-1}$ )	N (dimensionless)	$\theta_r$ (% vol)	$\theta_s$ (% vol)	Oversize Corrected	
					$\theta_r$ (% vol)	$\theta_s$ (% vol)
Waste Rock Composite A (2.15 g/cc)	0.0022	1.3404	0.00	17.25	---	---
Waste Rock Composite B (2.13 g/cc)	0.0025	1.3588	0.00	17.62	---	---
Coal Composite A (1.27 g/cc)	0.0152	1.2617	5.95	35.59	---	---
Coal Composite B (1.27 g/cc)	0.0143	1.3118	6.71	36.13	---	---

--- = Oversize correction is unnecessary since coarse fraction < 5% of composite mass  
 NR = Not requested  
 NA = Not applicable



**Moisture Retention Data**  
**Hanging Column / Pressure Plate**  
 (Soil-Water Characteristic Curve)

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Waste Rock Composite A (2.15 g/cc)  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18

Dry wt. of sample (g): 4790.81  
 Tare wt., ring (g): 286.77  
 Tare wt., screen & clamp (g): 57.98  
 Initial sample volume (cm<sup>3</sup>): 2232.68  
 Initial dry bulk density (g/cm<sup>3</sup>): 2.15  
 Measured particle density (g/cm<sup>3</sup>): 2.63  
 Initial calculated total porosity (%): 18.39

	Date	Time	Weight* (g)	Matric Potential (-cm water)	Moisture Content † (% vol)
<i>Hanging column:</i>	13-Feb-18	10:00	5536.90	0	17.98
	21-Feb-18	13:10	5513.08	19.5	16.91
	28-Feb-18	15:00	5501.47	73.0	16.39
	7-Mar-18	13:00	5493.83	150.0	16.05
<i>Pressure plate:</i>	16-Mar-18	15:50	5482.63	337	15.55

Volume Adjusted Data<sup>1</sup>

	Matric Potential (-cm water)	Adjusted Volume (cm <sup>3</sup> )	% Volume Change <sup>2</sup> (%)	Adjusted Density (g/cm <sup>3</sup> )	Adjusted Calculated Porosity (%)
<i>Hanging column:</i>	0.0	---	---	---	---
	19.5	---	---	---	---
	73.0	---	---	---	---
	150.0	---	---	---	---
<i>Pressure plate:</i>	337	---	---	---	---

**Comments:**

<sup>1</sup> Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent each of the volume change measurements obtained after saturated hydraulic conductivity testing and throughout hanging column/pressure plate testing. "---" indicates no volume changes occurred.

<sup>2</sup> Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '---' denotes no volume change occurred.

\* Weight including tares

† Assumed density of water is 1.0 g/cm<sup>3</sup>

‡ Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

**Technician Notes:**

*Laboratory analysis by: D. O'Dowd*  
*Data entered by: M. Garcia*  
*Checked by: J. Hines*





**Moisture Retention Data**

**Dew Point Potentiometer / Relative Humidity Box**  
(Soil-Water Characteristic Curve)

Sample Number: Waste Rock Composite A (2.15 g/cc)

Initial sample bulk density (g/cm<sup>3</sup>): 2.15

Fraction of test sample used (<2.00mm fraction) (%): 40.23

Dry weight\* of dew point potentiometer sample (g): 150.50

Tare weight, jar (g): 116.87

	Date	Time	Weight* (g)	Water Potential (-cm water)	Moisture Content <sup>†</sup> (% vol)
Dew point potentiometer:	12-Mar-18	10:30	153.58	4283	7.90
	7-Mar-18	10:50	152.43	15297	4.96
	21-Feb-18	13:35	151.62	78933	2.88
	16-Feb-18	11:10	151.28	351729	2.00

Volume Adjusted Data<sup>1</sup>

	Water Potential (-cm water)	Adjusted Volume (cm <sup>3</sup> )	% Volume Change <sup>2</sup> (%)	Adjusted Density (g/cm <sup>3</sup> )	Adjusted Calc. Porosity (%)
Dew point potentiometer:	4283	---	---	---	---
	15297	---	---	---	---
	78933	---	---	---	---
	351729	---	---	---	---

Comments:

<sup>1</sup> Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent the volume change measurements obtained after the last hanging column or pressure plate point. "---" indicates no volume changes occurred.

<sup>2</sup> Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '-' denotes no volume change occurred.

\* Weight including tares

<sup>†</sup> Adjusted for >2.00mm (#10 sieve) material not used in DPP/RH testing. Assumed moisture content of material >2.00mm is zero, and assumed density of water is 1.0 g/cm<sup>3</sup>.

<sup>‡</sup> Volume adjustments are applicable at this matric potential (see comment #1).

Laboratory analysis by: M. Garcia/A. Bland/ D. O'Dowd

Data entered by: M. Garcia

Checked by: J. Hines



**Moisture Retention Data**  
**Dew Point Potentiometer / Relative Humidity Box**  
 (Soil-Water Characteristic Curve)

*Sample Number:* Waste Rock Composite A (2.15 g/cc)

*Initial sample bulk density (g/cm<sup>3</sup>):* 2.15

*Fraction of test sample used (<2.00mm fraction) (%):* 40.23

*Dry weight\* of relative humidity box sample (g):* 54.38

*Tare weight (g):* 41.39

	Date	Time	Weight* (g)	Water Potential (-cm water)	Moisture Content <sup>†</sup> (% vol)
<i>Relative humidity box:</i>	13-Feb-18	9:30	54.61	846993	1.52

Volume Adjusted Data<sup>1</sup>

	Water Potential (-cm water)	Adjusted Volume (cm <sup>3</sup> )	% Volume Change <sup>2</sup> (%)	Adjusted Density (g/cm <sup>3</sup> )	Adjusted Calc. Porosity (%)
<i>Relative humidity box:</i>	846993	---	---	---	---

**Comments:**

<sup>1</sup> Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent the volume change measurements obtained after the last hanging column or pressure plate point. "----" indicates no volume changes occurred.

<sup>2</sup> Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '---' denotes no volume change occurred.

\* Weight including tares

<sup>†</sup> Adjusted for >2.00mm (#10 sieve) material not used in DPP/RH testing. Assumed moisture content of material >2.00mm is zero, and assumed density of water is 1.0 g/cm<sup>3</sup>.

<sup>‡</sup> Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

*Laboratory analysis by:* M. Garcia/A. Bland/ D. O'Dowd

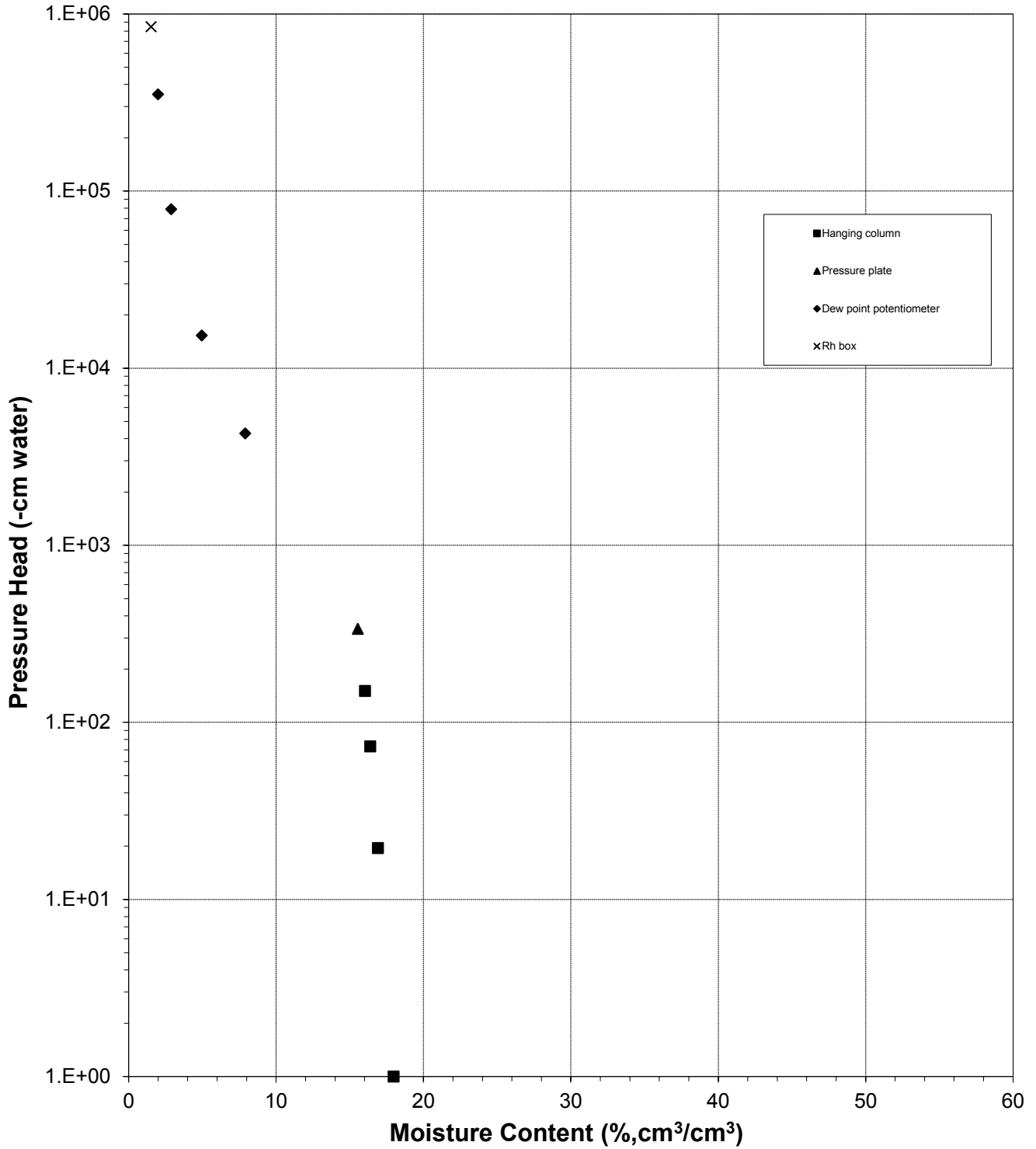
*Data entered by:* M. Garcia

*Checked by:* J. Hines



### Water Retention Data Points

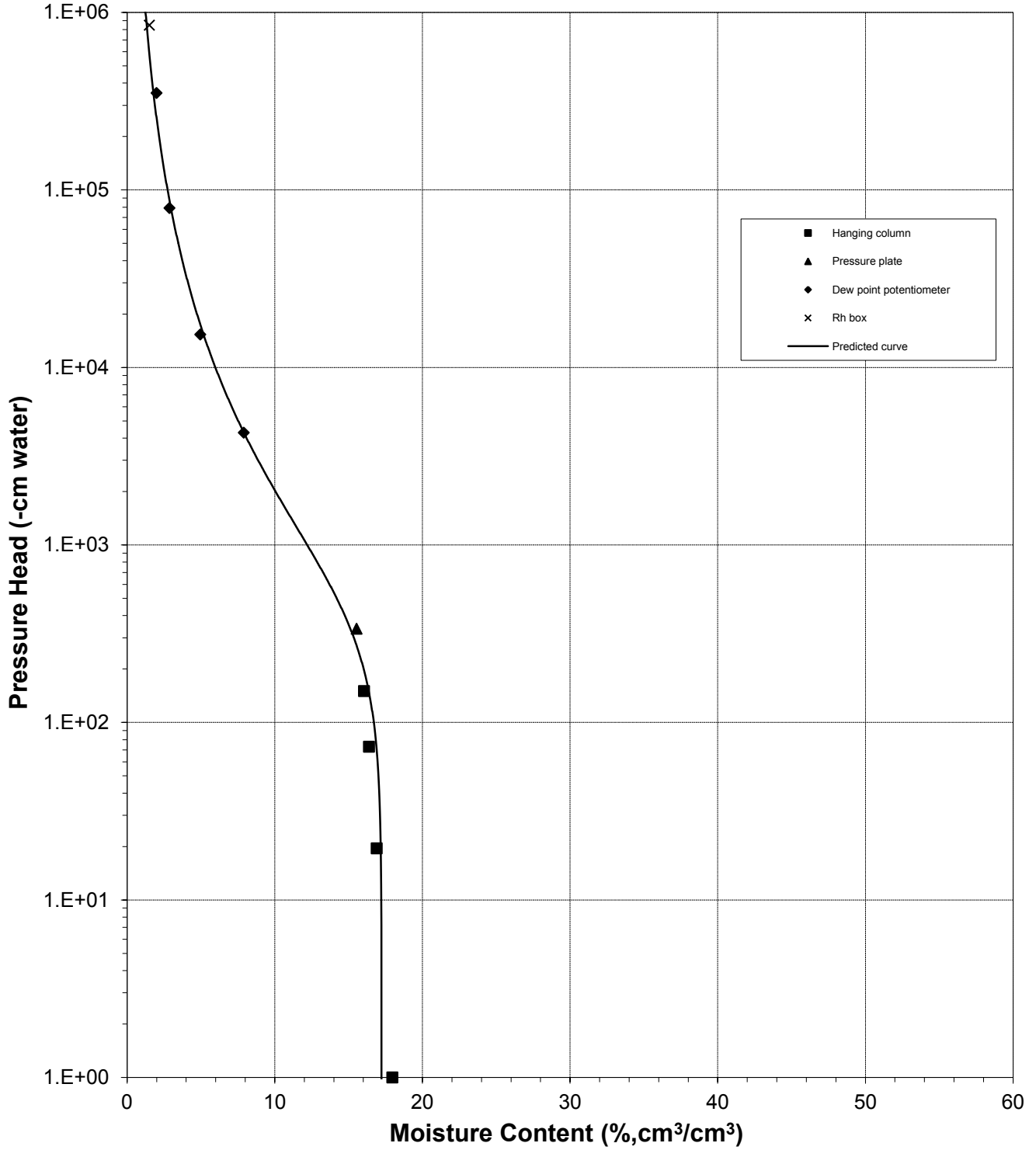
Sample Number: Waste Rock Composite A (2.15 g/cc)





### Predicted Water Retention Curve and Data Points

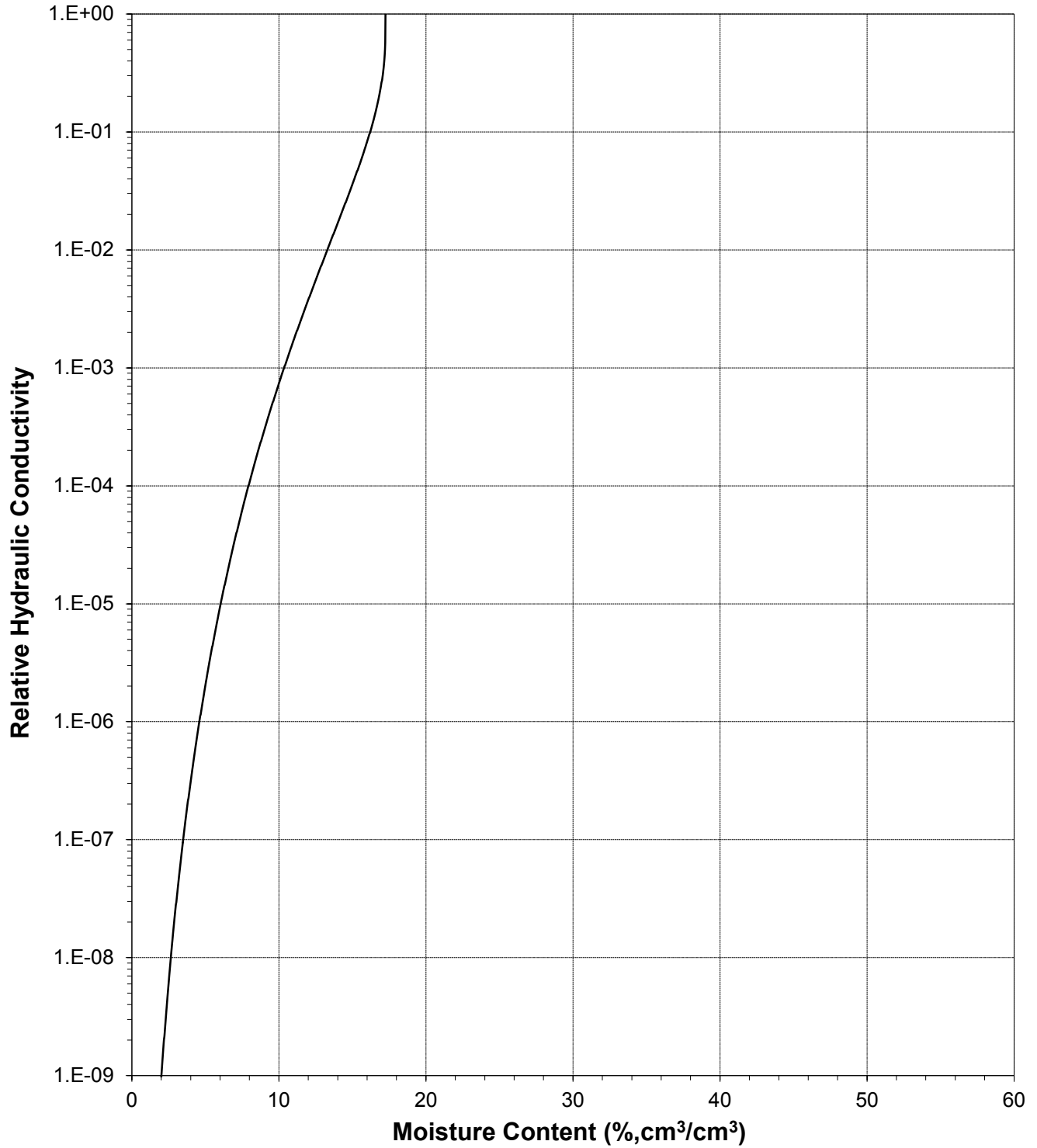
Sample Number: Waste Rock Composite A (2.15 g/cc)





### Plot of Relative Hydraulic Conductivity vs Moisture Content

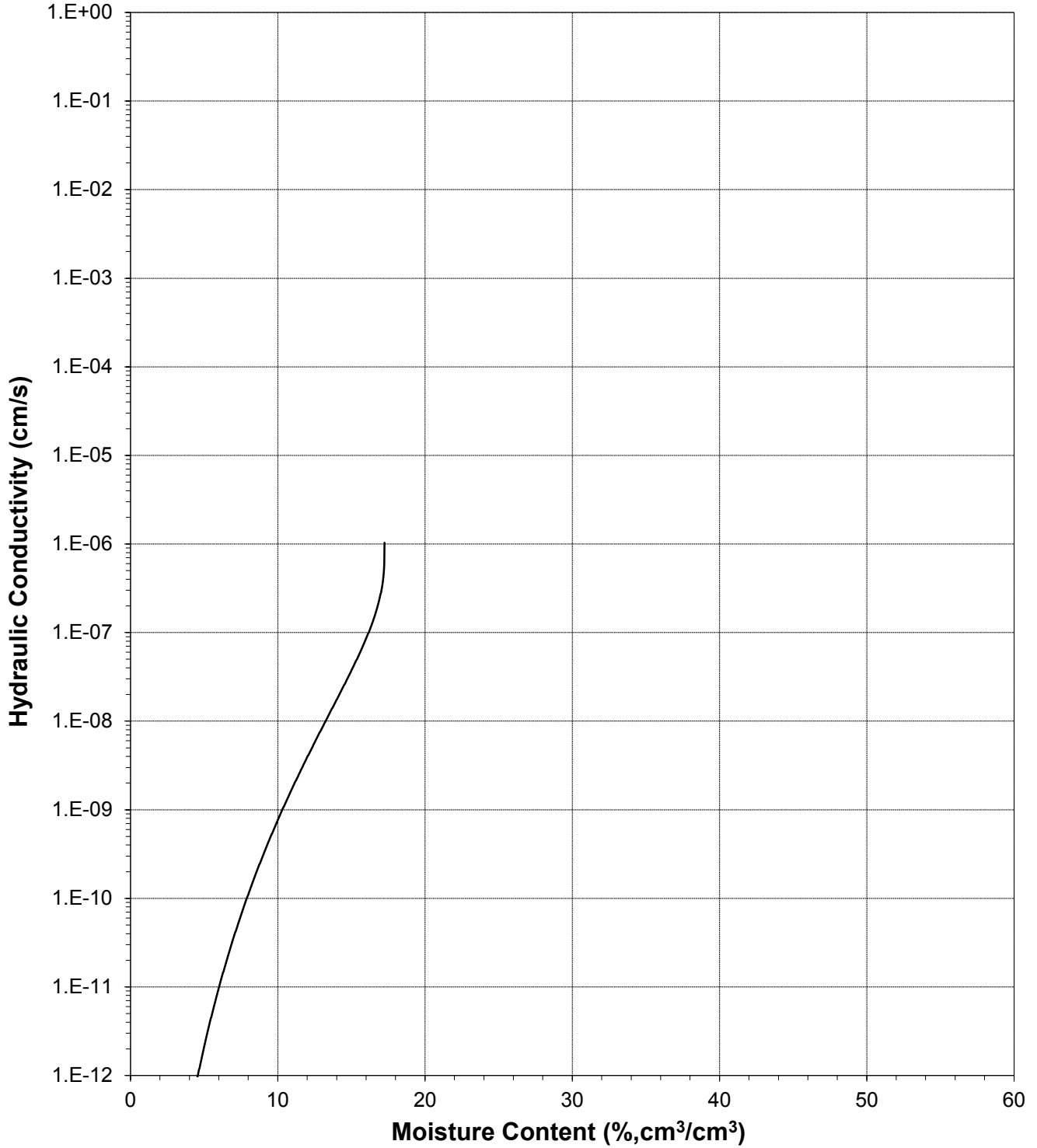
Sample Number: Waste Rock Composite A (2.15 g/cc)





### Plot of Hydraulic Conductivity vs Moisture Content

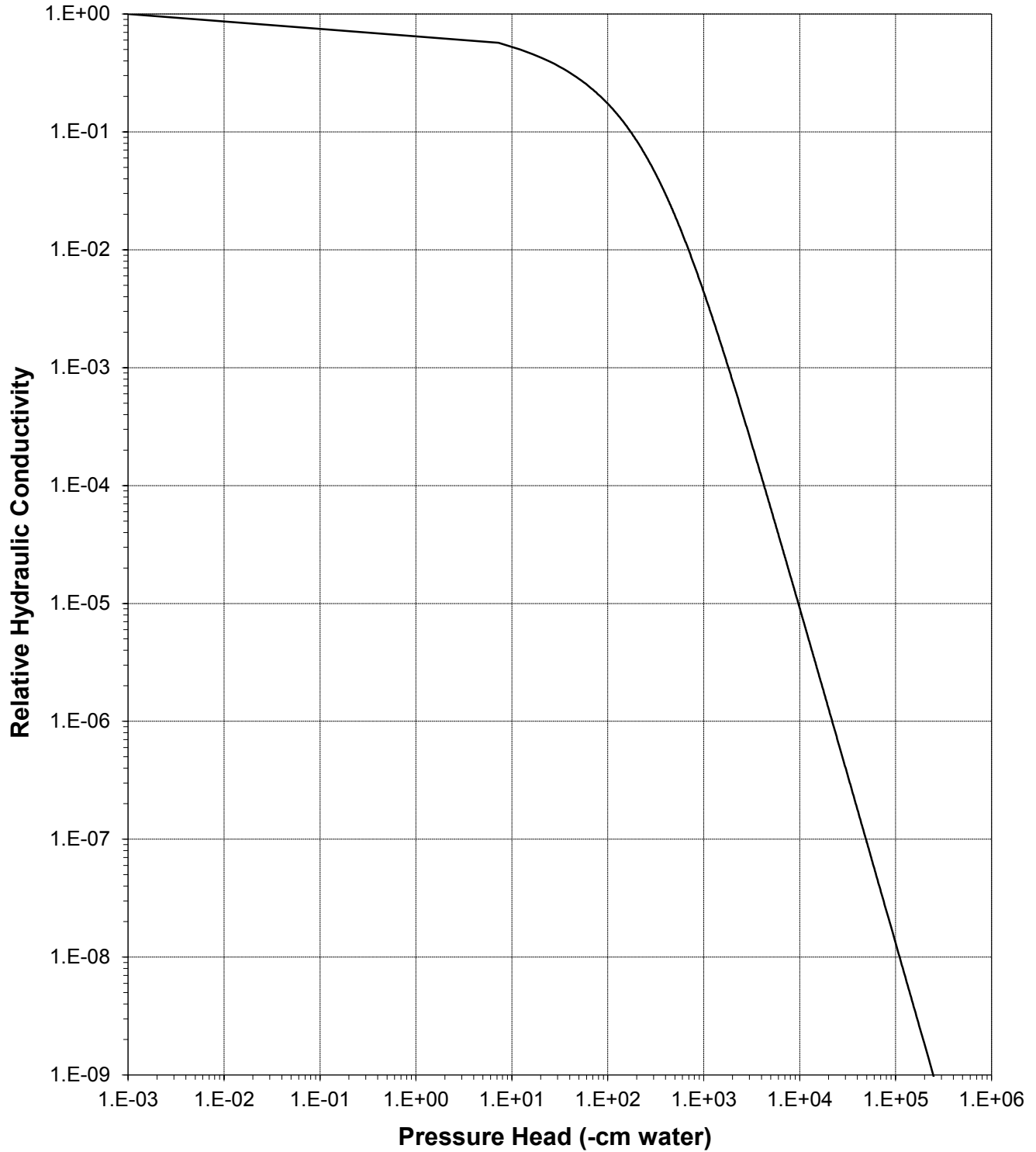
Sample Number: Waste Rock Composite A (2.15 g/cc)





### Plot of Relative Hydraulic Conductivity vs Pressure Head

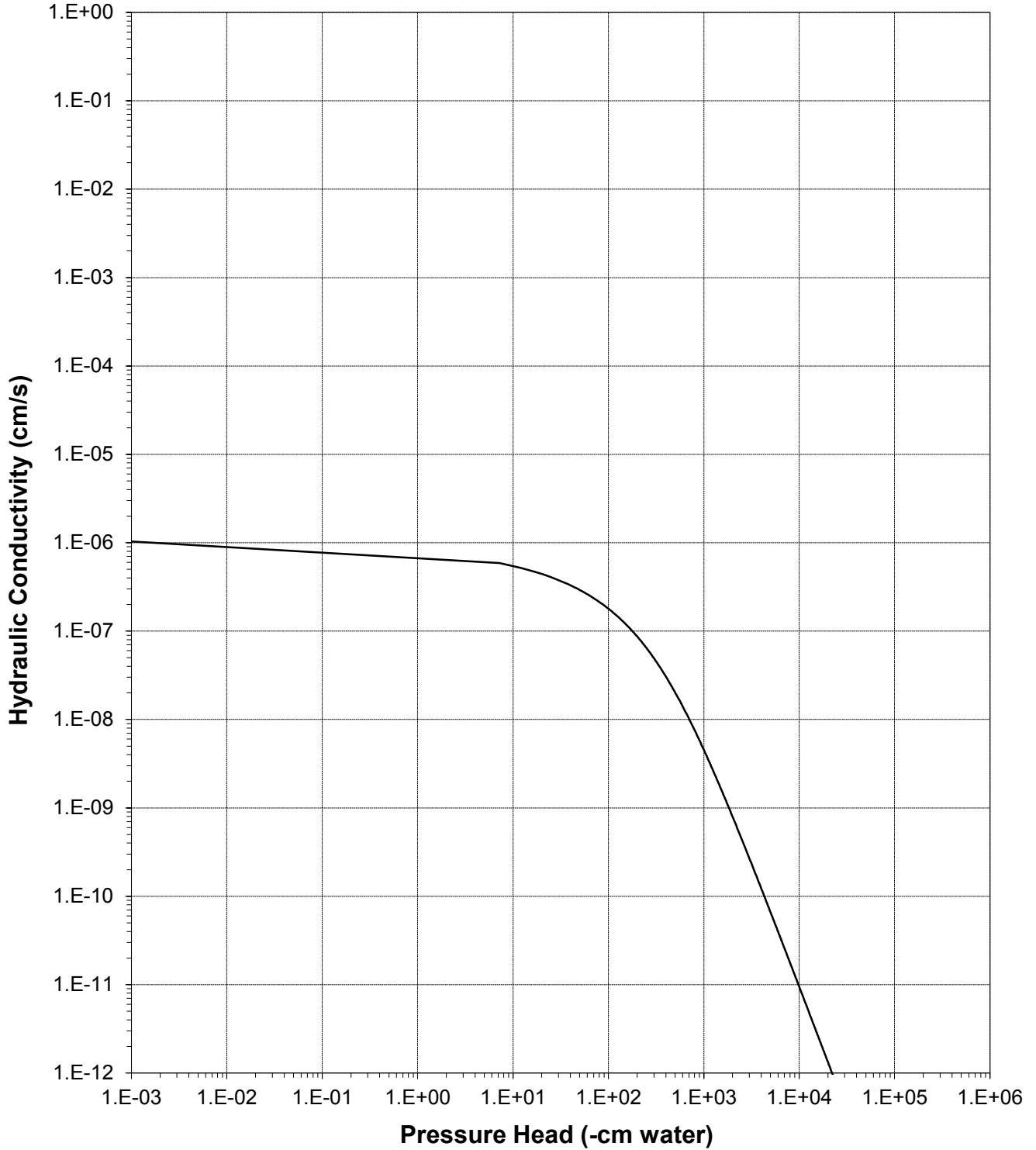
Sample Number: Waste Rock Composite A (2.15 g/cc)





### Plot of Hydraulic Conductivity vs Pressure Head

Sample Number: Waste Rock Composite A (2.15 g/cc)







**Moisture Retention Data**  
**Hanging Column / Pressure Plate**  
 (Soil-Water Characteristic Curve)

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Waste Rock Composite B (2.13 g/cc)  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18

Dry wt. of sample (g): 4752.56  
 Tare wt., ring (g): 289.72  
 Tare wt., screen & clamp (g): 62.77  
 Initial sample volume (cm<sup>3</sup>): 2234.97  
 Initial dry bulk density (g/cm<sup>3</sup>): 2.13  
 Measured particle density (g/cm<sup>3</sup>): 2.63  
 Initial calculated total porosity (%): 19.24

	Date	Time	Weight* (g)	Matric Potential (-cm water)	Moisture Content † (% vol)
<i>Hanging column:</i>	13-Feb-18	10:00	5520.50	0	18.59
	21-Feb-18	13:15	5491.30	19.5	17.28
	28-Feb-18	15:00	5471.00	73.0	16.37
	7-Mar-18	13:00	5463.79	156.0	16.05
<i>Pressure plate:</i>	16-Mar-18	16:00	5456.63	337	15.73

Volume Adjusted Data<sup>1</sup>

	Matric Potential (-cm water)	Adjusted Volume (cm <sup>3</sup> )	% Volume Change <sup>2</sup> (%)	Adjusted Density (g/cm <sup>3</sup> )	Adjusted Calculated Porosity (%)
<i>Hanging column:</i>	0.0	---	---	---	---
	19.5	---	---	---	---
	73.0	---	---	---	---
	156.0	---	---	---	---
<i>Pressure plate:</i>	337	---	---	---	---

**Comments:**

- <sup>1</sup> Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent each of the volume change measurements obtained after saturated hydraulic conductivity testing and throughout hanging column/pressure plate testing. "---" indicates no volume changes occurred.
- <sup>2</sup> Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '---' denotes no volume change occurred.
- \* Weight including tares
- † Assumed density of water is 1.0 g/cm<sup>3</sup>
- ‡ Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

**Technician Notes:**

Laboratory analysis by: D. O'Dowd  
 Data entered by: M. Garcia  
 Checked by: J. Hines



**Moisture Retention Data**

**Dew Point Potentiometer / Relative Humidity Box**  
(Soil-Water Characteristic Curve)

Sample Number: Waste Rock Composite B (2.13 g/cc)

Initial sample bulk density (g/cm<sup>3</sup>): 2.13

Fraction of test sample used (<2.00mm fraction) (%): 37.12

Dry weight\* of dew point potentiometer sample (g): 151.86

Tare weight, jar (g): 113.35

	Date	Time	Weight* (g)	Water Potential (-cm water)	Moisture Content <sup>†</sup> (% vol)
Dew point potentiometer:	9-Mar-18	10:35	155.59	3671	7.65
	21-Feb-18	13:55	153.72	24067	3.82
	16-Feb-18	10:50	153.00	118297	2.33
	14-Feb-18	10:30	152.70	384873	1.71

Volume Adjusted Data<sup>1</sup>

	Water Potential (-cm water)	Adjusted Volume (cm <sup>3</sup> )	% Volume Change <sup>2</sup> (%)	Adjusted Density (g/cm <sup>3</sup> )	Adjusted Calc. Porosity (%)
Dew point potentiometer:	3671	---	---	---	---
	24067	---	---	---	---
	118297	---	---	---	---
	384873	---	---	---	---

**Comments:**

<sup>1</sup> Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent the volume change measurements obtained after the last hanging column or pressure plate point. "---" indicates no volume changes occurred.

<sup>2</sup> Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '-' denotes no volume change occurred.

\* Weight including tares

<sup>†</sup> Adjusted for >2.00mm (#10 sieve) material not used in DPP/RH testing. Assumed moisture content of material >2.00mm is zero, and assumed density of water is 1.0 g/cm<sup>3</sup>.

<sup>‡</sup> Volume adjustments are applicable at this matric potential (see comment #1).

Laboratory analysis by: M. Garcia/A. Bland/ D. O'Dowd

Data entered by: M. Garcia

Checked by: J. Hines



**Moisture Retention Data**

**Dew Point Potentiometer / Relative Humidity Box**  
(Soil-Water Characteristic Curve)

Sample Number: Waste Rock Composite B (2.13 g/cc)

Initial sample bulk density (g/cm<sup>3</sup>): 2.13

Fraction of test sample used (<2.00mm fraction) (%): 37.12

Dry weight\* of relative humidity box sample (g): 45.57

Tare weight (g): 31.75

	Date	Time	Weight* (g)	Water Potential (-cm water)	Moisture Content <sup>†</sup> (% vol)
Relative humidity box:	13-Feb-18	9:30	45.79	846993	1.26

Volume Adjusted Data<sup>1</sup>

	Water Potential (-cm water)	Adjusted Volume (cm <sup>3</sup> )	% Volume Change <sup>2</sup> (%)	Adjusted Density (g/cm <sup>3</sup> )	Adjusted Calc. Porosity (%)
Relative humidity box:	846993	---	---	---	---

**Comments:**

<sup>1</sup> Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent the volume change measurements obtained after the last hanging column or pressure plate point. "----" indicates no volume changes occurred.

<sup>2</sup> Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '---' denotes no volume change occurred.

\* Weight including tares

<sup>†</sup> Adjusted for >2.00mm (#10 sieve) material not used in DPP/RH testing. Assumed moisture content of material >2.00mm is zero, and assumed density of water is 1.0 g/cm<sup>3</sup>.

<sup>‡</sup> Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

Laboratory analysis by: M. Garcia/A. Bland/ D. O'Dowd

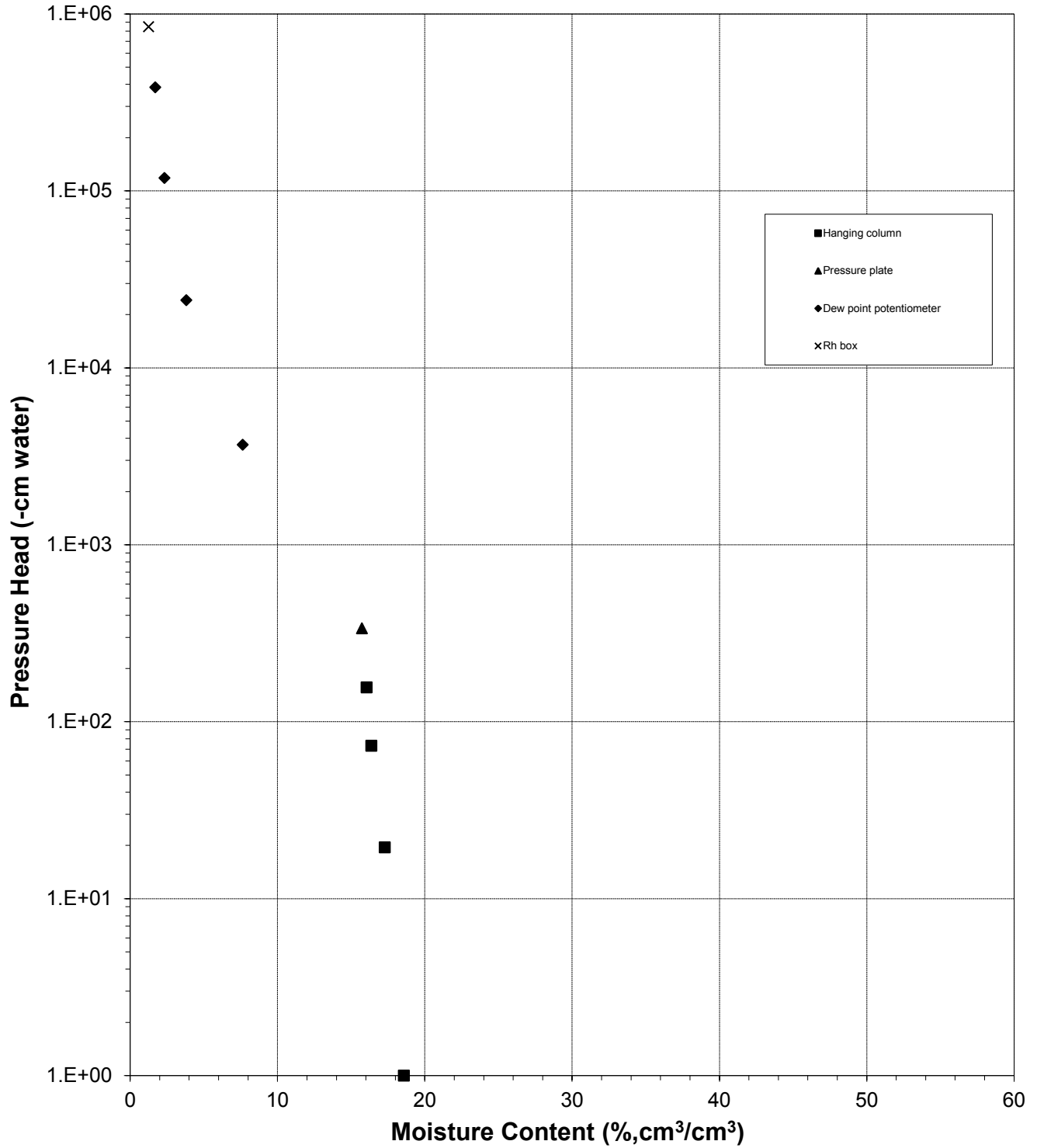
Data entered by: M. Garcia

Checked by: J. Hines



### Water Retention Data Points

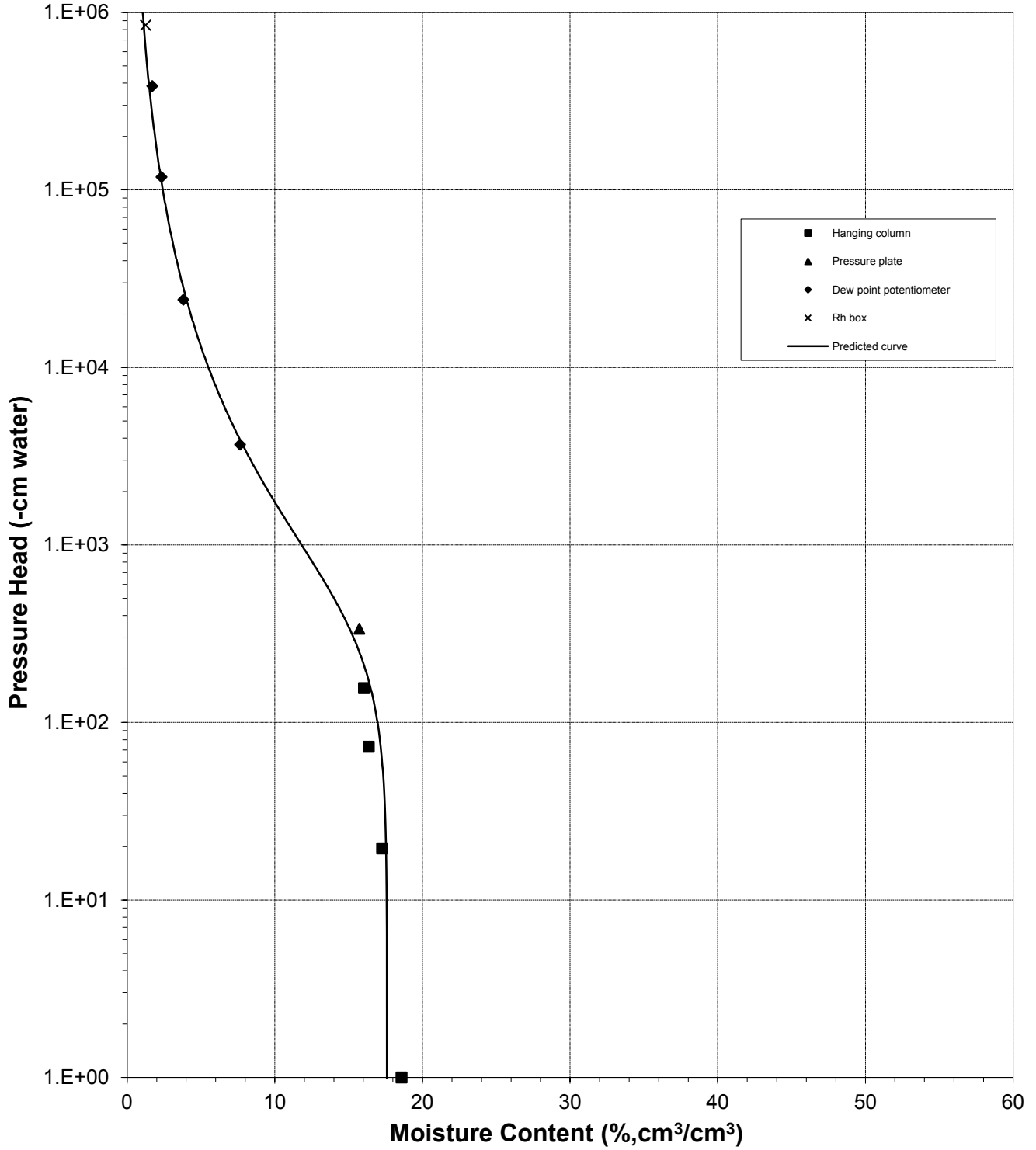
Sample Number: Waste Rock Composite B (2.13 g/cc)





### Predicted Water Retention Curve and Data Points

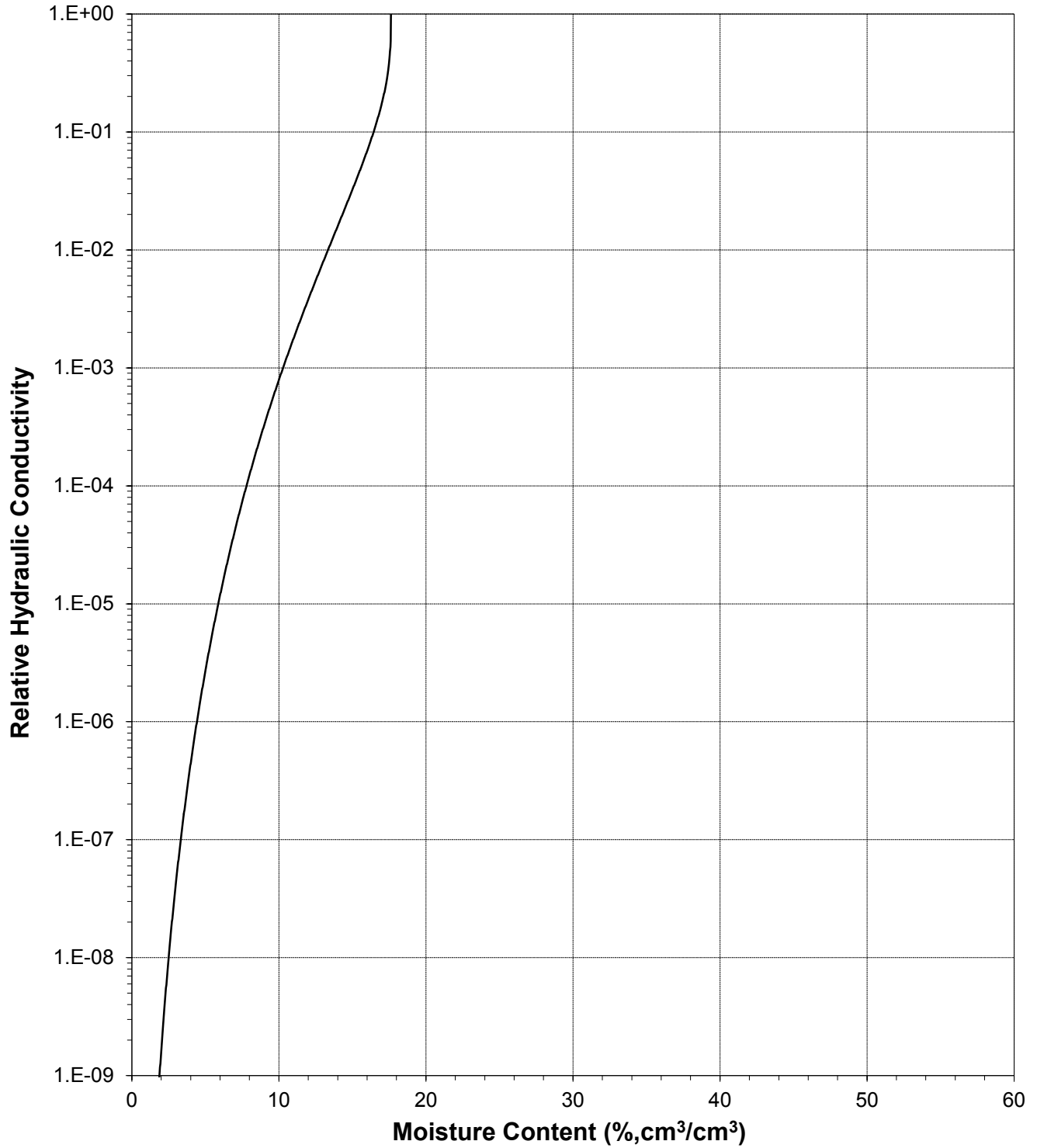
Sample Number: Waste Rock Composite B (2.13 g/cc)





### Plot of Relative Hydraulic Conductivity vs Moisture Content

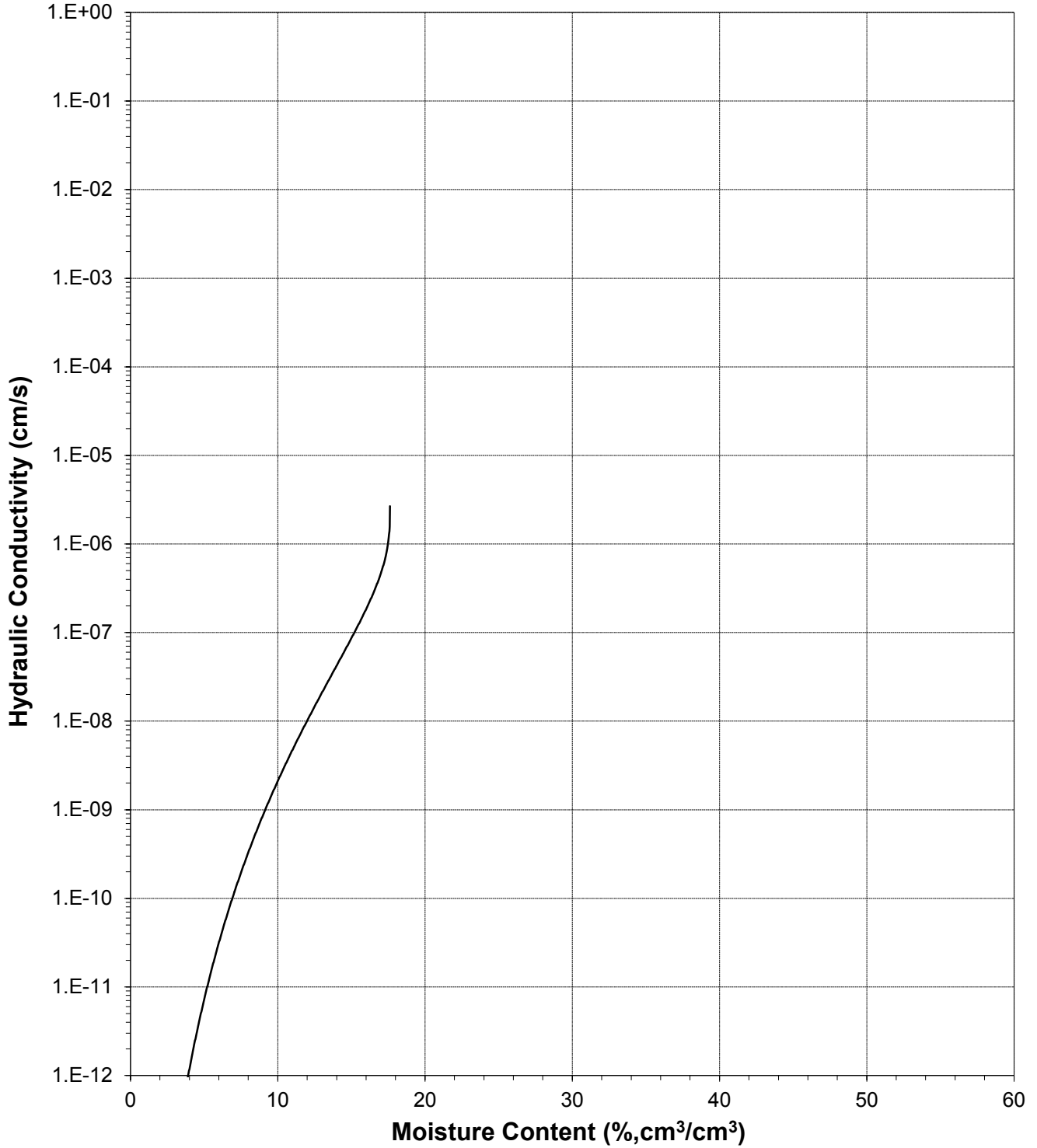
Sample Number: Waste Rock Composite B (2.13 g/cc)





### Plot of Hydraulic Conductivity vs Moisture Content

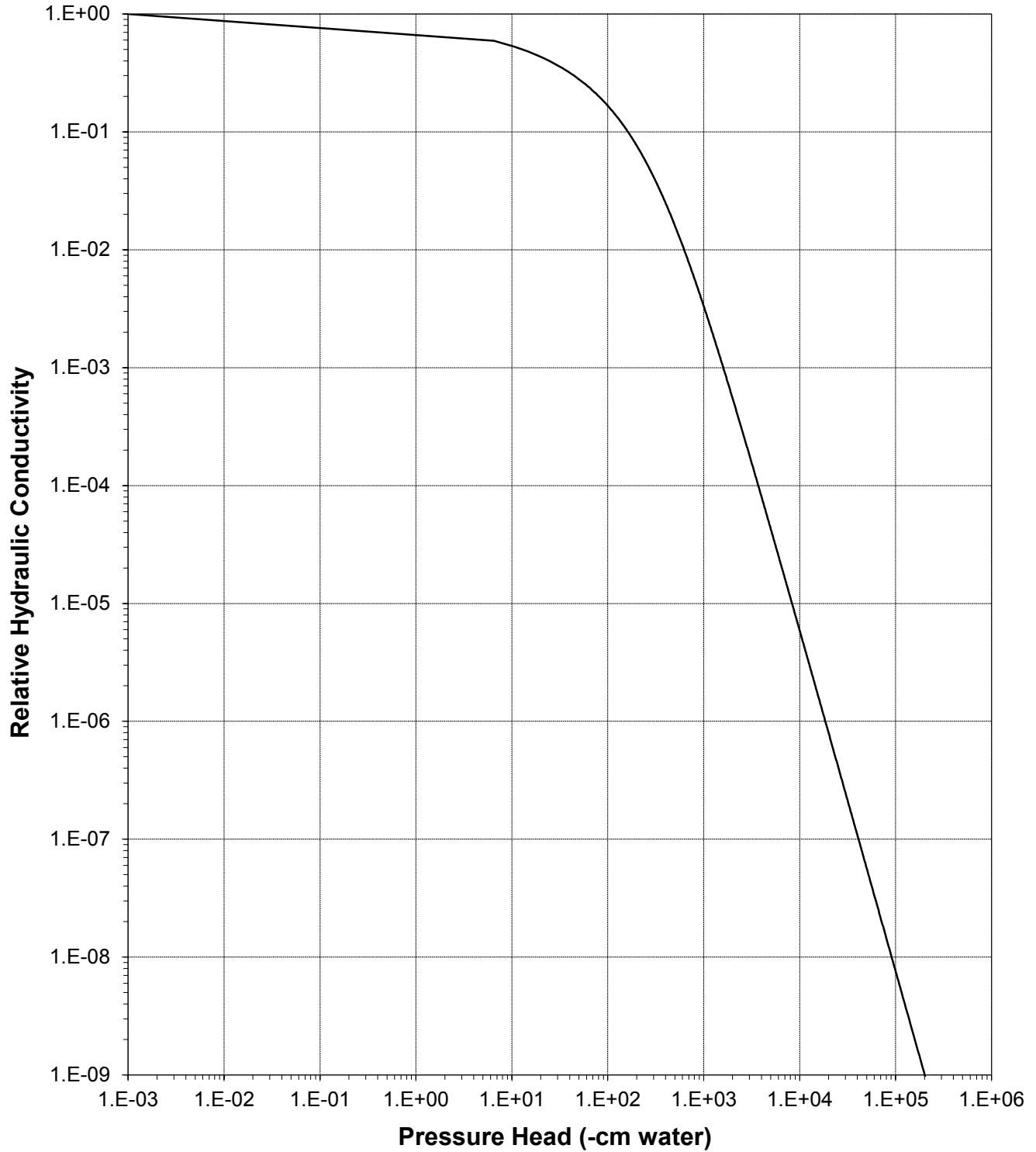
Sample Number: Waste Rock Composite B (2.13 g/cc)





### Plot of Relative Hydraulic Conductivity vs Pressure Head

Sample Number: Waste Rock Composite B (2.13 g/cc)

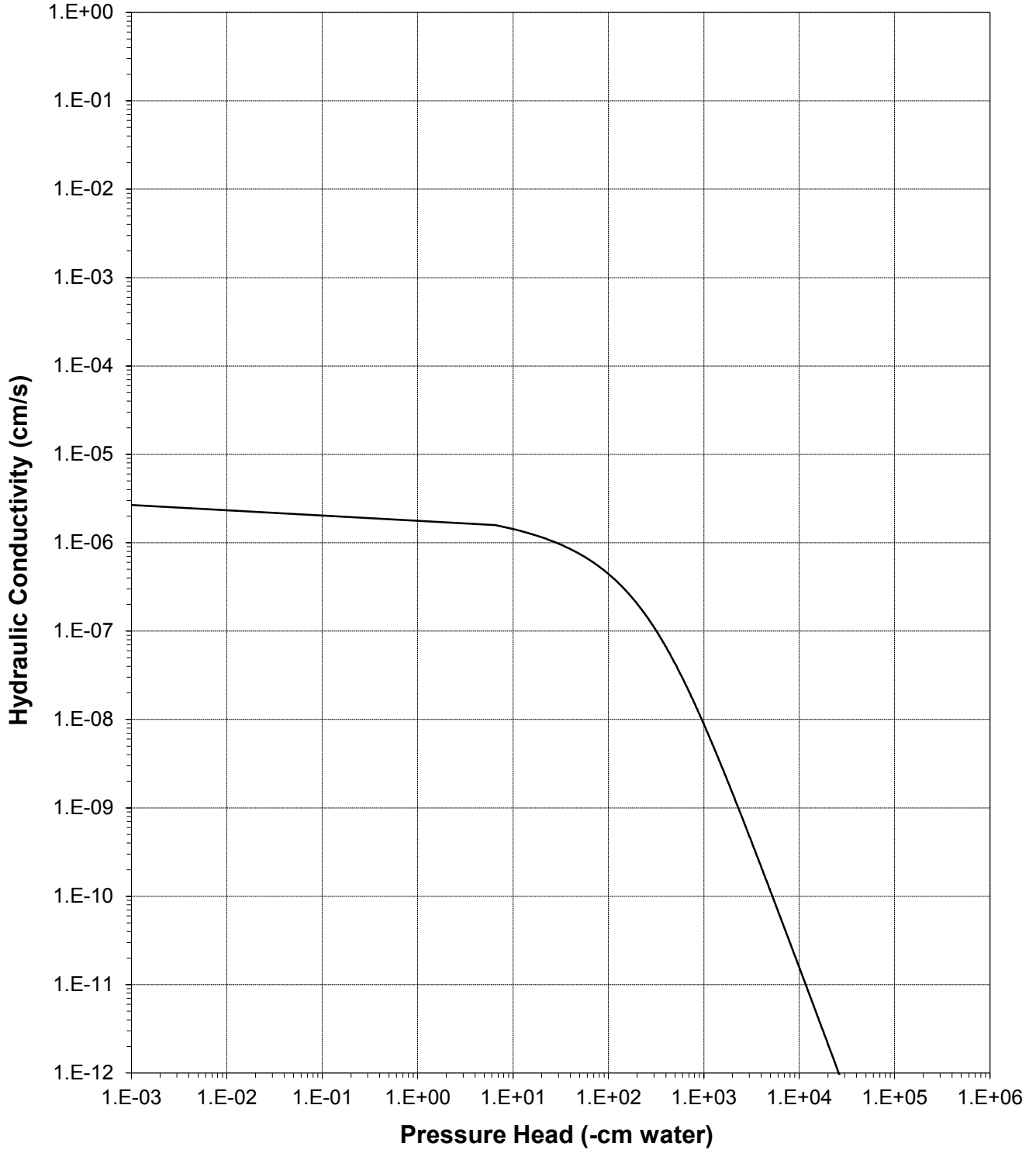






### Plot of Hydraulic Conductivity vs Pressure Head

Sample Number: Waste Rock Composite B (2.13 g/cc)





**Moisture Retention Data**  
**Hanging Column / Pressure Plate**  
 (Soil-Water Characteristic Curve)

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Coal Composite A (1.27 g/cc)  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18

Dry wt. of sample (g): 2825.01  
 Tare wt., ring (g): 289.64  
 Tare wt., screen & clamp (g): 57.07  
 Initial sample volume (cm<sup>3</sup>): 2232.97  
 Initial dry bulk density (g/cm<sup>3</sup>): 1.27  
 Measured particle density (g/cm<sup>3</sup>): 1.94  
 Initial calculated total porosity (%): 34.74

	Date	Time	Weight* (g)	Matric Potential (-cm water)	Moisture Content † (% vol)
<i>Hanging column:</i>	13-Feb-18	10:00	3956.40	0	35.14
	21-Feb-18	13:00	3940.00	11.0	34.41
	28-Feb-18	15:00	3931.60	35.0	34.03
	7-Mar-18	12:45	3905.95	101.0	32.88
<i>Pressure plate:</i>	16-Mar-18	16:00	3633.99	337	20.70

Volume Adjusted Data<sup>1</sup>

	Matric Potential (-cm water)	Adjusted Volume (cm <sup>3</sup> )	% Volume Change <sup>2</sup> (%)	Adjusted Density (g/cm <sup>3</sup> )	Adjusted Calculated Porosity (%)
<i>Hanging column:</i>	0.0	---	---	---	---
	11.0	---	---	---	---
	35.0	---	---	---	---
	101.0	---	---	---	---
<i>Pressure plate:</i>	337	---	---	---	---

**Comments:**

- <sup>1</sup> Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent each of the volume change measurements obtained after saturated hydraulic conductivity testing and throughout hanging column/pressure plate testing. "---" indicates no volume changes occurred.
- <sup>2</sup> Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '---' denotes no volume change occurred.
- \* Weight including tares
- † Assumed density of water is 1.0 g/cm<sup>3</sup>
- ‡ Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

**Technician Notes:**

Laboratory analysis by: D. O'Dowd  
 Data entered by: M. Garcia  
 Checked by: J. Hines



**Moisture Retention Data**

**Dew Point Potentiometer / Relative Humidity Box**  
(Soil-Water Characteristic Curve)

Sample Number: Coal Composite A (1.27 g/cc)

Initial sample bulk density (g/cm<sup>3</sup>): 1.27

Fraction of test sample used (<2.00mm fraction) (%): 82.75

Dry weight\* of dew point potentiometer sample (g): 140.17

Tare weight, jar (g): 115.29

	Date	Time	Weight* (g)	Water Potential (-cm water)	Moisture Content <sup>†</sup> (% vol)
Dew point potentiometer:	16-Mar-18	12:45	144.68	2855	18.96
	12-Mar-18	10:30	143.69	6527	14.82
	22-Feb-18	13:15	142.86	78015	11.34
	19-Feb-18	14:05	142.12	498172	8.21

Volume Adjusted Data<sup>1</sup>

	Water Potential (-cm water)	Adjusted Volume (cm <sup>3</sup> )	% Volume Change <sup>2</sup> (%)	Adjusted Density (g/cm <sup>3</sup> )	Adjusted Calc. Porosity (%)
Dew point potentiometer:	2855	---	---	---	---
	6527	---	---	---	---
	78015	---	---	---	---
	498172	---	---	---	---

**Comments:**

<sup>1</sup> Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent the volume change measurements obtained after the last hanging column or pressure plate point. "---" indicates no volume changes occurred.

<sup>2</sup> Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '-' denotes no volume change occurred.

\* Weight including tares

<sup>†</sup> Adjusted for >2.00mm (#10 sieve) material not used in DPP/RH testing. Assumed moisture content of material >2.00mm is zero, and assumed density of water is 1.0 g/cm<sup>3</sup>.

<sup>‡</sup> Volume adjustments are applicable at this matric potential (see comment #1).

Laboratory analysis by: M. Garica/A. Bland/ D. O'Dowd

Data entered by: M. Garcia

Checked by: J. Hines



**Moisture Retention Data**  
**Dew Point Potentiometer / Relative Humidity Box**  
 (Soil-Water Characteristic Curve)

*Sample Number:* Coal Composite A (1.27 g/cc)

*Initial sample bulk density (g/cm<sup>3</sup>):* 1.27

*Fraction of test sample used (<2.00mm fraction) (%):* 82.75

*Dry weight\* of relative humidity box sample (g):* 48.65

*Tare weight (g):* 41.63

	Date	Time	Weight* (g)	Water Potential (-cm water)	Moisture Content <sup>†</sup> (% vol)
<i>Relative humidity box:</i>	13-Feb-18	9:30	49.19	846993	8.05

Volume Adjusted Data<sup>1</sup>

	Water Potential (-cm water)	Adjusted Volume (cm <sup>3</sup> )	% Volume Change <sup>2</sup> (%)	Adjusted Density (g/cm <sup>3</sup> )	Adjusted Calc. Porosity (%)
<i>Relative humidity box:</i>	846993	---	---	---	---

**Comments:**

<sup>1</sup> Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent the volume change measurements obtained after the last hanging column or pressure plate point. "----" indicates no volume changes occurred.

<sup>2</sup> Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '---' denotes no volume change occurred.

\* Weight including tares

<sup>†</sup> Adjusted for >2.00mm (#10 sieve) material not used in DPP/RH testing. Assumed moisture content of material >2.00mm is zero, and assumed density of water is 1.0 g/cm<sup>3</sup>.

<sup>‡</sup> Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

*Laboratory analysis by:* M. Garica/A. Bland/ D. O'Dowd

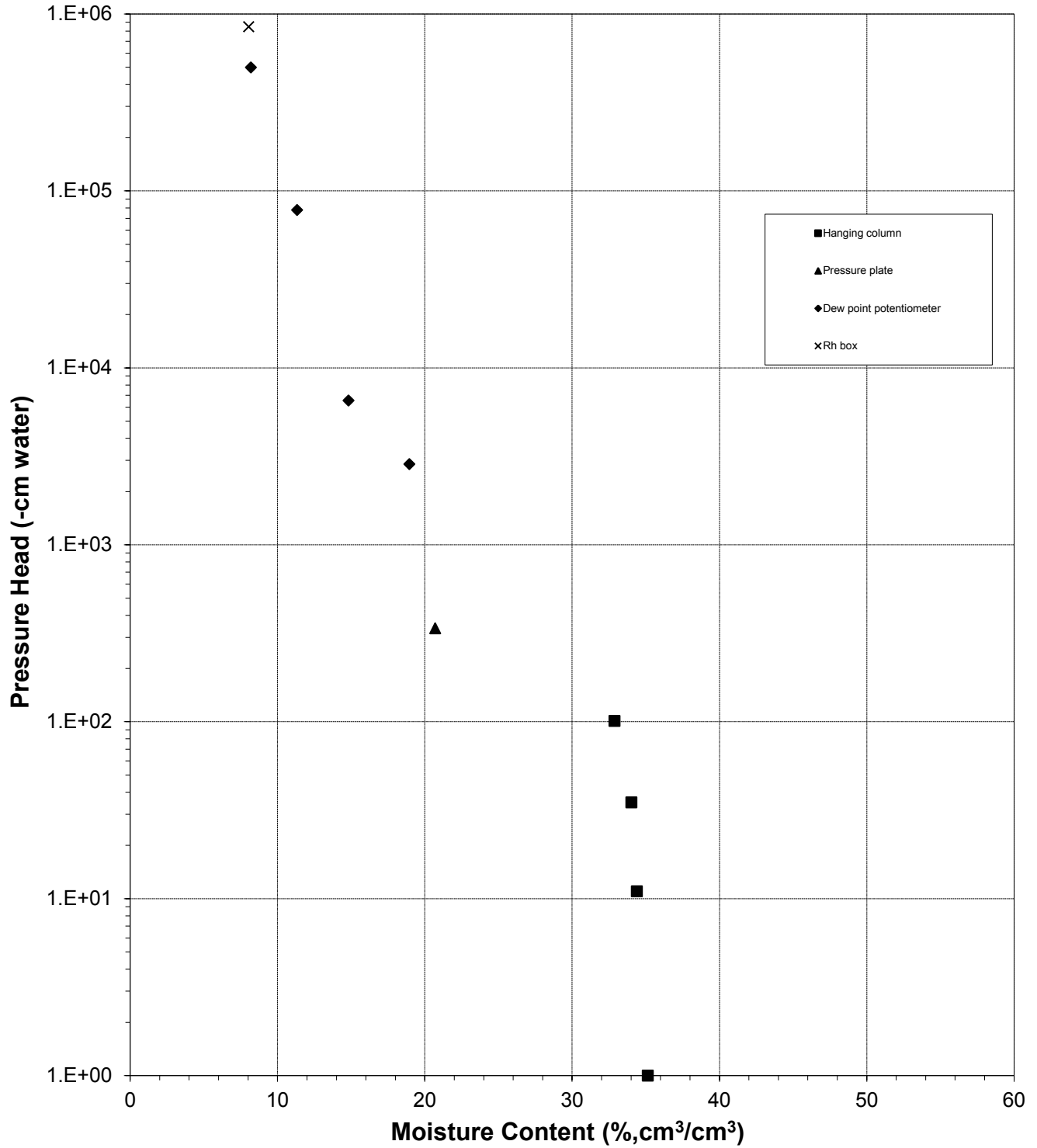
*Data entered by:* M. Garcia

*Checked by:* J. Hines



### Water Retention Data Points

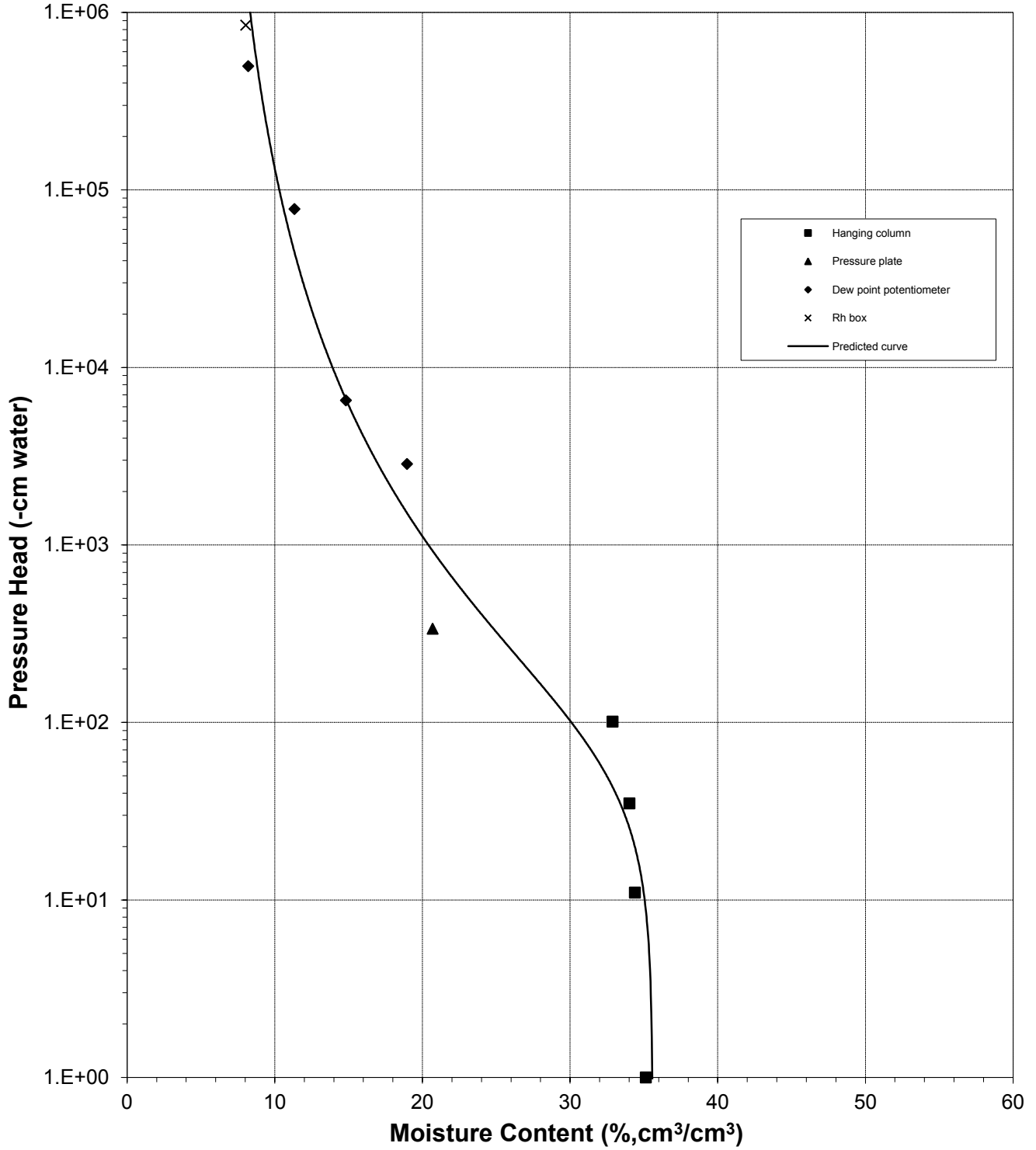
Sample Number: Coal Composite A (1.27 g/cc)





### Predicted Water Retention Curve and Data Points

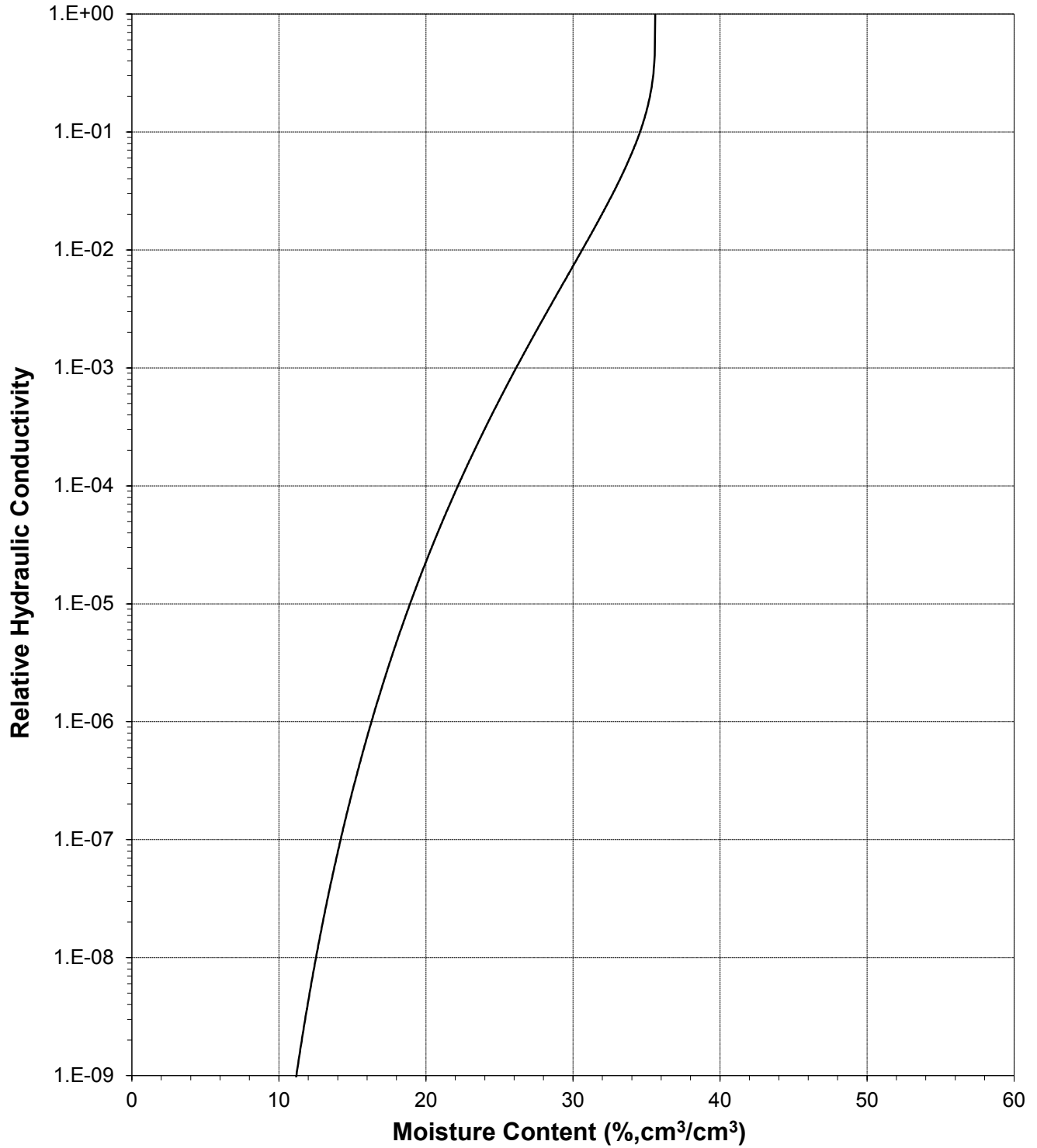
Sample Number: Coal Composite A (1.27 g/cc)





### Plot of Relative Hydraulic Conductivity vs Moisture Content

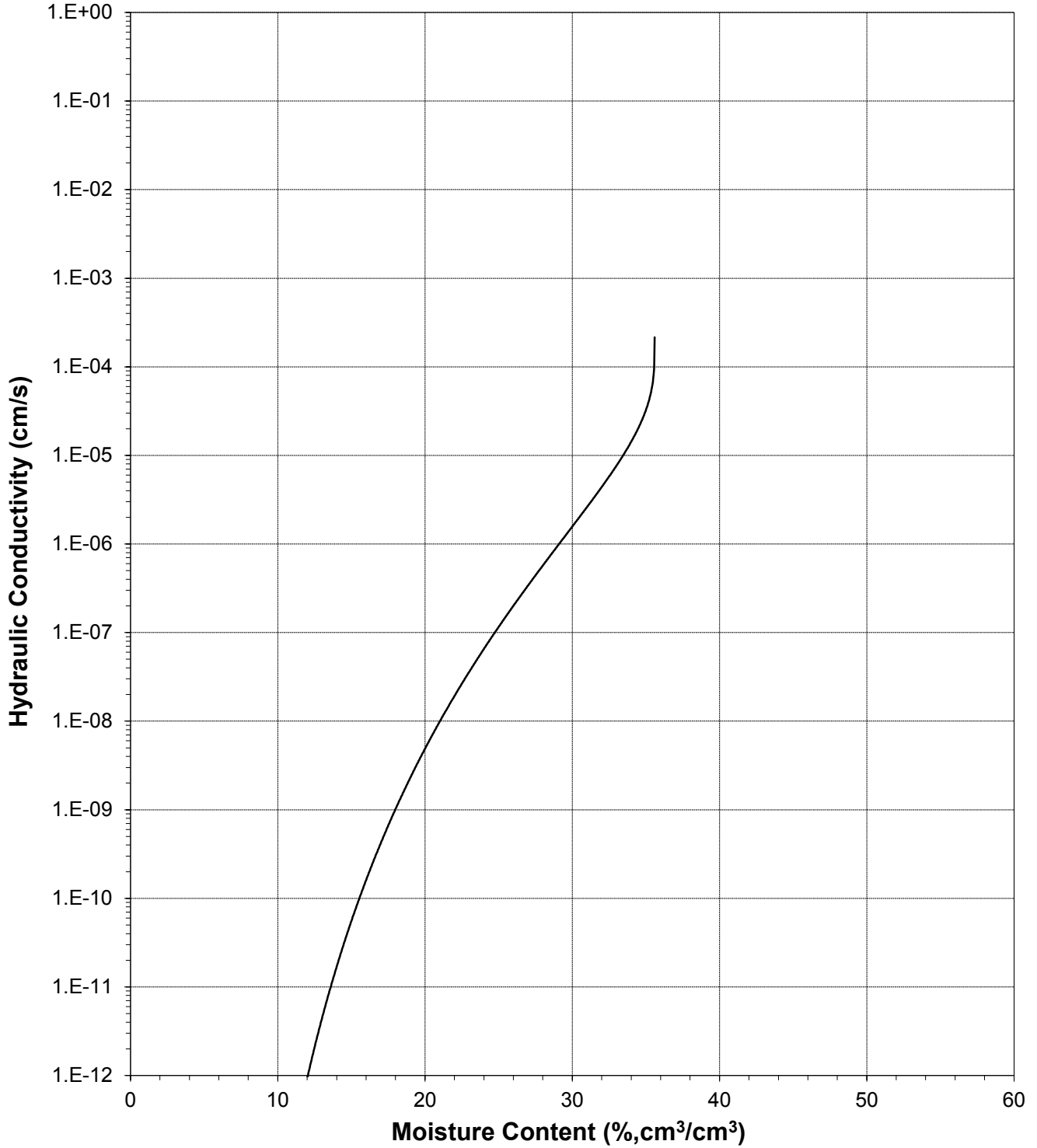
Sample Number: Coal Composite A (1.27 g/cc)





### Plot of Hydraulic Conductivity vs Moisture Content

Sample Number: Coal Composite A (1.27 g/cc)

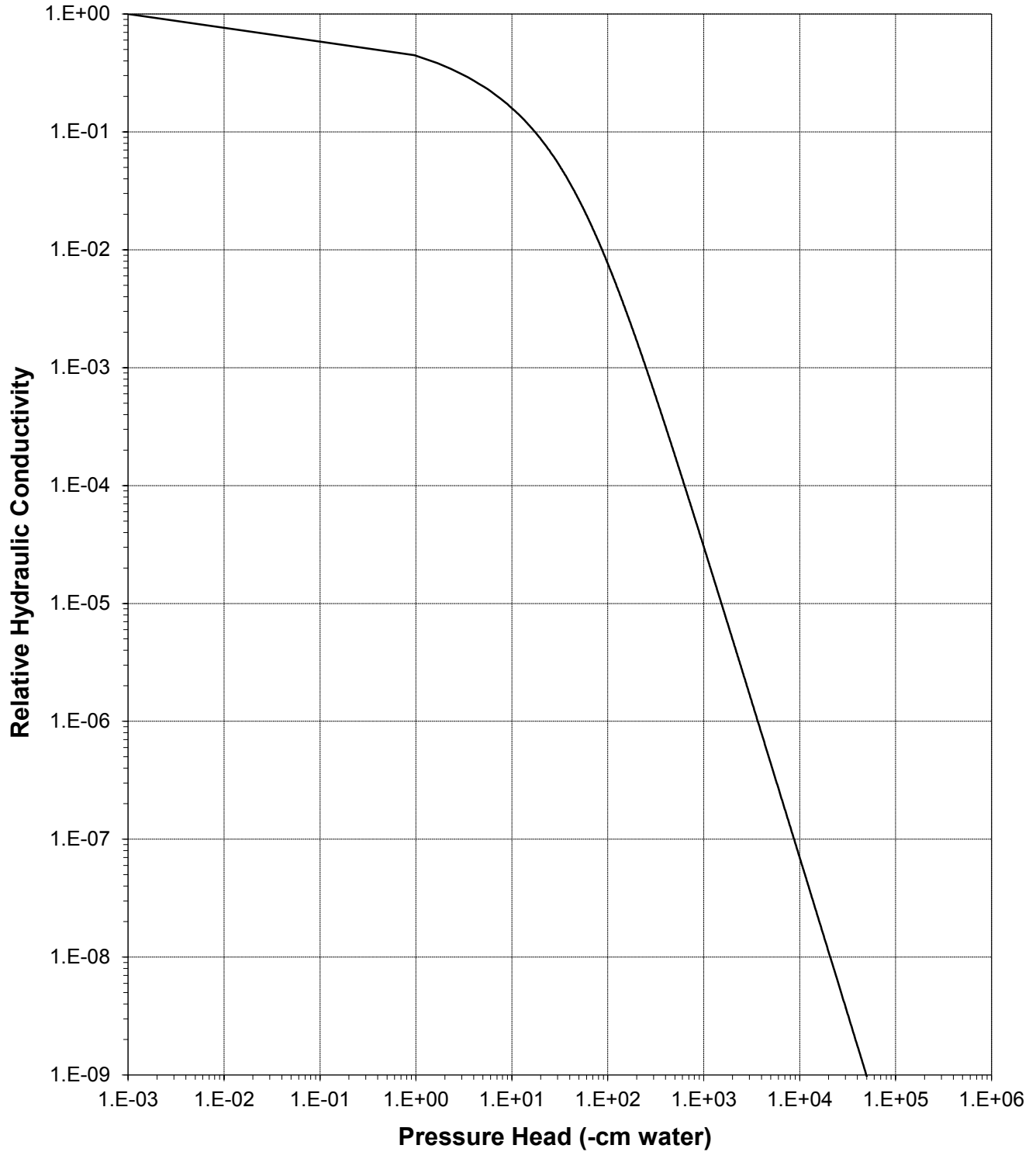






### Plot of Relative Hydraulic Conductivity vs Pressure Head

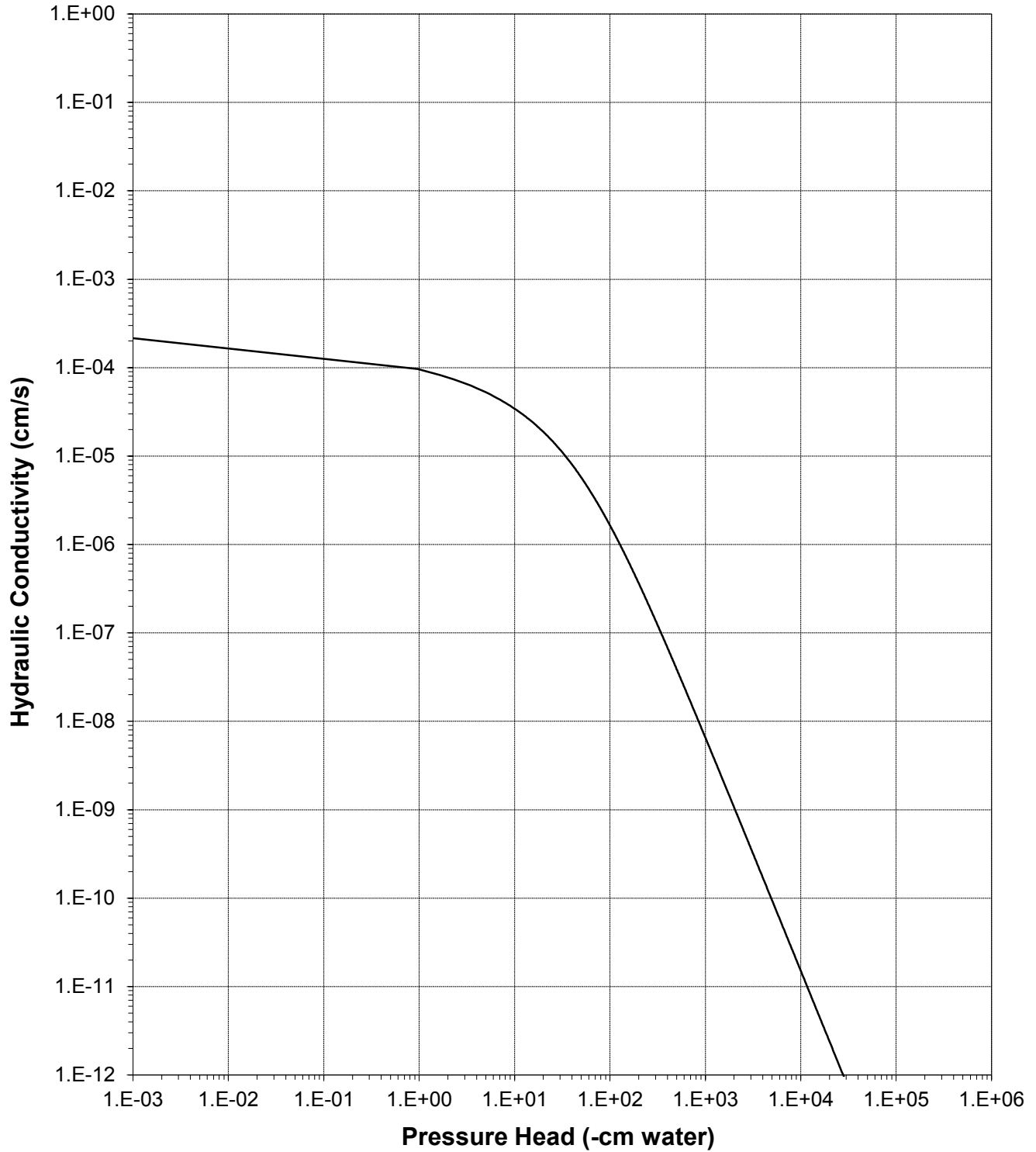
Sample Number: Coal Composite A (1.27 g/cc)





### Plot of Hydraulic Conductivity vs Pressure Head

Sample Number: Coal Composite A (1.27 g/cc)





**Moisture Retention Data**  
**Hanging Column / Pressure Plate**  
 (Soil-Water Characteristic Curve)

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Coal Composite B (1.27 g/cc)  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18

Dry wt. of sample (g): 2835.64  
 Tare wt., ring (g): 289.68  
 Tare wt., screen & clamp (g): 61.04  
 Initial sample volume (cm<sup>3</sup>): 2225.09  
 Initial dry bulk density (g/cm<sup>3</sup>): 1.27  
 Measured particle density (g/cm<sup>3</sup>): 1.96  
 Initial calculated total porosity (%): 34.92

	Date	Time	Weight* (g)	Matric Potential (-cm water)	Moisture Content † (% vol)
<i>Hanging column:</i>	13-Feb-18	10:00	3971.70	0	35.29
	21-Feb-18	13:05	3967.90	14.0	35.12
	28-Feb-18	15:00	3960.86	35.0	34.81
	7-Mar-18	12:45	3901.09	106.0	32.12
<i>Pressure plate:</i>	16-Mar-18	16:00	3641.42	337	20.45

Volume Adjusted Data<sup>1</sup>

	Matric Potential (-cm water)	Adjusted Volume (cm <sup>3</sup> )	% Volume Change <sup>2</sup> (%)	Adjusted Density (g/cm <sup>3</sup> )	Adjusted Calculated Porosity (%)
<i>Hanging column:</i>	0.0	---	---	---	---
	14.0	---	---	---	---
	35.0	---	---	---	---
	106.0	---	---	---	---
<i>Pressure plate:</i>	337	---	---	---	---

**Comments:**

<sup>1</sup> Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent each of the volume change measurements obtained after saturated hydraulic conductivity testing and throughout hanging column/pressure plate testing. "---" indicates no volume changes occurred.

<sup>2</sup> Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '---' denotes no volume change occurred.

\* Weight including tares

† Assumed density of water is 1.0 g/cm<sup>3</sup>

‡ Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

**Technician Notes:**

Laboratory analysis by: D. O'Dowd  
 Data entered by: M. Garcia  
 Checked by: J. Hines



**Moisture Retention Data**

**Dew Point Potentiometer / Relative Humidity Box**  
(Soil-Water Characteristic Curve)

Sample Number: Coal Composite B (1.27 g/cc)

Initial sample bulk density (g/cm<sup>3</sup>): 1.27

Fraction of test sample used (<2.00mm fraction) (%): 82.63

Dry weight\* of dew point potentiometer sample (g): 154.88

Tare weight, jar (g): 112.85

	Date	Time	Weight* (g)	Water Potential (-cm water)	Moisture Content <sup>†</sup> (% vol)
Dew point potentiometer:	15-Mar-18	15:05	162.21	1836	18.36
	12-Mar-18	10:15	160.88	6323	15.02
	1-Mar-18	10:00	159.40	34673	11.32
	26-Feb-18	10:50	158.35	361519	8.69

Volume Adjusted Data<sup>1</sup>

	Water Potential (-cm water)	Adjusted Volume (cm <sup>3</sup> )	% Volume Change <sup>2</sup> (%)	Adjusted Density (g/cm <sup>3</sup> )	Adjusted Calc. Porosity (%)
Dew point potentiometer:	1836	---	---	---	---
	6323	---	---	---	---
	34673	---	---	---	---
	361519	---	---	---	---

**Comments:**

<sup>1</sup> Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent the volume change measurements obtained after the last hanging column or pressure plate point. "---" indicates no volume changes occurred.

<sup>2</sup> Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '-' denotes no volume change occurred.

\* Weight including tares

<sup>†</sup> Adjusted for >2.00mm (#10 sieve) material not used in DPP/RH testing. Assumed moisture content of material >2.00mm is zero, and assumed density of water is 1.0 g/cm<sup>3</sup>.

<sup>‡</sup> Volume adjustments are applicable at this matric potential (see comment #1).

Laboratory analysis by: M. Garcia/A. Bland/ D. O'Dowd

Data entered by: M. Garcia

Checked by: J. Hines



**Moisture Retention Data**  
**Dew Point Potentiometer / Relative Humidity Box**  
 (Soil-Water Characteristic Curve)

*Sample Number:* Coal Composite B (1.27 g/cc)

*Initial sample bulk density (g/cm<sup>3</sup>):* 1.27

*Fraction of test sample used (<2.00mm fraction) (%):* 82.63

*Dry weight\* of relative humidity box sample (g):* 46.90

*Tare weight (g):* 38.03

	Date	Time	Weight* (g)	Water Potential (-cm water)	Moisture Content <sup>†</sup> (% vol)
<i>Relative humidity box:</i>	13-Feb-18	9:30	47.53	846993	7.46

Volume Adjusted Data<sup>1</sup>

	Water Potential (-cm water)	Adjusted Volume (cm <sup>3</sup> )	% Volume Change <sup>2</sup> (%)	Adjusted Density (g/cm <sup>3</sup> )	Adjusted Calc. Porosity (%)
<i>Relative humidity box:</i>	846993	---	---	---	---

**Comments:**

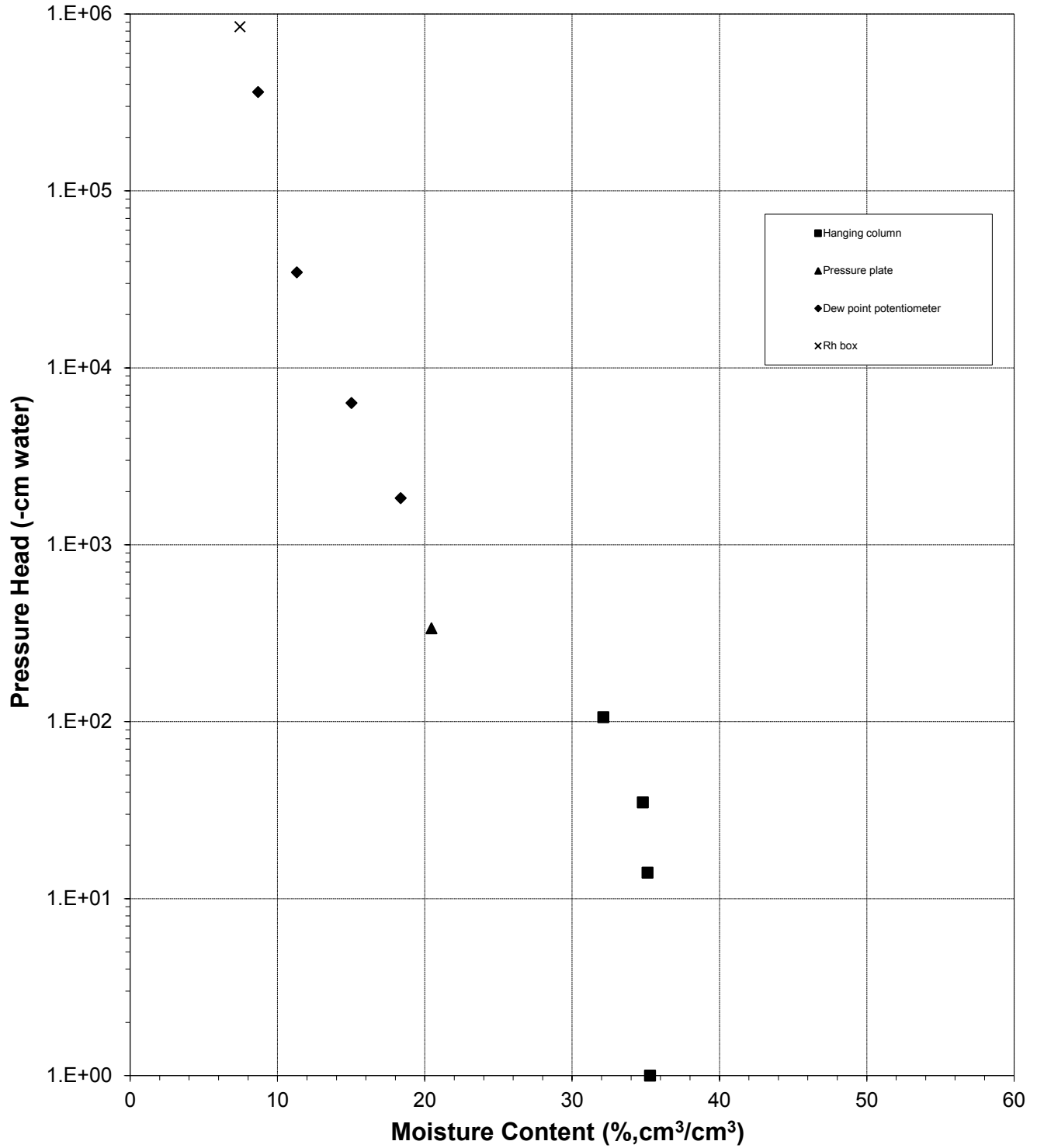
- <sup>1</sup> Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent the volume change measurements obtained after the last hanging column or pressure plate point. "----" indicates no volume changes occurred.
- <sup>2</sup> Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '---' denotes no volume change occurred.
- \* Weight including tares
- <sup>†</sup> Adjusted for >2.00mm (#10 sieve) material not used in DPP/RH testing. Assumed moisture content of material >2.00mm is zero, and assumed density of water is 1.0 g/cm<sup>3</sup>.
- <sup>‡</sup> Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

*Laboratory analysis by:* M. Garcia/A. Bland/ D. O'Dowd  
*Data entered by:* M. Garcia  
*Checked by:* J. Hines



### Water Retention Data Points

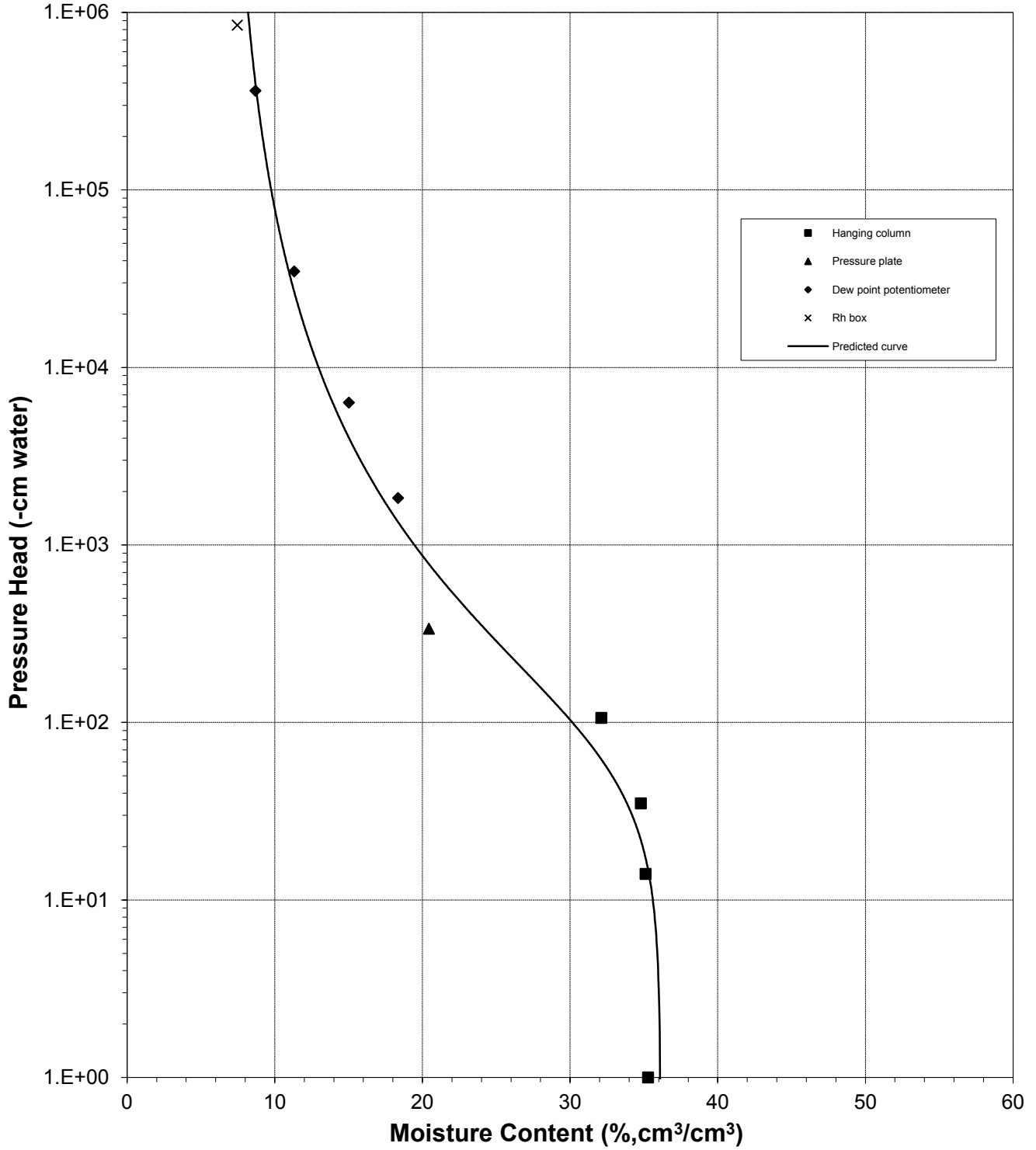
Sample Number: Coal Composite B (1.27 g/cc)





### Predicted Water Retention Curve and Data Points

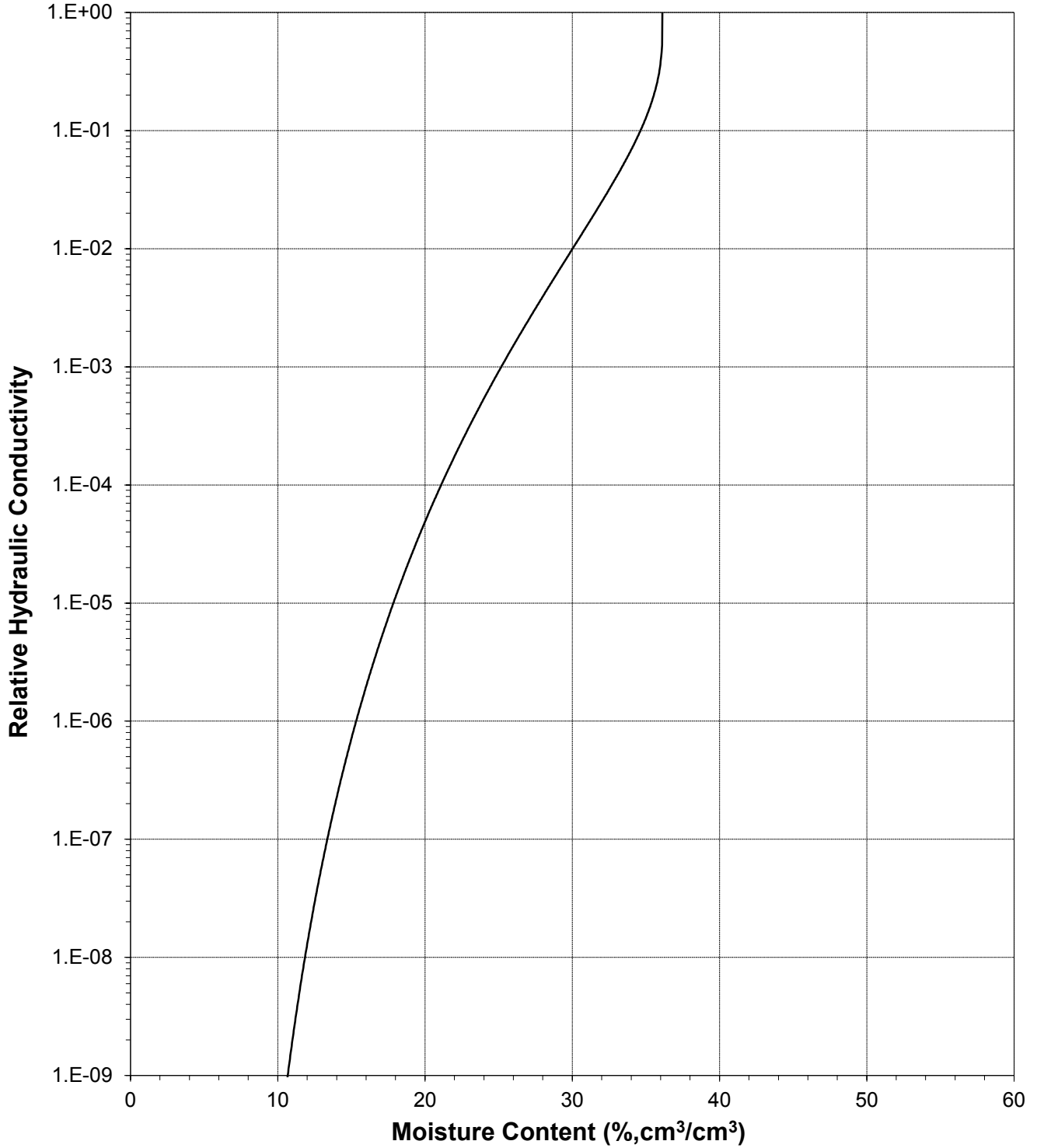
Sample Number: Coal Composite B (1.27 g/cc)





### Plot of Relative Hydraulic Conductivity vs Moisture Content

Sample Number: Coal Composite B (1.27 g/cc)

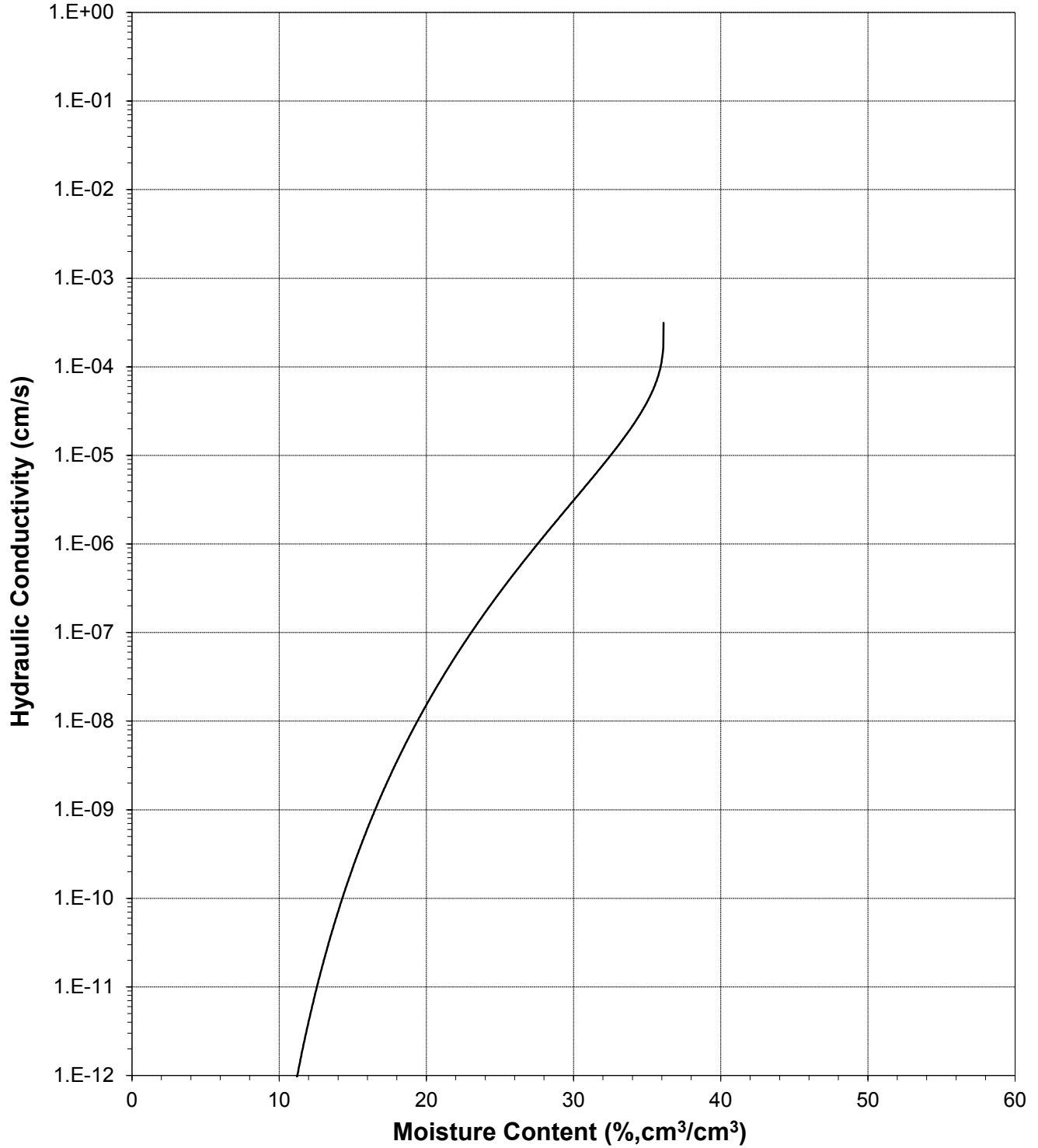






### Plot of Hydraulic Conductivity vs Moisture Content

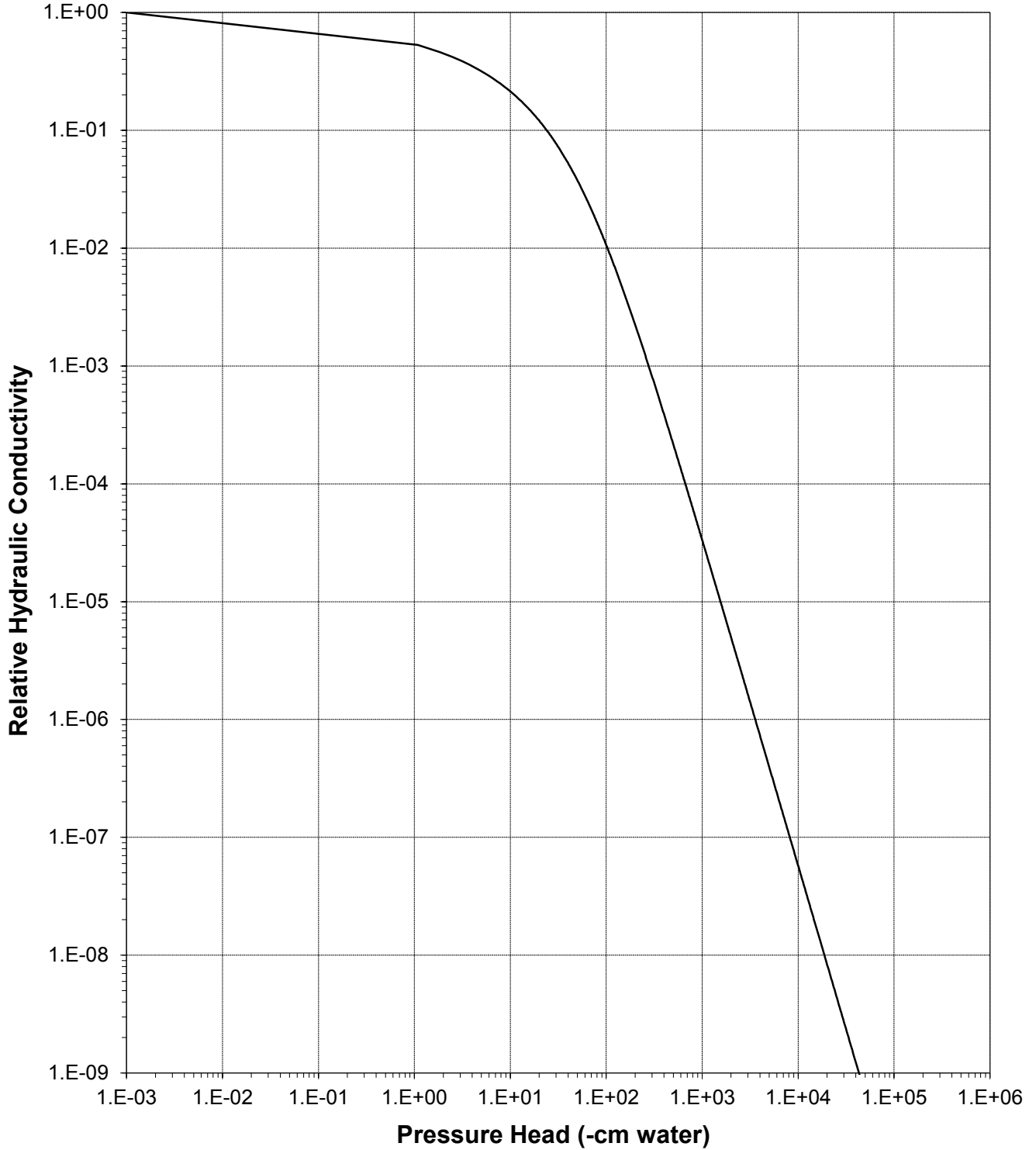
Sample Number: Coal Composite B (1.27 g/cc)





### Plot of Relative Hydraulic Conductivity vs Pressure Head

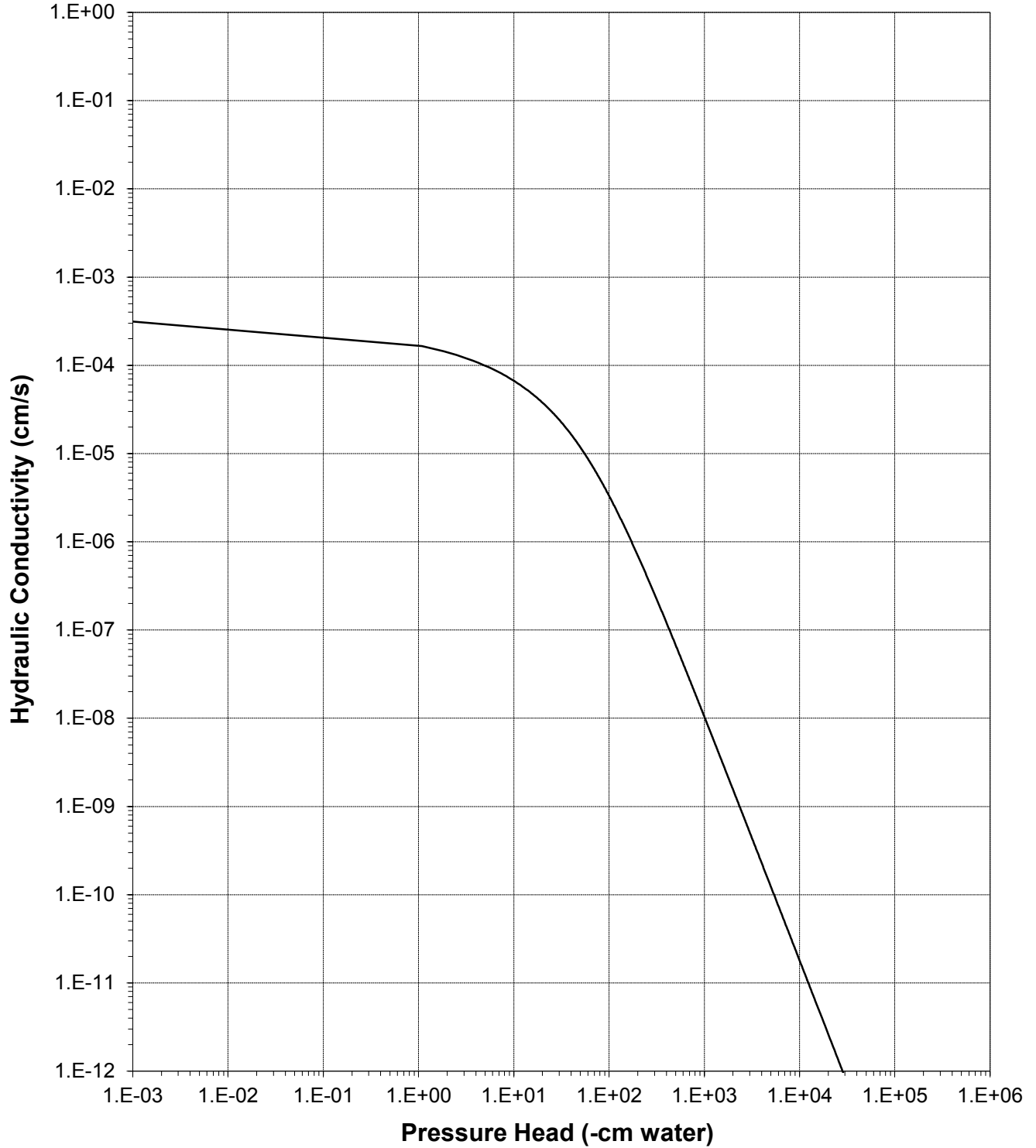
Sample Number: Coal Composite B (1.27 g/cc)





### Plot of Hydraulic Conductivity vs Pressure Head

Sample Number: Coal Composite B (1.27 g/cc)



## **Effective Porosity**



**Summary of Moisture Retention (Effective Porosity)**

Sample Number	Calculated Total Porosity (%, cm <sup>3</sup> /cm <sup>3</sup> )	-15 Bar Point Volumetric Water Content <sup>1</sup> (%, cm <sup>3</sup> /cm <sup>3</sup> )	Effective Porosity (%, cm <sup>3</sup> /cm <sup>3</sup> )	Oversize Corrected		
				Calculated Total Porosity (%, cm <sup>3</sup> /cm <sup>3</sup> )	-15 Bar Point Volumetric Water Content (%, cm <sup>3</sup> /cm <sup>3</sup> )	Effective Porosity (%, cm <sup>3</sup> /cm <sup>3</sup> )
Waste Rock Composite A (2.15 g/cc)	18.4	5.0	13.4	---	---	---
Waste Rock Composite B (2.13 g/cc)	19.2	4.7	14.6	---	---	---
Coal Composite A (1.27 g/cc)	34.7	13.5	21.2	---	---	---
Coal Composite B (1.27 g/cc)	34.9	12.8	22.1	---	---	---

1 = Volume adjusted, if applicable

--- = Oversize correction is unnecessary since coarse fraction < 5% of composite mass

NA = Not applicable

NR = Not requested



**Moisture Retention Data**

**Dew Point Potentiometer**

(Effective Porosity)

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Waste Rock Composite A (2.15 g/cc)  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18

Initial sample calculated total porosity (cm<sup>3</sup>): 18.39  
 Measured particle density (g/cm<sup>3</sup>): 2.63  
 Initial sample bulk density (g/cm<sup>3</sup>): 2.15  
 Fraction of bulk sample used (<2.00mm fraction) (%): 40.23

Dry weight\* of dew point potentiometer sample (g): 150.50  
 Tare weight, jar (g): 116.87

	Date	Time	Weight* (g)	Water Potential (-cm water)	Moisture Content † (% vol)
Dew point potentiometer:	7-Mar-18	10:50	152.43	15297	4.96

Volume Adjusted Data<sup>1</sup>

	Water Potential (-cm water)	Adjusted Volume (cm <sup>3</sup> )	% Volume Change <sup>2</sup> (%)	Adjusted Density (g/cm <sup>3</sup> )	Adjusted Calc. Porosity (%)
Dew point potentiometer:	15297	---	---	---	---

Moisture content at -15 bars (% cm<sup>3</sup>/cm<sup>3</sup>): 5.0

**Effective Porosity (% cm<sup>3</sup>/cm<sup>3</sup>): 13.4**

**Oversize Corrected Effective Porosity (% cm<sup>3</sup>/cm<sup>3</sup>): NA**

**Comments:**

<sup>1</sup> Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent the volume change measurements obtained after the pressure plate point. "---" indicates no volume changes occurred.

<sup>2</sup> Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '-' denotes no volume change occurred.

\* Weight including tares

† Adjusted for >2.00mm (#10 sieve) material not used in DPP testing. Assumed moisture content of material >2.00mm is zero, and assumed density of water is 1.0 g/cm<sup>3</sup>.

‡ Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

NA Not Applicable

Laboratory analysis by: M. Garcia  
 Data entered by: C. Krous  
 Checked by: J. Hines



## Moisture Retention Data

### Dew Point Potentiometer

(Effective Porosity)

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Waste Rock Composite B (2.13 g/cc)  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18

Initial sample calculated total porosity (cm<sup>3</sup>): 19.24  
 Measured particle density (g/cm<sup>3</sup>): 2.63  
 Initial sample bulk density (g/cm<sup>3</sup>): 2.13  
 Fraction of bulk sample used (<2.00mm fraction) (%): 37.12

Dry weight\* of dew point potentiometer sample (g): 151.86  
 Tare weight, jar (g): 113.35

	Date	Time	Weight* (g)	Water Potential (-cm water)	Moisture Content <sup>†</sup> (% vol)
Dew point potentiometer:	7-Mar-18	11:35	154.19	14277	4.78
	6-Mar-18	16:10	154.05	17337	4.48

#### Volume Adjusted Data<sup>1</sup>

	Water Potential (-cm water)	Adjusted Volume (cm <sup>3</sup> )	% Volume Change <sup>2</sup> (%)	Adjusted Density (g/cm <sup>3</sup> )	Adjusted Calc. Porosity (%)
Dew point potentiometer:	14277	---	---	---	---
	17337	---	---	---	---

Moisture content at -15 bars (% cm<sup>3</sup>/cm<sup>3</sup>): 4.7

**Effective Porosity (% cm<sup>3</sup>/cm<sup>3</sup>): 14.6**

**Oversize Corrected Effective Porosity (% cm<sup>3</sup>/cm<sup>3</sup>): NA**

#### Comments:

<sup>1</sup> Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent the volume change measurements obtained after the pressure plate point. "---" indicates no volume changes occurred.

<sup>2</sup> Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '-' denotes no volume change occurred.

\* Weight including tares

<sup>†</sup> Adjusted for >2.00mm (#10 sieve) material not used in DPP testing. Assumed moisture content of material >2.00mm is zero, and assumed density of water is 1.0 g/cm<sup>3</sup>.

<sup>‡</sup> Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

NA Not Applicable

Laboratory analysis by: M. Garcia

Data entered by: C. Krous

Checked by: J. Hines



## Moisture Retention Data

### Dew Point Potentiometer

(Effective Porosity)

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Coal Composite A (1.27 g/cc)  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18

Initial sample calculated total porosity (cm<sup>3</sup>): 34.74  
 Measured particle density (g/cm<sup>3</sup>): 1.94  
 Initial sample bulk density (g/cm<sup>3</sup>): 1.27  
 Fraction of bulk sample used (<2.00mm fraction) (%): 82.75

Dry weight\* of dew point potentiometer sample (g): 140.17  
 Tare weight, jar (g): 115.29

	Date	Time	Weight* (g)	Water Potential (-cm water)	Moisture Content <sup>†</sup> (% vol)
Dew point potentiometer:	9-Mar-18	10:25	143.42	13359	13.69
	7-Mar-18	11:50	143.31	18152	13.22

#### Volume Adjusted Data<sup>1</sup>

	Water Potential (-cm water)	Adjusted Volume (cm <sup>3</sup> )	% Volume Change <sup>2</sup> (%)	Adjusted Density (g/cm <sup>3</sup> )	Adjusted Calc. Porosity (%)
Dew point potentiometer:	13359	---	---	---	---
	18152	---	---	---	---

Moisture content at -15 bars (% cm<sup>3</sup>/cm<sup>3</sup>): 13.5

**Effective Porosity (% cm<sup>3</sup>/cm<sup>3</sup>): 21.2**

**Oversize Corrected Effective Porosity (% cm<sup>3</sup>/cm<sup>3</sup>): NA**

#### Comments:

<sup>1</sup> Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent the volume change measurements obtained after the pressure plate point. "---" indicates no volume changes occurred.

<sup>2</sup> Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '-' denotes no volume change occurred.

\* Weight including tares

<sup>†</sup> Adjusted for >2.00mm (#10 sieve) material not used in DPP testing. Assumed moisture content of material >2.00mm is zero, and assumed density of water is 1.0 g/cm<sup>3</sup>.

<sup>‡</sup> Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

NA Not Applicable

Laboratory analysis by: M. Garcia

Data entered by: C. Krous

Checked by: J. Hines





## Moisture Retention Data

### Dew Point Potentiometer

(Effective Porosity)

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Coal Composite B (1.27 g/cc)  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18

Initial sample calculated total porosity (cm<sup>3</sup>): 34.92  
 Measured particle density (g/cm<sup>3</sup>): 1.96  
 Initial sample bulk density (g/cm<sup>3</sup>): 1.27  
 Fraction of bulk sample used (<2.00mm fraction) (%): 82.63

Dry weight\* of dew point potentiometer sample (g): 154.88  
 Tare weight, jar (g): 112.85

	Date	Time	Weight* (g)	Water Potential (-cm water)	Moisture Content <sup>†</sup> (% vol)
Dew point potentiometer:	7-Mar-18	10:40	160.02	14073	12.88
	6-Mar-18	13:15	159.90	18356	12.57

#### Volume Adjusted Data<sup>1</sup>

	Water Potential (-cm water)	Adjusted Volume (cm <sup>3</sup> )	% Volume Change <sup>2</sup> (%)	Adjusted Density (g/cm <sup>3</sup> )	Adjusted Calc. Porosity (%)
Dew point potentiometer:	14073	---	---	---	---
	18356	---	---	---	---

Moisture content at -15 bars (% cm<sup>3</sup>/cm<sup>3</sup>): 12.8

**Effective Porosity (% cm<sup>3</sup>/cm<sup>3</sup>): 22.1**

**Oversize Corrected Effective Porosity (% cm<sup>3</sup>/cm<sup>3</sup>): NA**

#### Comments:

<sup>1</sup> Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent the volume change measurements obtained after the pressure plate point. "---" indicates no volume changes occurred.

<sup>2</sup> Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '-' denotes no volume change occurred.

\* Weight including tares

<sup>†</sup> Adjusted for >2.00mm (#10 sieve) material not used in DPP testing. Assumed moisture content of material >2.00mm is zero, and assumed density of water is 1.0 g/cm<sup>3</sup>.

<sup>‡</sup> Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

NA Not Applicable

Laboratory analysis by: M. Garcia

Data entered by: C. Krous

Checked by: J. Hines

# **Water Holding Capacity**



**Summary of Moisture Retention (1/3, 15 Bar Points and Water Holding Capacity\*)**

Sample Number	1/3 Bar Point Volumetric (%, cm <sup>3</sup> /cm <sup>3</sup> )	15 Bar Point Volumetric (%, cm <sup>3</sup> /cm <sup>3</sup> )	Water Holding Capacity (%, cm <sup>3</sup> /cm <sup>3</sup> )	Oversize Corrected		
				1/3 Bar Point Volumetric (%, cm <sup>3</sup> /cm <sup>3</sup> )	15 Bar Point Volumetric (%, cm <sup>3</sup> /cm <sup>3</sup> )	Water Holding Capacity (%, cm <sup>3</sup> /cm <sup>3</sup> )
Waste Rock Composite A (2.15 g/cc)	15.5	5.0	10.6	---	---	---
Waste Rock Composite B (2.13 g/cc)	15.7	4.7	11.1	---	---	---
Coal Composite A (1.27 g/cc)	20.7	13.5	7.2	---	---	---
Coal Composite B (1.27 g/cc)	20.5	12.8	7.7	---	---	---

\*Water Holding Capacity (WHC) is defined here as the difference in the moisture content of the sample at -1/3 bar of water potential (commonly referred to as 'Field Capacity') and the moisture content of the sample at -15 bars of water potential (commonly referred to as 'Wilting Point').

--- = Oversize correction is unnecessary since coarse fraction < 5% of composite mass

NA = Not applicable

NR = Not requested



**Moisture Retention Data**

**Pressure Plate**

(-1/3 Bar)

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Waste Rock Composite A (2.15 g/cc)  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18

Dry wt. of sample (g): 4790.81  
 Tare wt., ring (g): 286.77  
 Tare wt., screen & clamp (g): 57.98  
 Initial sample volume (cm<sup>3</sup>): 2232.68  
 Initial dry bulk density (g/cm<sup>3</sup>): 2.15  
 Measured particle density (g/cm<sup>3</sup>): 2.63  
 Initial calculated total porosity (%): 18.39

	Date	Time	Weight* (g)	Matric Potential (-cm water)	Moisture Content † (% vol)
Pressure plate:	16-Mar-18	15:50	5482.63	337	15.55

Volume Adjusted Data<sup>1</sup>

	Matric Potential (-cm water)	Adjusted Volume (cm <sup>3</sup> )	% Volume Change <sup>2</sup> (%)	Adjusted Density (g/cm <sup>3</sup> )	Adjusted Calculated Porosity (%)
Pressure plate:	337	---	---	---	---

**Moisture content at -1/3 bar (% cm<sup>3</sup>/cm<sup>3</sup>): 15.5**

**Comments:**

- <sup>1</sup> Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent volume change measurements obtained after the pressure plate testing. "---" indicates no volume changes occurred.
- <sup>2</sup> Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '---' denotes no volume change occurred.
- \* Weight including tares
- † Assumed density of water is 1.0 g/cm<sup>3</sup>
- ‡ Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

**Technician Notes:**

Laboratory analysis by: D. O'Dowd  
 Data entered by: C. Krous  
 Checked by: J. Hines



**Moisture Retention Data**

**Dew Point Potentiometer**

(-15 Bar)

Sample Number: Waste Rock Composite A (2.15 g/cc)

Initial sample bulk density (g/cm<sup>3</sup>): 2.15

Fraction of bulk sample used (<2.00mm fraction) (%): 40.23

Dry weight\* of dew point potentiometer sample (g): 150.50

Tare weight, jar (g): 116.87

	Date	Time	Weight* (g)	Water Potential (-cm water)	Moisture Content <sup>†</sup> (% vol)
Dew point potentiometer:	7-Mar-18	10:50	152.43	15297	4.96

Volume Adjusted Data<sup>1</sup>

	Water Potential (-cm water)	Adjusted Volume (cm <sup>3</sup> )	% Volume Change <sup>2</sup> (%)	Adjusted Density (g/cm <sup>3</sup> )	Adjusted Calc. Porosity (%)
Dew point potentiometer:	15297	---	---	---	---

**Moisture content at -15 bar (% cm<sup>3</sup>/cm<sup>3</sup>): 5.0**

**Oversize Corrected Moisture content at -15 bar (% cm<sup>3</sup>/cm<sup>3</sup>): NA**

*Comments:*

<sup>1</sup> Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent the volume change measurements obtained after the pressure plate point. "---" indicates no volume changes occurred.

<sup>2</sup> Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '-' denotes no volume change occurred.

\* Weight including tares

<sup>†</sup> Adjusted for >2.00mm (#10 sieve) material not used in DPP testing. Assumed moisture content of material >2.00mm is zero, and assumed density of water is 1.0 g/cm<sup>3</sup>.

<sup>‡</sup> Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

Laboratory analysis by: M. Garcia

Data entered by: C. Krous

Checked by: J. Hines



**Moisture Retention Data**

**Pressure Plate**

(-1/3 Bar)

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Waste Rock Composite B (2.13 g/cc)  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18

Dry wt. of sample (g): 4752.56  
 Tare wt., ring (g): 289.72  
 Tare wt., screen & clamp (g): 62.77  
 Initial sample volume (cm<sup>3</sup>): 2234.97  
 Initial dry bulk density (g/cm<sup>3</sup>): 2.13  
 Measured particle density (g/cm<sup>3</sup>): 2.63  
 Initial calculated total porosity (%): 19.24

	Date	Time	Weight* (g)	Matric Potential (-cm water)	Moisture Content † (% vol)
Pressure plate:	16-Mar-18	16:00	5456.63	337	15.73

Volume Adjusted Data<sup>1</sup>

	Matric Potential (-cm water)	Adjusted Volume (cm <sup>3</sup> )	% Volume Change <sup>2</sup> (%)	Adjusted Density (g/cm <sup>3</sup> )	Adjusted Calculated Porosity (%)
Pressure plate:	337	---	---	---	---

**Moisture content at -1/3 bar (% cm<sup>3</sup>/cm<sup>3</sup>): 15.7**

**Comments:**

- <sup>1</sup> Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent volume change measurements obtained after the pressure plate testing. "---" indicates no volume changes occurred.
- <sup>2</sup> Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '---' denotes no volume change occurred.
- \* Weight including tares
- † Assumed density of water is 1.0 g/cm<sup>3</sup>
- ‡ Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

**Technician Notes:**

Laboratory analysis by: D. O'Dowd  
 Data entered by: C. Krous  
 Checked by: J. Hines



## Moisture Retention Data

### Dew Point Potentiometer

(-15 Bar)

Sample Number: Waste Rock Composite B (2.13 g/cc)

Initial sample bulk density (g/cm<sup>3</sup>): 2.13

Fraction of bulk sample used (<2.00mm fraction) (%): 37.12

Dry weight\* of dew point potentiometer sample (g): 151.86

Tare weight, jar (g): 113.35

	Date	Time	Weight* (g)	Water Potential (-cm water)	Moisture Content <sup>†</sup> (% vol)
Dew point potentiometer:	7-Mar-18	11:35	154.19	14277	4.78
	6-Mar-18	16:10	154.05	17337	4.48

#### Volume Adjusted Data<sup>1</sup>

	Water Potential (-cm water)	Adjusted Volume (cm <sup>3</sup> )	% Volume Change <sup>2</sup> (%)	Adjusted Density (g/cm <sup>3</sup> )	Adjusted Calc. Porosity (%)
Dew point potentiometer:	14277	---	---	---	---
	17337	---	---	---	---

**Moisture content at -15 bar (% cm<sup>3</sup>/cm<sup>3</sup>): 4.7**

**Upsize Corrected Moisture content at -15 bar (% cm<sup>3</sup>/cm<sup>3</sup>): NA**

#### Comments:

<sup>1</sup> Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent the volume change measurements obtained after the pressure plate point. "---" indicates no volume changes occurred.

<sup>2</sup> Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '-' denotes no volume change occurred.

\* Weight including tares

<sup>†</sup> Adjusted for >2.00mm (#10 sieve) material not used in DPP testing. Assumed moisture content of material >2.00mm is zero, and assumed density of water is 1.0 g/cm<sup>3</sup>.

<sup>‡</sup> Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

Laboratory analysis by: M. Garcia

Data entered by: C. Krous

Checked by: J. Hines



**Moisture Retention Data**

**Pressure Plate**

(-1/3 Bar)

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Coal Composite A (1.27 g/cc)  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18

Dry wt. of sample (g): 2825.01  
 Tare wt., ring (g): 289.64  
 Tare wt., screen & clamp (g): 57.07  
 Initial sample volume (cm<sup>3</sup>): 2232.97  
 Initial dry bulk density (g/cm<sup>3</sup>): 1.27  
 Measured particle density (g/cm<sup>3</sup>): 1.94  
 Initial calculated total porosity (%): 34.74

	Date	Time	Weight* (g)	Matric Potential (-cm water)	Moisture Content † (% vol)
Pressure plate:	16-Mar-18	16:00	3633.99	337	20.70

Volume Adjusted Data<sup>1</sup>

	Matric Potential (-cm water)	Adjusted Volume (cm <sup>3</sup> )	% Volume Change <sup>2</sup> (%)	Adjusted Density (g/cm <sup>3</sup> )	Adjusted Calculated Porosity (%)
Pressure plate:	337	---	---	---	---

**Moisture content at -1/3 bar (% cm<sup>3</sup>/cm<sup>3</sup>): 20.7**

**Comments:**

- <sup>1</sup> Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent volume change measurements obtained after the pressure plate testing. "---" indicates no volume changes occurred.
- <sup>2</sup> Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '---' denotes no volume change occurred.
- \* Weight including tares
- † Assumed density of water is 1.0 g/cm<sup>3</sup>
- ‡ Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

**Technician Notes:**

Laboratory analysis by: D. O'Dowd  
 Data entered by: C. Krous  
 Checked by: J. Hines





### Moisture Retention Data

#### Dew Point Potentiometer

(-15 Bar)

Sample Number: Coal Composite A (1.27 g/cc)

Initial sample bulk density (g/cm<sup>3</sup>): 1.27

Fraction of bulk sample used (<2.00mm fraction) (%): 82.75

Dry weight\* of dew point potentiometer sample (g): 140.17

Tare weight, jar (g): 115.29

	Date	Time	Weight* (g)	Water Potential (-cm water)	Moisture Content <sup>†</sup> (% vol)
Dew point potentiometer:	9-Mar-18	10:25	143.42	13359	13.69
	7-Mar-18	11:50	143.31	18152	13.22

#### Volume Adjusted Data<sup>1</sup>

	Water Potential (-cm water)	Adjusted Volume (cm <sup>3</sup> )	% Volume Change <sup>2</sup> (%)	Adjusted Density (g/cm <sup>3</sup> )	Adjusted Calc. Porosity (%)
Dew point potentiometer:	13359	---	---	---	---
	18152	---	---	---	---

**Moisture content at -15 bar (% cm<sup>3</sup>/cm<sup>3</sup>): 13.5**

**Upsize Corrected Moisture content at -15 bar (% cm<sup>3</sup>/cm<sup>3</sup>): NA**

#### Comments:

<sup>1</sup> Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent the volume change measurements obtained after the pressure plate point. "---" indicates no volume changes occurred.

<sup>2</sup> Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '-' denotes no volume change occurred.

\* Weight including tares

<sup>†</sup> Adjusted for >2.00mm (#10 sieve) material not used in DPP testing. Assumed moisture content of material >2.00mm is zero, and assumed density of water is 1.0 g/cm<sup>3</sup>.

<sup>‡</sup> Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

Laboratory analysis by: M. Garcia

Data entered by: C. Krous

Checked by: J. Hines



**Moisture Retention Data**

**Pressure Plate**

(-1/3 Bar)

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Coal Composite B (1.27 g/cc)  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18

Dry wt. of sample (g): 2835.64  
 Tare wt., ring (g): 289.68  
 Tare wt., screen & clamp (g): 61.04  
 Initial sample volume (cm<sup>3</sup>): 2225.09  
 Initial dry bulk density (g/cm<sup>3</sup>): 1.27  
 Measured particle density (g/cm<sup>3</sup>): 1.96  
 Initial calculated total porosity (%): 34.92

	Date	Time	Weight* (g)	Matric Potential (-cm water)	Moisture Content † (% vol)
Pressure plate:	16-Mar-18	16:00	3641.42	337	20.45

Volume Adjusted Data<sup>1</sup>

	Matric Potential (-cm water)	Adjusted Volume (cm <sup>3</sup> )	% Volume Change <sup>2</sup> (%)	Adjusted Density (g/cm <sup>3</sup> )	Adjusted Calculated Porosity (%)
Pressure plate:	337	---	---	---	---

**Moisture content at -1/3 bar (% cm<sup>3</sup>/cm<sup>3</sup>): 20.5**

**Comments:**

- <sup>1</sup> Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent volume change measurements obtained after the pressure plate testing. "---" indicates no volume changes occurred.
- <sup>2</sup> Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '---' denotes no volume change occurred.
- \* Weight including tares
- † Assumed density of water is 1.0 g/cm<sup>3</sup>
- ‡ Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

**Technician Notes:**

Laboratory analysis by: D. O'Dowd  
 Data entered by: C. Krous  
 Checked by: J. Hines



### Moisture Retention Data

#### Dew Point Potentiometer

(-15 Bar)

Sample Number: Coal Composite B (1.27 g/cc)

Initial sample bulk density (g/cm<sup>3</sup>): 1.27

Fraction of bulk sample used (<2.00mm fraction) (%): 82.63

Dry weight\* of dew point potentiometer sample (g): 154.88

Tare weight, jar (g): 112.85

	Date	Time	Weight* (g)	Water Potential (-cm water)	Moisture Content <sup>†</sup> (% vol)
Dew point potentiometer:	7-Mar-18	10:40	160.02	14073	12.88
	6-Mar-18	13:15	159.90	18356	12.57

#### Volume Adjusted Data<sup>1</sup>

	Water Potential (-cm water)	Adjusted Volume (cm <sup>3</sup> )	% Volume Change <sup>2</sup> (%)	Adjusted Density (g/cm <sup>3</sup> )	Adjusted Calc. Porosity (%)
Dew point potentiometer:	14073	---	---	---	---
	18356	---	---	---	---

**Moisture content at -15 bar (% cm<sup>3</sup>/cm<sup>3</sup>): 12.8**

**Upsize Corrected Moisture content at -15 bar (% cm<sup>3</sup>/cm<sup>3</sup>): NA**

#### Comments:

<sup>1</sup> Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent the volume change measurements obtained after the pressure plate point. "---" indicates no volume changes occurred.

<sup>2</sup> Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '-' denotes no volume change occurred.

\* Weight including tares

<sup>†</sup> Adjusted for >2.00mm (#10 sieve) material not used in DPP testing. Assumed moisture content of material >2.00mm is zero, and assumed density of water is 1.0 g/cm<sup>3</sup>.

<sup>‡</sup> Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

Laboratory analysis by: M. Garcia

Data entered by: C. Krous

Checked by: J. Hines

# Particle Size Analysis



### Summary of Particle Size Characteristics

Sample Number	d <sub>10</sub> (mm)	d <sub>50</sub> (mm)	d <sub>60</sub> (mm)	C <sub>u</sub>	C <sub>c</sub>	Method	ASTM Classification	USDA Classification
Waste Rock Composite A	0.038	3.1	4.7	124	6.8	WS/H	Poorly-graded sand with clay and gravel (SP-SC)g	Sandy Loam †
Waste Rock Composite B	0.062	3.8	5.6	90	4.9	WS/H	Poorly-graded gravel with clay and sand (GP-GC)s	Sandy Loam †
Coal Composite A	0.026	0.51	0.92	35	0.32	WS/H	Silty sand (SM)	Loamy Sand †
Coal Composite B	0.024	0.47	0.90	38	0.34	WS/H	Silty sand (SM)	Loamy Sand †

d<sub>50</sub> = Median particle diameter

Est = Reported values for d<sub>10</sub>, C<sub>u</sub>, C<sub>c</sub>, and soil classification are estimates, since extrapolation was required to obtain the d<sub>10</sub> diameter

$$C_u = \frac{d_{60}}{d_{10}}$$

$$C_c = \frac{(d_{30})^2}{(d_{10})(d_{60})}$$

DS = Dry sieve

H = Hydrometer

WS = Wet sieve

† Greater than 10% of sample is coarse material



**Percent Gravel, Sand, Silt and Clay\***

Sample Number	% Gravel (>4.75mm)	% Sand (<4.75mm, >0.075mm)	% Silt (<0.075mm, >0.002mm)	% Clay (<0.002mm)
Waste Rock Composite A	39.7	48.4	9.5	2.4
Waste Rock Composite B	45.5	43.7	8.6	2.3
Coal Composite A	3.5	68.8	27.6	0.1
Coal Composite B	4.9	67.2	27.8	0.1

\*USCS classification does not classify clay fraction based on particle size. USDA definition of clay (<0.002mm) used in this table.



**Particle Size Analysis  
Wet Sieve Data (#10 Split)**

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Waste Rock Composite A  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18  
 Test Date: 22-Feb-18

Initial Dry Weight of Sample (g): 7778.90  
 Weight Passing #10 (g): 3099.66  
 Weight Retained #10 (g): 4679.24  
 Weight of Hydrometer Sample (g): 51.62  
 Calculated Weight of Sieve Sample (g): 129.55  
 Shape: Angular  
 Hardness: Weathered and friable

Test Fraction	Sieve Number	Diameter (mm)	Wt. Retained	Cum Wt. Retained	Wt. Passing	% Passing
+10	3"	75	0.00	0.00	7778.90	100.00
	2"	50	0.00	0.00	7778.90	100.00
	1.5"	38.1	0.00	0.00	7778.90	100.00
	1"	25	0.00	0.00	7778.90	100.00
	3/4"	19.0	74.47	74.47	7704.43	99.04
	3/8"	9.5	1110.34	1184.81	6594.09	84.77
	4	4.75	1901.20	3086.00	4692.90	60.33
	10	2.00	1593.24	4679.24	3099.66	39.85
-10	(Based on calculated sieve wt.)					
	20	0.85	18.78	96.71	32.84	25.35
	40	0.425	7.55	104.26	25.29	19.52
	60	0.250	4.26	108.52	21.03	16.23
	140	0.106	4.35	112.87	16.68	12.88
	200	0.075	1.23	114.10	15.45	11.93
	dry pan			0.13	114.23	15.32
wet pan				15.32	0.00	

d<sub>10</sub> (mm): 0.038                      d<sub>50</sub> (mm): 3.1  
 d<sub>16</sub> (mm): 0.24                        d<sub>60</sub> (mm): 4.7  
 d<sub>30</sub> (mm): 1.1                         d<sub>84</sub> (mm): 9.3

Median Particle Diameter--d<sub>50</sub> (mm): 3.1  
 Uniformity Coefficient, Cu--[d<sub>60</sub>/d<sub>10</sub>] (mm): 124  
 Coefficient of Curvature, Cc--[d<sub>30</sub><sup>2</sup>/(d<sub>10</sub>\*d<sub>60</sub>)] (mm): 6.8  
 Mean Particle Diameter--[d<sub>16</sub>+d<sub>50</sub>+d<sub>84</sub>]/3] (mm): 4.2

Classification of fines: CL-ML

ASTM Soil Classification: Poorly-graded sand with clay and gravel (SP-SC)g

USDA Soil Classification: Sandy Loam †

† Greater than 10% of sample is coarse material

Laboratory analysis by: Z. Calhoun/D. O'Dowd  
 Data entered by: C. Krous  
 Checked by: J. Hines



**Particle Size Analysis  
Hydrometer Data**

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Waste Rock Composite A  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18  
 Test Date: 13-Feb-18  
 Start Time: 9:12

Type of Water Used: DISTILLED  
 Reaction with H<sub>2</sub>O<sub>2</sub>: NA  
 Dispersant\*: (NaPO<sub>3</sub>)<sub>6</sub>  
 Measured particle density: 2.60  
 Initial Wt. (g): 51.62  
 Total Sample Wt. (g): 7778.90  
 Wt. Passing #10 (g): 3099.66

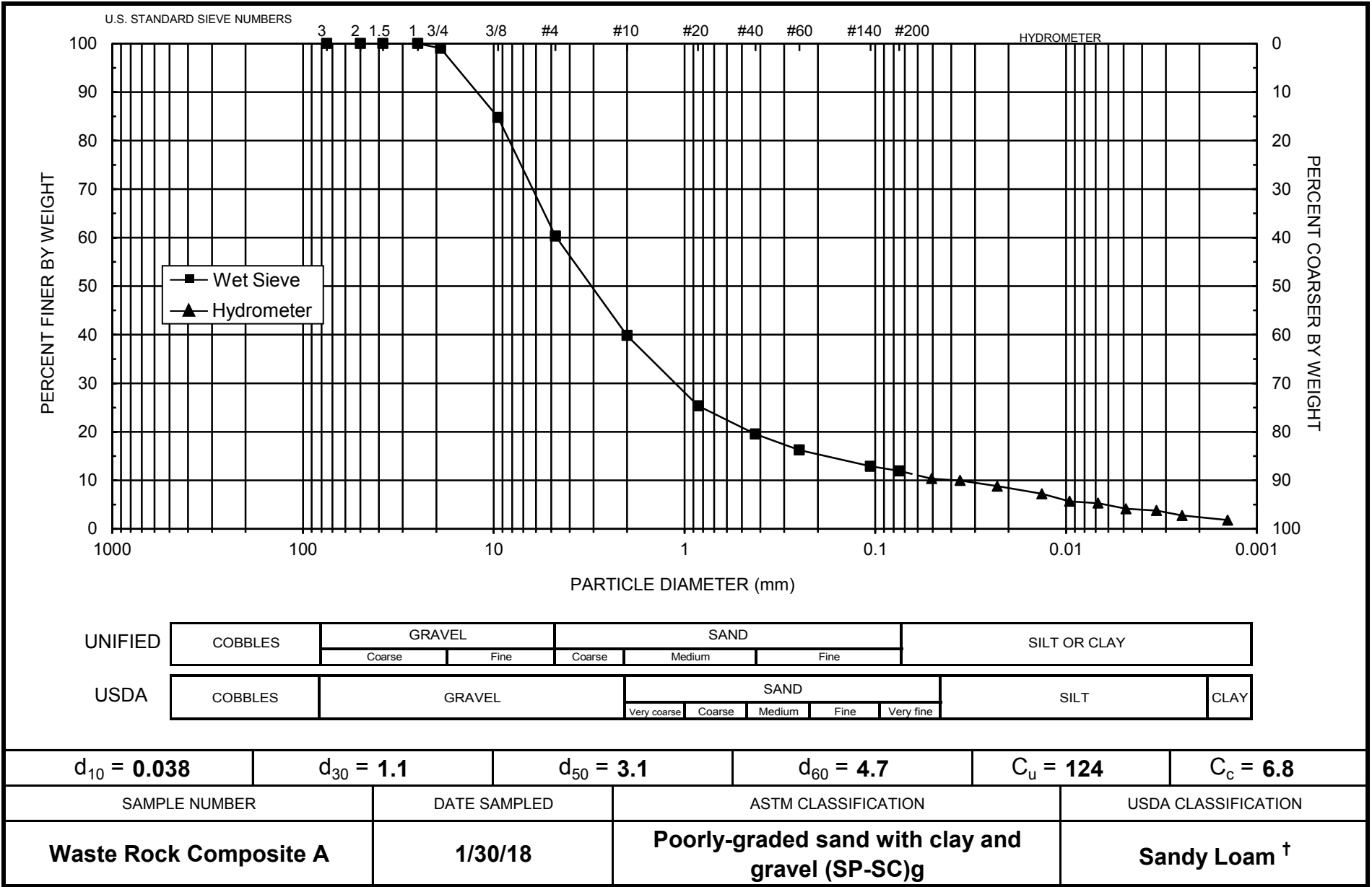
Date	Time (min)	Temp (°C)	R (g/L)	R <sub>L</sub> (g/L)	R <sub>corr</sub> (g/L)	L (cm)	D (mm)	P (%)	% Finer
13-Feb-18	1	18.9	20.0	6.7	13.3	13.0	0.05063	25.9	10.3
	2	18.9	19.5	6.7	12.8	13.1	0.03592	25.0	9.9
	5	18.9	18.0	6.7	11.3	13.3	0.02293	22.0	8.8
	15	18.9	16.0	6.7	9.3	13.7	0.01340	18.1	7.2
	30	18.9	14.0	6.7	7.3	14.0	0.00959	14.2	5.7
	60	19.0	13.5	6.7	6.8	14.1	0.00679	13.3	5.3
	120	19.0	12.0	6.7	5.3	14.3	0.00484	10.3	4.1
	250	19.3	11.5	6.7	4.8	14.4	0.00335	9.5	3.8
	460	20.1	10.0	6.5	3.5	14.7	0.00247	6.9	2.7
14-Feb-18	1443	19.0	9.0	6.7	2.3	14.8	0.00142	4.5	1.8

Comments:

\* Dispersion device: mechanically operated stirring device

Laboratory analysis by: M. Garcia  
 Data entered by: M. Garcia  
 Checked by: J. Hines





† Greater than 10% of sample is coarse material



Daniel B. Stephens & Associates, Inc.



**Particle Size Analysis  
Wet Sieve Data (#10 Split)**

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Waste Rock Composite B  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18  
 Test Date: 22-Feb-18

Initial Dry Weight of Sample (g): 6837.62  
 Weight Passing #10 (g): 2527.02  
 Weight Retained #10 (g): 4310.60  
 Weight of Hydrometer Sample (g): 50.31  
 Calculated Weight of Sieve Sample (g): 136.13  
 Shape: Angular  
 Hardness: Weathered and friable

Test Fraction	Sieve Number	Diameter (mm)	Wt. Retained	Cum Wt. Retained	Wt. Passing	% Passing
+10	3"	75	0.00	0.00	6837.62	100.00
	2"	50	0.00	0.00	6837.62	100.00
	1.5"	38.1	0.00	0.00	6837.62	100.00
	1"	25	14.69	14.69	6822.93	99.79
	3/4"	19.0	15.86	30.55	6807.07	99.55
	3/8"	9.5	1541.44	1571.99	5265.63	77.01
	4	4.75	1535.89	3107.88	3729.75	54.55
	10	2.00	1202.73	4310.60	2527.02	36.96
-10	(Based on calculated sieve wt.)					
	20	0.85	18.20	104.02	32.11	23.59
	40	0.425	8.28	112.30	23.83	17.51
	60	0.250	3.79	116.09	20.04	14.72
	140	0.106	4.13	120.22	15.91	11.69
	200	0.075	1.14	121.36	14.77	10.85
	dry pan			0.09	121.45	14.68
wet pan				14.68	0.00	

d<sub>10</sub> (mm): 0.062                      d<sub>50</sub> (mm): 3.8  
 d<sub>16</sub> (mm): 0.32                        d<sub>60</sub> (mm): 5.6  
 d<sub>30</sub> (mm): 1.3                         d<sub>84</sub> (mm): 12

Median Particle Diameter--d<sub>50</sub> (mm): 3.8  
 Uniformity Coefficient, Cu--[d<sub>60</sub>/d<sub>10</sub>] (mm): 90  
 Coefficient of Curvature, Cc--[d<sub>30</sub><sup>2</sup>/(d<sub>10</sub>\*d<sub>60</sub>)] (mm): 4.9  
 Mean Particle Diameter--[d<sub>16</sub>+d<sub>50</sub>+d<sub>84</sub>]/3] (mm): 5.4

Classification of fines: CL-ML

ASTM Soil Classification: Poorly-graded gravel with clay and sand (GP-GC)s

USDA Soil Classification: Sandy Loam †

† Greater than 10% of sample is coarse material

Laboratory analysis by: Z. Calhoun/D. O'Dowd  
 Data entered by: M. Garcia  
 Checked by: J. Hines



**Particle Size Analysis  
Hydrometer Data**

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Waste Rock Composite B  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18  
 Test Date: 13-Feb-18  
 Start Time: 9:18

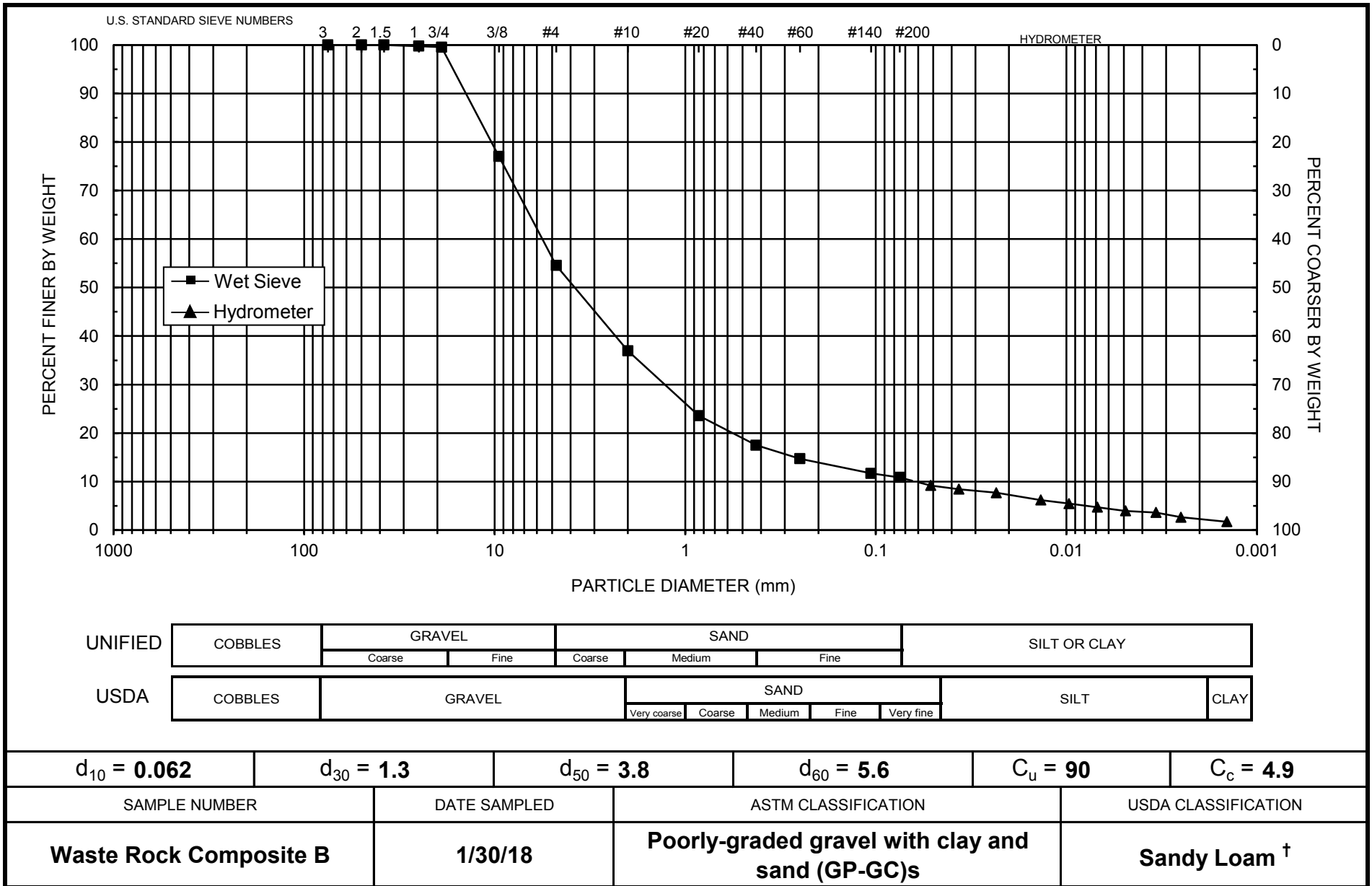
Type of Water Used: DISTILLED  
 Reaction with H<sub>2</sub>O<sub>2</sub>: NA  
 Dispersant\*: (NaPO<sub>3</sub>)<sub>6</sub>  
 Measured particle density: 2.57  
 Initial Wt. (g): 50.31  
 Total Sample Wt. (g): 6837.62  
 Wt. Passing #10 (g): 2527.02

Date	Time (min)	Temp (°C)	R (g/L)	R <sub>L</sub> (g/L)	R <sub>corr</sub> (g/L)	L (cm)	D (mm)	P (%)	% Finer
13-Feb-18	1	18.9	19.0	6.7	12.3	13.2	0.05146	24.9	9.2
	2	18.9	18.0	6.7	11.3	13.3	0.03661	22.8	8.4
	5	18.9	17.0	6.7	10.3	13.5	0.02330	20.8	7.7
	15	18.9	15.0	6.7	8.3	13.8	0.01361	16.7	6.2
	30	18.9	14.0	6.7	7.3	14.0	0.00968	14.7	5.4
	60	19.0	13.0	6.7	6.3	14.2	0.00688	12.7	4.7
	120	19.0	12.0	6.7	5.3	14.3	0.00489	10.7	4.0
	250	19.3	11.5	6.7	4.8	14.4	0.00339	9.8	3.6
	455	20.1	10.0	6.5	3.5	14.7	0.00250	7.1	2.6
14-Feb-18	1438	19.0	9.0	6.7	2.3	14.8	0.00144	4.6	1.7

Comments:

\* Dispersion device: mechanically operated stirring device

Laboratory analysis by: M. Garcia  
 Data entered by: M. Garcia  
 Checked by: J. Hines



† Greater than 10% of sample is coarse material



Daniel B. Stephens & Associates, Inc.



**Particle Size Analysis  
Wet Sieve Data (#10 Split)**

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Coal Composite A  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18  
 Test Date: 22-Feb-18

Initial Dry Weight of Sample (g): 4995.95  
 Weight Passing #10 (g): 4134.14  
 Weight Retained #10 (g): 861.81  
 Weight of Hydrometer Sample (g): 51.75  
 Calculated Weight of Sieve Sample (g): 62.54  
 Shape: Angular  
 Hardness: Weathered and friable

Test Fraction	Sieve Number	Diameter (mm)	Wt. Retained	Cum Wt. Retained	Wt. Passing	% Passing
+10	3"	75	0.00	0.00	4995.95	100.00
	2"	50	0.00	0.00	4995.95	100.00
	1.5"	38.1	0.00	0.00	4995.95	100.00
	1"	25	0.00	0.00	4995.95	100.00
	3/4"	19.0	0.00	0.00	4995.95	100.00
	3/8"	9.5	0.00	0.00	4995.95	100.00
	4	4.75	175.81	175.81	4820.14	96.48
	10	2.00	686.00	861.81	4134.14	82.75
-10	(Based on calculated sieve wt.)					
	20	0.85	15.59	26.38	36.16	57.82
	40	0.425	6.70	33.08	29.46	47.11
	60	0.250	3.20	36.28	26.26	41.99
	140	0.106	5.54	41.82	20.72	33.13
	200	0.075	3.38	45.20	17.34	27.73
	dry pan			0.67	45.87	16.67
wet pan				16.67	0.00	

d<sub>10</sub> (mm): 0.026                      d<sub>50</sub> (mm): 0.51  
 d<sub>16</sub> (mm): 0.050                      d<sub>60</sub> (mm): 0.92  
 d<sub>30</sub> (mm): 0.087                      d<sub>84</sub> (mm): 2.2

Median Particle Diameter--d<sub>50</sub> (mm): 0.51  
 Uniformity Coefficient, Cu--[d<sub>60</sub>/d<sub>10</sub>] (mm): 35  
 Coefficient of Curvature, Cc--[d<sub>30</sub><sup>2</sup>/(d<sub>10</sub>\*d<sub>60</sub>)] (mm): 0.32  
 Mean Particle Diameter--[d<sub>16</sub>+d<sub>50</sub>+d<sub>84</sub>]/3] (mm): 0.92

Classification of fines (visual method): ML

ASTM Soil Classification: Silty sand (SM)  
 USDA Soil Classification: Loamy Sand †

† Greater than 10% of sample is coarse material

Laboratory analysis by: Z. Calhoun  
 Data entered by: M. Garcia  
 Checked by: J. Hines



**Particle Size Analysis  
Hydrometer Data**

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Coal Composite A  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18  
 Test Date: 13-Feb-18  
 Start Time: 9:24

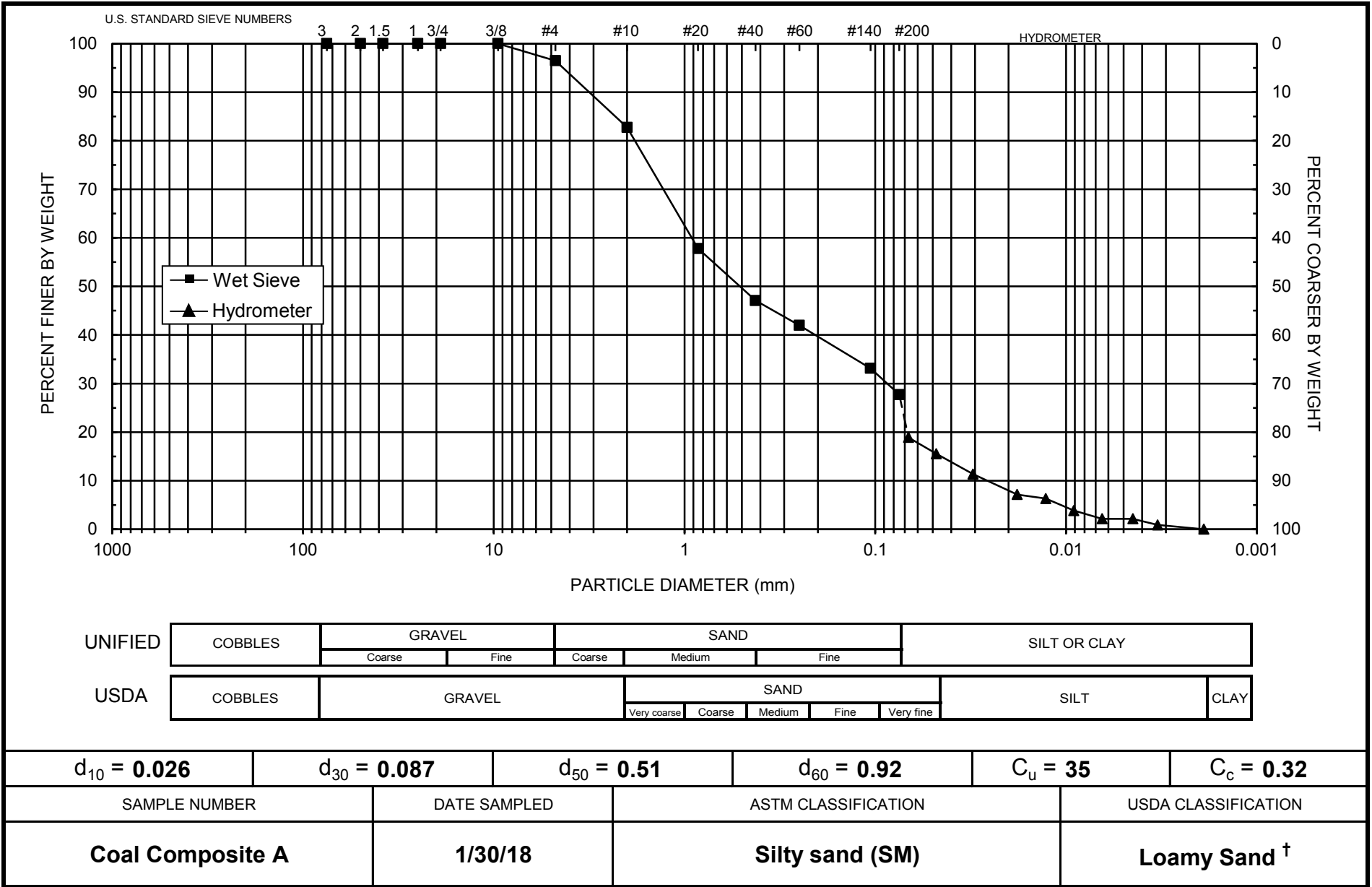
Type of Water Used: DISTILLED  
 Reaction with H<sub>2</sub>O<sub>2</sub>: NA  
 Dispersant\*: (NaPO<sub>3</sub>)<sub>6</sub>  
 Measured particle density: 1.94  
 Initial Wt. (g): 51.75  
 Total Sample Wt. (g): 4995.95  
 Wt. Passing #10 (g): 4134.14

Date	Time (min)	Temp (°C)	R (g/L)	R <sub>L</sub> (g/L)	R <sub>corr</sub> (g/L)	L (cm)	D (mm)	P (%)	% Finer
13-Feb-18	1	18.9	18.0	6.7	11.3	13.3	0.06695	22.8	18.9
	2	18.9	16.0	6.7	9.3	13.7	0.04792	18.8	15.5
	5	18.9	13.5	6.7	6.8	14.1	0.03076	13.7	11.3
	15	18.9	11.0	6.7	4.3	14.5	0.01802	8.6	7.2
	30	18.9	10.5	6.7	3.8	14.6	0.01277	7.6	6.3
	60	19.0	9.0	6.7	2.3	14.8	0.00910	4.6	3.8
	120	19.0	8.0	6.7	1.3	15.0	0.00647	2.6	2.1
	250	19.3	8.0	6.7	1.3	15.0	0.00446	2.6	2.1
	450	20.1	7.0	6.5	0.5	15.2	0.00331	1.1	0.9
14-Feb-18	1433	19.0	6.0	6.0	0.0	15.3	0.00189	0.0	0.0

*Comments:*

\* Dispersion device: mechanically operated stirring device

Laboratory analysis by: M. Garcia  
 Data entered by: M. Garcia  
 Checked by: J. Hines



† Greater than 10% of sample is coarse material



Daniel B. Stephens & Associates, Inc.



**Particle Size Analysis  
Wet Sieve Data (#10 Split)**

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Coal Composite B  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18  
 Test Date: 22-Feb-18

Initial Dry Weight of Sample (g): 4476.23  
 Weight Passing #10 (g): 3698.52  
 Weight Retained #10 (g): 777.71  
 Weight of Hydrometer Sample (g): 51.76  
 Calculated Weight of Sieve Sample (g): 62.64  
 Shape: Angular  
 Hardness: Weathered and friable

Test Fraction	Sieve Number	Diameter (mm)	Wt. Retained	Cum Wt. Retained	Wt. Passing	% Passing
+10	3"	75	0.00	0.00	4476.23	100.00
	2"	50	0.00	0.00	4476.23	100.00
	1.5"	38.1	0.00	0.00	4476.23	100.00
	1"	25	0.00	0.00	4476.23	100.00
	3/4"	19.0	0.00	0.00	4476.23	100.00
	3/8"	9.5	0.00	0.00	4476.23	100.00
	4	4.75	218.76	218.76	4257.47	95.11
	10	2.00	558.95	777.71	3698.52	82.63
-10	(Based on calculated sieve wt.)					
	20	0.85	15.23	26.11	36.53	58.31
	40	0.425	6.03	32.14	30.50	48.69
	60	0.250	3.40	35.54	27.10	43.26
	140	0.106	6.16	41.70	20.94	33.43
	200	0.075	3.48	45.18	17.46	27.87
	dry pan			0.40	45.58	17.06
wet pan				17.06	0.00	

d<sub>10</sub> (mm): 0.024                      d<sub>50</sub> (mm): 0.47  
 d<sub>16</sub> (mm): 0.050                      d<sub>60</sub> (mm): 0.90  
 d<sub>30</sub> (mm): 0.086                      d<sub>84</sub> (mm): 2.2

Median Particle Diameter--d<sub>50</sub> (mm): 0.47  
 Uniformity Coefficient, Cu--[d<sub>60</sub>/d<sub>10</sub>] (mm): 38  
 Coefficient of Curvature, Cc--[d<sub>30</sub><sup>2</sup>/(d<sub>10</sub>\*d<sub>60</sub>)] (mm): 0.34  
 Mean Particle Diameter--[d<sub>16</sub>+d<sub>50</sub>+d<sub>84</sub>]/3] (mm): 0.91

Classification of fines (visual method): ML

ASTM Soil Classification: Silty sand (SM)  
 USDA Soil Classification: Loamy Sand †

† Greater than 10% of sample is coarse material

Laboratory analysis by: Z. Calhoun  
 Data entered by: M. Garcia  
 Checked by: J. Hines





**Particle Size Analysis  
Hydrometer Data**

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Coal Composite B  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18  
 Test Date: 13-Feb-18  
 Start Time: 9:30

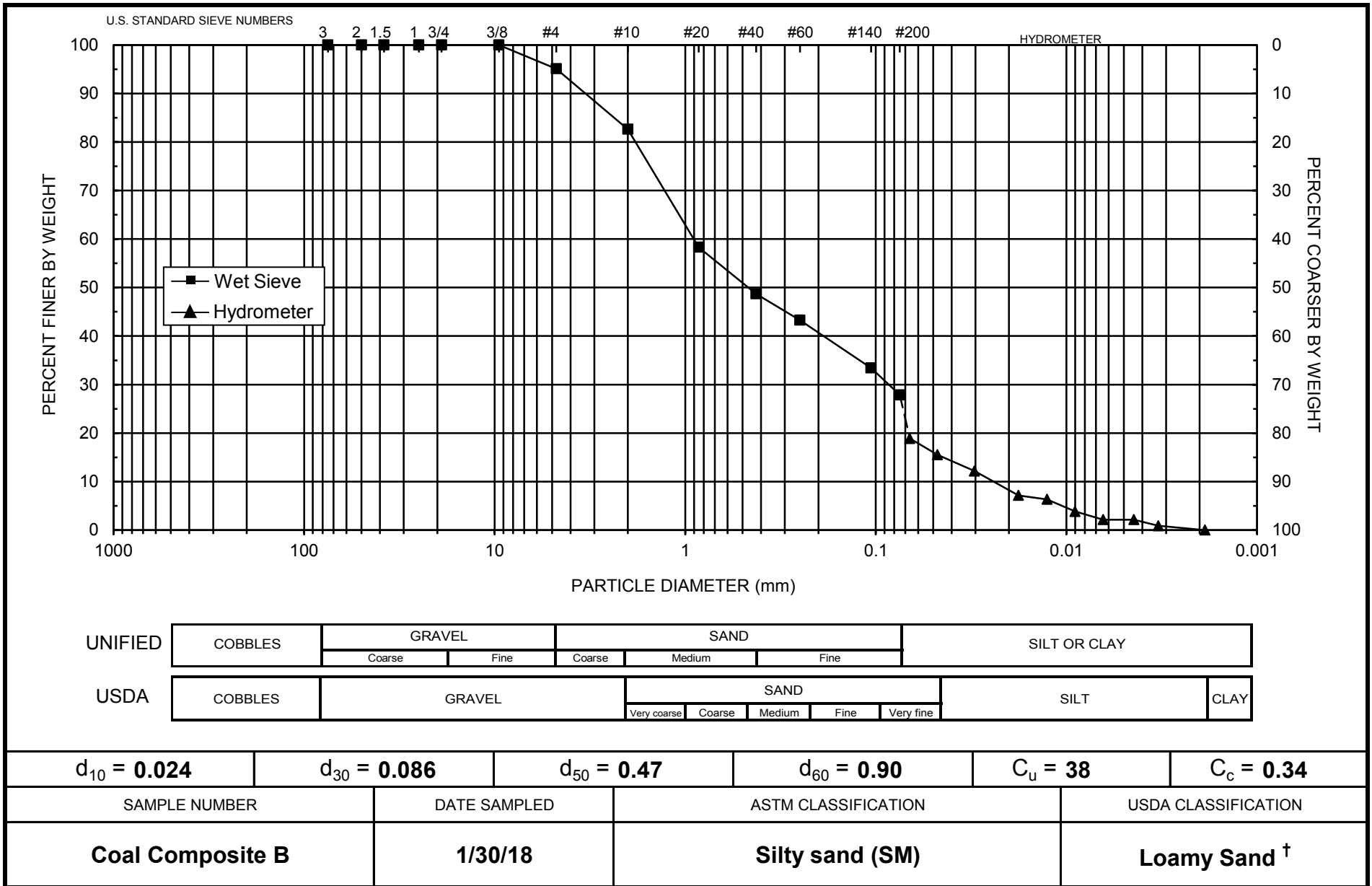
Type of Water Used: DISTILLED  
 Reaction with H<sub>2</sub>O<sub>2</sub>: NA  
 Dispersant\*: (NaPO<sub>3</sub>)<sub>6</sub>  
 Measured particle density: 1.96  
 Initial Wt. (g): 51.76  
 Total Sample Wt. (g): 4476.23  
 Wt. Passing #10 (g): 3698.52

Date	Time (min)	Temp (°C)	R (g/L)	R <sub>L</sub> (g/L)	R <sub>corr</sub> (g/L)	L (cm)	D (mm)	P (%)	% Finer
13-Feb-18	1	18.9	18.0	6.7	11.3	13.3	0.06627	22.8	18.9
	2	18.9	16.0	6.7	9.3	13.7	0.04743	18.8	15.5
	5	18.9	14.0	6.7	7.3	14.0	0.03035	14.7	12.2
	15	18.9	11.0	6.7	4.3	14.5	0.01783	8.6	7.1
	30	19.0	10.5	6.7	3.8	14.6	0.01263	7.7	6.3
	60	19.0	9.0	6.7	2.3	14.8	0.00900	4.6	3.8
	120	19.0	8.0	6.7	1.3	15.0	0.00640	2.6	2.1
	250	19.3	8.0	6.7	1.3	15.0	0.00442	2.6	2.1
	445	20.1	7.0	6.5	0.5	15.2	0.00329	1.1	0.9
14-Feb-18	1428	19.0	6.0	6.0	0.0	15.3	0.00188	0.0	0.0

*Comments:*

\* Dispersion device: mechanically operated stirring device

Laboratory analysis by: M. Garcia  
 Data entered by: M. Garcia  
 Checked by: J. Hines



† Greater than 10% of sample is coarse material



*Daniel B. Stephens & Associates, Inc.*

## **Atterberg Limits/ Identification of Fines**



### Summary of Atterberg Tests

Sample Number	Liquid Limit	Plastic Limit	Plasticity Index	Classification
Waste Rock Composite A	25	20	5	CL-ML
Waste Rock Composite B	24	20	4	CL-ML
Coal Composite A	---	---	---	ML
Coal Composite B	---	---	---	ML

---

--- = Soil requires visual-manual classification due to non-plasticity



### Atterberg Limits

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Waste Rock Composite A  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18  
 Test Date: 13-Feb-18

#### Liquid Limit

	Trial 1	Trial 2	Trial 3
Number of drops:	30	23	15
Pan number:	LL1	LL2	LL3
Weight of pan plus moist soil (g):	127.36	128.77	132.60
Weight of pan plus dry soil (g)	125.07	126.49	129.26
Weight of pan (g):	115.47	117.44	116.54
Gravimetric moisture content (% g/g):	23.85	25.19	26.26
Liquid Limit:	25		

#### Plastic Limit

	Trial 1	Trial 2
Pan number:	PL1	PL2
Weight of pan plus moist soil (g):	127.54	128.10
Weight of pan plus dry soil (g)	125.74	126.30
Weight of pan (g):	116.57	117.13
Gravimetric moisture content (% g/g):	19.63	19.63
Plastic Limit:	20	

### Results

Percent of Sample Retained on #40 Sieve: See Sieve  
 Liquid Limit: 25  
 Plastic Limit: 20  
 Plasticity Index: 5  
 Classification: CL-ML

Comments:

- = Soil requires visual-manual classification due to non-plasticity
- \* = 1-point method requested by client

Laboratory analysis by: D. O'Dowd  
 Data entered by: D. O'Dowd  
 Checked by: J. Hines



### Atterberg Limits

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Waste Rock Composite B  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18  
 Test Date: 13-Feb-18

#### Liquid Limit

	Trial 1	Trial 2	Trial 3
Number of drops:	35	29	19
Pan number:	LL1	LL2	LL3
Weight of pan plus moist soil (g):	126.85	135.64	129.61
Weight of pan plus dry soil (g)	124.83	132.14	126.35
Weight of pan (g):	115.71	117.26	113.38
Gravimetric moisture content (% g/g):	22.15	23.52	25.13
Liquid Limit:	24		

#### Plastic Limit

	Trial 1	Trial 2
Pan number:	PL1	PL2
Weight of pan plus moist soil (g):	125.82	134.54
Weight of pan plus dry soil (g)	124.14	132.55
Weight of pan (g):	115.73	122.31
Gravimetric moisture content (% g/g):	19.98	19.43
Plastic Limit:	20	

### Results

Percent of Sample Retained on #40 Sieve: See Sieve  
 Liquid Limit: 24  
 Plastic Limit: 20  
 Plasticity Index: 4  
 Classification: CL-ML

#### Comments:

- = Soil requires visual-manual classification due to non-plasticity
- \* = 1-point method requested by client

Laboratory analysis by: D. O'Dowd  
 Data entered by: D. O'Dowd  
 Checked by: J. Hines



## Atterberg Limits

Job Name: Enviromin, Inc.  
Job Number: DB18.1057.00  
Sample Number: Coal Composite A  
Project Name: NWP Column Study  
Date Sampled: 1/30/18  
Test Date: 12-Feb-18

### Liquid Limit

	Trial 1	Trial 2	Trial 3
Number of drops:			
Pan number:			
Weight of pan plus moist soil (g):			
Weight of pan plus dry soil (g)			
Weight of pan (g):			
Gravimetric moisture content (% g/g):	---	---	---
Liquid Limit:	---		

### Plastic Limit

	Trial 1	Trial 2
Pan number:		
Weight of pan plus moist soil (g):		
Weight of pan plus dry soil (g)		
Weight of pan (g):		
Gravimetric moisture content (% g/g):	---	---
Plastic Limit:	---	

### Results

Percent of Sample Retained on #40 Sieve: See Sieve  
Liquid Limit: ---  
Plastic Limit: ---  
Plasticity Index: ---  
Classification (Visual Method): ML

#### Comments:

- = Soil requires visual-manual classification due to non-plasticity
- \* = 1-point method requested by client

Laboratory analysis by: D. O'Dowd  
Data entered by: D. O'Dowd  
Checked by: J. Hines



**Data for Description and Identification of Fines  
(Visual-Manual Procedure)**

*Job Name:* Enviromin, Inc.  
*Job Number:* DB18.1057.00  
*Sample Number:* Coal Composite A  
*Project Name:* NWP Column Study  
*Date Sampled:* 1/30/18  
  
*Test Date:* 12-Feb-18

Visual-manual classification of material passing the #40 sieve in lieu of  
Atterberg analysis due to non-plasticity:

**Descriptive Information:**

Color of Moist Sample: Black (2.5Y 2.5/1)  
Odor: None  
Moisture Condition: Moist  
HCl Reaction: None

**Preliminary Identification:**

Dry Strength: None  
Dilatency: Rapid  
Toughness: Low  
Plasticity: Non-plastic

**Identification of Inorganic Fine Grained Soils:**

Silt (ML)

*Laboratory analysis by:* D. O'Dowd  
*Data entered by:* D. O'Dowd  
*Checked by:* J. Hines





## Atterberg Limits

Job Name: Enviromin, Inc.  
Job Number: DB18.1057.00  
Sample Number: Coal Composite B  
Project Name: NWP Column Study  
Date Sampled: 1/30/18  
Test Date: 12-Feb-18

### Liquid Limit

	Trial 1	Trial 2	Trial 3
Number of drops:			
Pan number:			
Weight of pan plus moist soil (g):			
Weight of pan plus dry soil (g)			
Weight of pan (g):			
Gravimetric moisture content (% g/g):	---	---	---
Liquid Limit:	---		

### Plastic Limit

	Trial 1	Trial 2
Pan number:		
Weight of pan plus moist soil (g):		
Weight of pan plus dry soil (g)		
Weight of pan (g):		
Gravimetric moisture content (% g/g):	---	---
Plastic Limit:	---	

### Results

Percent of Sample Retained on #40 Sieve: See Sieve

Liquid Limit: ---  
Plastic Limit: ---  
Plasticity Index: ---  
Classification (Visual Method): ML

#### Comments:

- = Soil requires visual-manual classification due to non-plasticity
- \* = 1-point method requested by client

Laboratory analysis by: D. O'Dowd  
Data entered by: D. O'Dowd  
Checked by: J. Hines



**Data for Description and Identification of Fines  
(Visual-Manual Procedure)**

*Job Name:* Enviromin, Inc.  
*Job Number:* DB18.1057.00  
*Sample Number:* Coal Composite B  
*Project Name:* NWP Column Study  
*Date Sampled:* 1/30/18  
  
*Test Date:* 12-Feb-18

Visual-manual classification of material passing the #40 sieve in lieu of  
Atterberg analysis due to non-plasticity:

**Descriptive Information:**

Color of Moist Sample: Black (2.5Y 2.5/1)  
Odor: None  
Moisture Condition: Moist  
HCl Reaction: None

**Preliminary Identification:**

Dry Strength: None  
Dilatency: Rapid  
Toughness: Low  
Plasticity: Non-plastic

**Identification of Inorganic Fine Grained Soils:**

Silt (ML)

*Laboratory analysis by:* D. O'Dowd  
*Data entered by:* D. O'Dowd  
*Checked by:* J. Hines

## **Specific Gravity**



### Summary of Specific Gravity Tests

Sample Number	<4.75 mm Fraction			>4.75 mm Fraction			Bulk Sample	
	Specific Gravity	Particle Size	% of Bulk Sample	Specific Gravity	Particle Size	% of Bulk Sample	Specific Gravity	
Waste Rock Composite A	2.61	<4.75 mm	60.3%	2.68	>4.75 mm	39.7%	2.63	*
Waste Rock Composite B	2.57	<4.75 mm	54.5%	2.72	>4.75 mm	45.5%	2.64	*
Coal Composite A	1.94	<4.75 mm	96.5%	---	>4.75 mm	3.5%	1.94	**
Coal Composite B	1.96	<4.75 mm	95.1%	---	>4.75 mm	4.9%	1.96	**

\* Weighted average

\*\* = Based on specific gravity of material < 4.75 mm

--- = Unnecessary since specified fraction <5% of composite mass

NR = Not requested

NA = Not applicable



**Data for Specific Gravity of Sample: Waste Rock Composite A**

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Waste Rock Composite A  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18

**ASTM D854 (<4.75mm Fraction)**

	Test Date: 26-Mar-18	
Percent of Test Sample (% g/g):	60.91	
Percent of Bulk Sample (% g/g):	60.33	
	<i>Trial 1</i>	<i>Trial 2</i>
Weight of pycnometer filled w/air (g):	94.22	93.69
Weight of pycnometer filled w/soil (g):	144.50	146.66
Weight of pycnometer filled w/soil & water (g):	374.41	375.60
Weight of pycnometer filled w/water (g):	343.44	342.93
Observed temperature (°C):	22.10	21.50
Density of water at observed temperature (g/cm <sup>3</sup> ):	0.9978	0.9979
Specific Gravity (g/g):	2.60	2.61
Correction factor, K:	0.9995	0.9997
Specific Gravity at 20°C (g/g):	2.60	2.61
Average Specific Gravity at 20°C (g/g):	2.61	
Average Particle Density at 20°C (g/cm <sup>3</sup> ):	2.60	

**ASTM C127 (>4.75mm Fraction)**

	Test Date: 21-Feb-18	
Percent of Test Sample (% g/g):	39.09	
Percent of Bulk Sample (% g/g):	39.67	
Tare Weight (g):	0.0	
Saturated Surface Dry (SSD) mass in Air & Tare (g):	437.15	
Saturated Apparent mass in Water & Tare (g):	265.92	
Oven Dry (OD) mass in Air & Tare (g):	424.17	
Observed Temperature (°C):	21.0	
Density of water at observed temperature (g/m <sup>3</sup> ):	0.9980	
SSD Specific Gravity (g/g):	2.55	
Apparent Specific Gravity (g/g):	2.68	
OD Specific Gravity (g/g):	2.48	
Percent Absorption (%):	3.0	
Correction Factor, K:	0.9998	
Average Specific Gravity (Apparent) at 20°C*:	2.68	
Average Particle Density (Apparent) at 20°C (g/cm <sup>3</sup> )*:	2.68	

**Specific Gravity (Apparent) at 20°C\*:** 2.63  
**Particle Density (Apparent) at 20°C (g/cm<sup>3</sup>)\*:** 2.63

\* Weighted harmonic average, if more than one fraction used.

Laboratory analysis by: D. O'Dowd  
 Data entered by: C. Krous  
 Checked by: J. Hines



**Data for Specific Gravity of Sample: Waste Rock Composite B**

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Waste Rock Composite B  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18

**ASTM D854 (<4.75mm Fraction)**

	Test Date: 26-Mar-18	
Percent of Test Sample (% g/g):	54.79	
Percent of Bulk Sample (% g/g):	54.55	
	<i>Trial 1</i>	<i>Trial 2</i>
Weight of pycnometer filled w/air (g):	99.58	92.37
Weight of pycnometer filled w/soil (g):	150.76	142.69
Weight of pycnometer filled w/soil & water (g):	380.17	372.35
Weight of pycnometer filled w/water (g):	348.79	341.64
Observed temperature (°C):	22.10	21.60
Density of water at observed temperature (g/cm <sup>3</sup> ):	0.9978	0.9979
Specific Gravity (g/g):	2.58	2.57
Correction factor, K:	0.9995	0.9997
Specific Gravity at 20°C (g/g):	2.58	2.56
Average Specific Gravity at 20°C (g/g):	2.57	
Average Particle Density at 20°C (g/cm <sup>3</sup> ):	2.57	

**ASTM C127 (>4.75mm Fraction)**

	Test Date: 21-Feb-18	
Percent of Test Sample (% g/g):	45.21	
Percent of Bulk Sample (% g/g):	45.45	
Tare Weight (g):	0.0	
Saturated Surface Dry (SSD) mass in Air & Tare (g):	344.13	
Saturated Apparent mass in Water & Tare (g):	211.16	
Oven Dry (OD) mass in Air & Tare (g):	333.95	
Observed Temperature (°C):	21.0	
Density of water at observed temperature (g/m <sup>3</sup> ):	0.9980	
SSD Specific Gravity (g/g):	2.59	
Apparent Specific Gravity (g/g):	2.72	
OD Specific Gravity (g/g):	2.51	
Percent Absorption (%):	3.0	
Correction Factor, K:	0.9998	
Average Specific Gravity (Apparent) at 20°C*:	2.72	
Average Particle Density (Apparent) at 20°C (g/cm <sup>3</sup> )*:	2.71	

**Specific Gravity (Apparent) at 20°C\*:** 2.64  
**Particle Density (Apparent) at 20°C (g/cm<sup>3</sup>)\*:** 2.63

\* Weighted harmonic average, if more than one fraction used.

Laboratory analysis by: D. O'Dowd  
 Data entered by: C. Krous  
 Checked by: J. Hines



**Data for Specific Gravity of Sample: Coal Composite A**

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Coal Composite A  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18

**ASTM D854 (<4.75mm Fraction)**

	Test Date:	15-Feb-18	
	Percent of Test Sample (% g/g):	96.48	
	Percent of Bulk Sample (% g/g):	96.48	
		Trial 1	Trial 2
	Weight of pycnometer filled w/air (g):	91.50	93.68
	Weight of pycnometer filled w/soil (g):	142.39	144.06
	Weight of pycnometer filled w/soil & water (g):	365.57	367.49
	Weight of pycnometer filled w/water (g):	340.87	343.08
	Observed temperature (°C):	18.40	18.40
	Density of water at observed temperature (g/cm <sup>3</sup> ):	0.9985	0.9985
	Specific Gravity (g/g):	1.94	1.94
	Correction factor, K:	1.0003	1.0003
	Specific Gravity at 20°C (g/g):	1.94	1.94
	Average Specific Gravity at 20°C (g/g):	1.94	
	Average Particle Density at 20°C (g/cm <sup>3</sup> ):	1.94	

**ASTM C127 (>4.75mm Fraction)**

	Test Date:	NA	Test unnecessary since fraction is less than 5% of bulk sample mass
	Percent of Test Sample (% g/g):	3.52	
	Percent of Bulk Sample (% g/g):	3.52	
	Tare Weight (g):	---	
	Saturated Surface Dry (SSD) mass in Air & Tare (g):	---	
	Saturated Apparent mass in Water & Tare (g):	---	
	Oven Dry (OD) mass in Air & Tare (g):	---	
	Observed Temperature (°C):	---	
	Density of water at observed temperature (g/m <sup>3</sup> ):	---	
	SSD Specific Gravity (g/g):	---	
	Apparent Specific Gravity (g/g):	---	
	OD Specific Gravity (g/g):	---	
	Percent Absorption (%):	---	
	Correction Factor, K:	---	
	Average Specific Gravity (Apparent) at 20°C*:	---	
	Average Particle Density (Apparent) at 20°C (g/cm <sup>3</sup> )*:	---	

**Specific Gravity (Apparent) at 20°C\*:** 1.94  
**Particle Density (Apparent) at 20°C (g/cm<sup>3</sup>)\*:** 1.94

\* Weighted harmonic average, if more than one fraction used.

Laboratory analysis by: D. O'Dowd  
 Data entered by: C. Krous  
 Checked by: J. Hines



**Data for Specific Gravity of Sample: Coal Composite B**

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Coal Composite B  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18

**ASTM D854 (<4.75mm Fraction)**

	Test Date:	15-Feb-18	
Percent of Test Sample (% g/g):		95.11	
Percent of Bulk Sample (% g/g):		95.11	
		Trial 1	Trial 2
Weight of pycnometer filled w/air (g):		94.98	92.13
Weight of pycnometer filled w/soil (g):		145.20	142.55
Weight of pycnometer filled w/soil & water (g):		369.14	366.14
Weight of pycnometer filled w/water (g):		344.40	341.56
Observed temperature (°C):		18.40	18.40
Density of water at observed temperature (g/cm <sup>3</sup> ):		0.9985	0.9985
Specific Gravity (g/g):		1.97	1.95
Correction factor, K:		1.0003	1.0003
Specific Gravity at 20°C (g/g):		1.97	1.95
Average Specific Gravity at 20°C (g/g):		1.96	
Average Particle Density at 20°C (g/cm <sup>3</sup> ):		1.96	

**ASTM C127 (>4.75mm Fraction)**

	Test Date:	NA	Test unnecessary since fraction is less than 5% of bulk sample mass
Percent of Test Sample (% g/g):		4.89	
Percent of Bulk Sample (% g/g):		4.89	
Tare Weight (g):		---	
Saturated Surface Dry (SSD) mass in Air & Tare (g):		---	
Saturated Apparent mass in Water & Tare (g):		---	
Oven Dry (OD) mass in Air & Tare (g):		---	
Observed Temperature (°C):		---	
Density of water at observed temperature (g/m <sup>3</sup> ):		---	
SSD Specific Gravity (g/g):		---	
Apparent Specific Gravity (g/g):		---	
OD Specific Gravity (g/g):		---	
Percent Absorption (%):		---	
Correction Factor, K:		---	
Average Specific Gravity (Apparent) at 20°C*:		---	
Average Particle Density (Apparent) at 20°C (g/cm <sup>3</sup> )*:		---	

**Specific Gravity (Apparent) at 20°C\*:** 1.96  
**Particle Density (Apparent) at 20°C (g/cm<sup>3</sup>)\*:** 1.96  
 \* Weighted harmonic average, if more than one fraction used.

Laboratory analysis by: D. O'Dowd  
 Data entered by: C. Krous  
 Checked by: J. Hines



## **Laboratory Tests and Methods**



## Tests and Methods

Dry Bulk Density:	ASTM D7263
Moisture Content:	ASTM D7263, ASTM D2216
Calculated Porosity:	ASTM D7263
Saturated Hydraulic Conductivity:	
Constant Head: (Rigid Wall)	ASTM D 5856 (modified apparatus)
Falling Head: (Rigid Wall)	Klute, A. and C. Dirkson. 1986. Hydraulic Conductivity and Diffusivity: Laboratory Methods. Chp. 28, pp. 700-703, in A. Klute (ed.), Methods of Soil Analysis, Part 1, American Society of Agronomy, Madison, WI
Hanging Column Method:	ASTM D6836 (modified apparatus)
Pressure Plate Method:	ASTM D6836 (modified apparatus)
Water Potential (Dewpoint Potentiometer) Method:	ASTM D6836
Relative Humidity (Box) Method:	Campbell, G. and G. Gee. 1986. Water Potential: Miscellaneous Methods. Chp. 25, pp. 631-632, in A. Klute (ed.), Methods of Soil Analysis. Part 1. American Society of Agronomy, Madison, WI; Karathanasis & Hajek. 1982. Quantitative Evaluation of Water Adsorption on Soil Clays. SSA Journal 46:1321-1325
Moisture Retention Characteristics & Calculated Unsaturated Hydraulic Conductivity:	ASTM D6836; van Genuchten, M.T. 1980. A closed-form equation for predicting the hydraulic conductivity of unsaturated soils. SSSAJ 44:892-898; van Genuchten, M.T., F.J. Leij, and S.R. Yates. 1991. The RETC code for quantifying the hydraulic functions of unsaturated soils. Robert S. Kerr Environmental Research Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, Ada, Oklahoma. EPA/600/2091/065. December 1991
Specific Gravity Fine:	ASTM D854
Specific Gravity Coarse:	ASTM C127
Particle Size Analysis:	ASTM D7928, ASTM D6913
USCS (ASTM) Classification:	ASTM D7928, ASTM D6913, ASTM D2487
USDA Classification:	ASTM D7928, ASTM D6913, USDA Soil Textural Triangle
Atterberg Limits:	ASTM D4318
Visual-Manual Description:	ASTM D2488
Effective Porosity:	ASTM D6836; Stephens, D.B., 1997, Hydrology Journal (1998) 6:6156-165, A Comparison of Estimated and Calculated Effective Porosity
Water Holding Capacity (calc):	ASTM D6836; Stephens, D. B. 1996, pp.11-12, Vadose Zone Hydrology. CRC Press, Inc., Boca Raton, FL

# Laboratory Report for Enviromin, Inc.

Project: NWP Column Study

May 17, 2018



*Daniel B. Stephens & Associates, Inc.*

4400 Alameda Blvd. NE, Suite C • Albuquerque, New Mexico 87113



May 17, 2018

Kylie Bodle  
Enviromin, Inc.  
524 Professional Drive  
Bozeman, MT 59718  
(406) 581-8261

Re: DBS&A Laboratory Report for the Enviromin, Inc. NWP Column Study Project

Dear Ms. Bodle:

Enclosed is the report for the Enviromin, Inc. NWP Column Study project samples. Please review this report and provide any comments as samples will be held for a maximum of 30 days. After 30 days samples will be returned or disposed of in an appropriate manner.

All testing results were evaluated subjectively for consistency and reasonableness, and the results appear to be reasonably representative of the material tested. However, DBS&A does not assume any responsibility for interpretations or analyses based on the data enclosed, nor can we guarantee that these data are fully representative of the undisturbed materials at the field site. We recommend that careful evaluation of these laboratory results be made for your particular application.

The testing utilized to generate the enclosed report employs methods that are standard for the industry. The results do not constitute a professional opinion by DBS&A, nor can the results affect any professional or expert opinions rendered with respect thereto by DBS&A. You have acknowledged that all the testing undertaken by us, and the report provided, constitutes mere test results using standardized methods, and cannot be used to disqualify DBS&A from rendering any professional or expert opinion, having waived any claim of conflict of interest by DBS&A.

We are pleased to provide this service to Enviromin, Inc. and look forward to future laboratory testing on other projects. If you have any questions about the enclosed data, please do not hesitate to call.

Sincerely,

DANIEL B. STEPHENS & ASSOCIATES, INC.  
SOIL TESTING & RESEARCH LABORATORY

Joleen Hines  
Laboratory Manager

Enclosure

*Daniel B. Stephens & Associates, Inc.*  
*Soil Testing & Research Laboratory*

4400 Alameda Blvd. NE, Suite C  
Albuquerque, NM 87113

505-889-7752  
FAX 505-889-0258

## **Summaries**



### Summary of Tests Performed

Laboratory Sample Number	Initial Soil Properties <sup>1</sup>			Saturated Hydraulic Conductivity <sup>2</sup>			Moisture Characteristics <sup>3</sup>							Particle Size <sup>4</sup>			Specific Gravity <sup>5</sup>		Air Perm-eability	Atterberg Limits	Proctor Compaction						
	G	VM	VD	CH	FH	FW	HC	PP	FP	DPP	RH	EP	WHC	K <sub>unsat</sub>	DS	WS	H	F				C					
Waste Rock Composite (S+T) (1.59 g/cc)	X	X		X									X														
Waste Rock Composite (Moderate) (1.82 g/cc)	X	X		X									X														
Coal Composite (S+T) (1.03 g/cc)	X	X		X									X														
Coal Composite (Moderate) (1.15 g/cc)	X	X		X									X														

<sup>1</sup> G = Gravimetric Moisture Content, VM = Volume Measurement Method, VD = Volume Displacement Method

<sup>2</sup> CH = Constant Head Rigid Wall, FH = Falling Head Rigid Wall, FW = Falling Head Rising Tail Flexible Wall

<sup>3</sup> HC = Hanging Column, PP = Pressure Plate, FP = Filter Paper, DPP = Dew Point Potentiometer, RH = Relative Humidity Box, EP = Effective Porosity, WHC = Water Holding Capacity, K<sub>unsat</sub> = Calculated Unsaturated Hydraulic Conductivity

<sup>4</sup> DS = Dry Sieve, WS = Wet Sieve, H = Hydrometer

<sup>5</sup> F = Fine (<4.75mm), C = Coarse (>4.75mm)



## Notes

### **Sample Receipt:**

Four samples were received on February 5, 2018. These samples were subjected to particle size analysis, Atterberg limits, specific gravity testing, and saturated hydraulic conductivity testing as well as moisture retention testing. The results of these tests were reported on March 27, 2018.

Additional sample material was received for Waste Rock on May 1, 2018. The sample arrived in nine quart size Ziploc bags, double bagged, inside a 5-gallon bucket sealed with a lid and tape.

### **Sample Preparation and Testing Notes:**

Samples Coal A and Coal B were composited from a combination of remaining original material and post-testing material from the first round of testing to form a 'Coal Composite' sample. Prior compaction that occurred during the first round remolding process may have altered the structure of the sample material resulting in smaller particles. Remaining original material and some post-testing material from the Waste Rock A and Waste Rock B first round of testing were composited with the Waste Rock (rec. 5/1/18) material to form a 'Waste Rock Composite' sample. Prior compaction is not suspected to have altered the structure of the Waste Rock material.

The composited samples were prepared for testing using two different preparation methods. The first set of sub-samples were prepared by placing a portion of the composited sample into a 6 inch testing ring while shaking and tapping the ring to encourage compact positioning of the particles. The second set of sub-samples were prepared by remolding the material into a 6 inch testing ring using a moderate compactive effort in order to achieve a density that would approximate 85% of standard proctor compaction testing, based on technician judgement. 'S&T' or 'Moderate', along with the actual dry bulk density achieved in g/cc, was added to each sub-sample ID. Each of these remolded sub-samples was subjected to initial properties analysis, saturated hydraulic conductivity testing, and the pressure chamber portion of the water holding capacity testing.

Separate sub-samples were obtained for the dewpoint potentiometer portion of the water holding capacity testing.

Volumetric water contents were adjusted for changes in volume, where applicable. Due to the irregularities formed on the sample surfaces during settling, volume measurements obtained after the initial reading should be considered estimates.

Porosity calculations are based on an assumed specific gravity of 2.59 for the Waste Rock Composite and 1.95 for the Coal Composite (the average of the measured specific gravity results of the composite components that were previously reported).



### Summary of Sample Preparation/Volume Changes

Sample Number	Target Remold Parameters <sup>1</sup>		Actual Remold Data			Volume Change Post Saturation <sup>2</sup>			Volume Change Post Water Holding Capacity <sup>3</sup>		
	Moisture Content (%)	Dry Bulk Density (g/cm <sup>3</sup> )	Moisture Content (%)	Dry Bulk Density (g/cm <sup>3</sup> )	% of Target Density (%)	Dry Bulk Density (g/cm <sup>3</sup> )	% Volume Change (%)	% of Initial Density (%)	Dry Bulk Density (g/cm <sup>3</sup> )	% Volume Change (%)	% of Initial Density (%)
Waste Rock Composite (S+T) (1.59 g/cc)	NA	'S&T'	7.5	1.59	NA	1.59	---	100%	1.67	-4.7%	105%
Waste Rock Composite (Moderate) (1.82 g/cc)	NA	Moderate	7.3	1.82	NA	1.82	---	100%	1.82	---	100%
Coal Composite (S+T) (1.03 g/cc)	NA	'S&T'	12.4	1.03	NA	1.03	---	100%	1.27	-19.2%	124%
Coal Composite (Moderate) (1.15 g/cc)	NA	Moderate	11.9	1.15	NA	1.15	---	100%	1.26	-8.6%	109%

<sup>1</sup>Target Remold Parameters: Samples were remold into a testing ring using both a 'Shake and Tap' method and using a 'Moderate' compactive effort approximating 85% of standard proctor.

<sup>2</sup>Volume Change Post Saturation: Volume change measurements were obtained after saturated hydraulic conductivity testing.

<sup>3</sup>Volume Change Post Water Holding Capacity: Volume change measurements were obtained after pressure plate testing. The 'Volume Change Post Water Holding Capacity' values represent the final sample dimensions after the last pressure plate point.

Notes:

"+" indicates sample swelling, "-" indicates sample settling, and "---" indicates no volume change occurred.





**Summary of Initial Moisture Content, Dry Bulk Density  
Wet Bulk Density and Calculated Porosity**

Sample Number	Moisture Content				Dry Bulk Density (g/cm <sup>3</sup> )	Wet Bulk Density (g/cm <sup>3</sup> )	Calculated Porosity (%)
	As Received		Remolded				
	Gravimetric (%, g/g)	Volumetric (%, cm <sup>3</sup> /cm <sup>3</sup> )	Gravimetric (%, g/g)	Volumetric (%, cm <sup>3</sup> /cm <sup>3</sup> )			
Waste Rock Composite (S+T) (1.59 g/cc)	NA	NA	7.5	12.0	1.59	1.71	38.4
Waste Rock Composite (Moderate) (1.82 g/cc)	NA	NA	7.3	13.4	1.82	1.96	29.4
Coal Composite (S+T) (1.03 g/cc)	NA	NA	12.4	12.7	1.03	1.15	47.3
Coal Composite (Moderate) (1.15 g/cc)	NA	NA	11.9	13.7	1.15	1.28	41.1

NA = Not analyzed

--- = This sample was not remolded



### Summary of Saturated Hydraulic Conductivity Tests

Sample Number	K <sub>sat</sub> (cm/sec)	Oversize Corrected K <sub>sat</sub> (cm/sec)	Method of Analysis	
			Constant Head	Falling Head
Waste Rock Composite (S+T) (1.59 g/cc)	7.4E-02	---	X	
Waste Rock Composite (Moderate) (1.82 g/cc)	6.2E-02	---	X	
Coal Composite (S+T) (1.03 g/cc)	1.3E-02	---	X	
Coal Composite (Moderate) (1.15 g/cc)	6.3E-04	---	X	

--- = Oversize correction is unnecessary since coarse fraction < 5% of composite mass  
 NR = Not requested  
 NA = Not applicable



**Summary of Moisture Retention (1/3, 15 Bar Points and Water Holding Capacity\*)**

Sample Number	1/3 Bar Point Volumetric (%, cm <sup>3</sup> /cm <sup>3</sup> )	15 Bar Point Volumetric (%, cm <sup>3</sup> /cm <sup>3</sup> )	Water Holding Capacity (%, cm <sup>3</sup> /cm <sup>3</sup> )	Oversize Corrected		
				1/3 Bar Point Volumetric (%, cm <sup>3</sup> /cm <sup>3</sup> )	15 Bar Point Volumetric (%, cm <sup>3</sup> /cm <sup>3</sup> )	Water Holding Capacity (%, cm <sup>3</sup> /cm <sup>3</sup> )
Waste Rock Composite (S+T) (1.59 g/cc)	11.2	4.1	7.1	---	---	---
Waste Rock Composite (Moderate) (1.82 g/cc)	11.6	4.3	7.2	---	---	---
Coal Composite (S+T) (1.03 g/cc)	20.3	13.2	7.1	---	---	---
Coal Composite (Moderate) (1.15 g/cc)	20.2	13.0	7.2	---	---	---

\*Water Holding Capacity (WHC) is defined here as the difference in the moisture content of the sample at -1/3 bar of water potential (commonly referred to as 'Field Capacity') and the moisture content of the sample at -15 bars of water potential (commonly referred to as 'Wilting Point').

--- = Oversize correction is unnecessary since coarse fraction < 5% of composite mass

NA = Not applicable

NR = Not requested

## **Initial Properties**



**Summary of Initial Moisture Content, Dry Bulk Density  
Wet Bulk Density and Calculated Porosity**

Sample Number	Moisture Content				Dry Bulk Density (g/cm <sup>3</sup> )	Wet Bulk Density (g/cm <sup>3</sup> )	Calculated Porosity (%)
	As Received		Remolded				
	Gravimetric (%, g/g)	Volumetric (%, cm <sup>3</sup> /cm <sup>3</sup> )	Gravimetric (%, g/g)	Volumetric (%, cm <sup>3</sup> /cm <sup>3</sup> )			
Waste Rock Composite (S+T) (1.59 g/cc)	NA	NA	7.5	12.0	1.59	1.71	38.4
Waste Rock Composite (Moderate) (1.82 g/cc)	NA	NA	7.3	13.4	1.82	1.96	29.4
Coal Composite (S+T) (1.03 g/cc)	NA	NA	12.4	12.7	1.03	1.15	47.3
Coal Composite (Moderate) (1.15 g/cc)	NA	NA	11.9	13.7	1.15	1.28	41.1

NA = Not analyzed

--- = This sample was not remolded



**Data for Initial Moisture Content,  
Bulk Density, Porosity, and Percent Saturation**

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Waste Rock Composite (S+T) (1.59 g/cc)  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18

	<u>As Received</u>	<u>Remolded</u>
Test Date:	NA	2-May-18
Field weight* of sample (g):		4124.50
Tare weight, ring (g):		286.93
Tare weight, pan/plate (g):		0.00
Tare weight, other (g):		0.00
Dry weight of sample (g):		3568.96
Sample volume (cm <sup>3</sup> ):		2240.86
Assumed particle density (g/cm <sup>3</sup> ):		2.59
<hr/>		
Gravimetric Moisture Content (% g/g):		7.5
Volumetric Moisture Content (% vol):		12.0
Dry bulk density (g/cm <sup>3</sup> ):		1.59
Wet bulk density (g/cm <sup>3</sup> ):		1.71
Calculated Porosity (% vol):		38.4
Percent Saturation:		31.2
<hr/>		
Laboratory analysis by:		D. O'Dowd
Data entered by:		D. O'Dowd
Checked by:		J. Hines

Comments:

- \* Weight including tares
- NA = Not analyzed
- = This sample was not remolded



**Data for Initial Moisture Content,  
Bulk Density, Porosity, and Percent Saturation**

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Waste Rock Composite (Moderate) (1.82 g/cc)  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18

	<u>As Received</u>	<u>Remolded</u>
Test Date:	NA	2-May-18
Field weight* of sample (g):		4702.30
Tare weight, ring (g):		289.38
Tare weight, pan/plate (g):		0.00
Tare weight, other (g):		0.00
Dry weight of sample (g):		4110.90
Sample volume (cm <sup>3</sup> ):		2252.89
Assumed particle density (g/cm <sup>3</sup> ):		2.59
<hr/>		
Gravimetric Moisture Content (% g/g):		7.3
Volumetric Moisture Content (% vol):		13.4
Dry bulk density (g/cm <sup>3</sup> ):		1.82
Wet bulk density (g/cm <sup>3</sup> ):		1.96
Calculated Porosity (% vol):		29.4
Percent Saturation:		45.6
<hr/>		
Laboratory analysis by:		D. O'Dowd
Data entered by:		D. O'Dowd
Checked by:		J. Hines

Comments:

- \* Weight including tares
- NA = Not analyzed
- = This sample was not remolded



Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Enviromin, Inc.
Job Number: DB18.1057.00
Sample Number: Coal Composite (S+T) (1.03 g/cc)
Project Name: NWP Column Study
Date Sampled: 1/30/18

Table with columns: Test Date, As Received, Remolded. Rows include Field weight\* of sample (g), Tare weight, ring (g), Tare weight, pan/plate (g), Tare weight, other (g), Dry weight of sample (g), Sample volume (cm³), Assumed particle density (g/cm³), Gravimetric Moisture Content (% g/g), Volumetric Moisture Content (% vol), Dry bulk density (g/cm³), Wet bulk density (g/cm³), Calculated Porosity (% vol), Percent Saturation, Laboratory analysis by, Data entered by, Checked by.

Comments:

- \* Weight including tares
NA = Not analyzed
--- = This sample was not remolded





**Data for Initial Moisture Content,  
Bulk Density, Porosity, and Percent Saturation**

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Coal Composite (Moderate) (1.15 g/cc)  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18

	<u>As Received</u>	<u>Remolded</u>
Test Date:	NA	2-May-18
Field weight* of sample (g):		3180.20
Tare weight, ring (g):		290.07
Tare weight, pan/plate (g):		0.00
Tare weight, other (g):		0.00
Dry weight of sample (g):		2582.12
Sample volume (cm <sup>3</sup> ):		2251.10
Assumed particle density (g/cm <sup>3</sup> ):		1.95
<hr/>		
Gravimetric Moisture Content (% g/g):		11.9
Volumetric Moisture Content (% vol):		13.7
Dry bulk density (g/cm <sup>3</sup> ):		1.15
Wet bulk density (g/cm <sup>3</sup> ):		1.28
Calculated Porosity (% vol):		41.1
Percent Saturation:		33.3
<hr/>		
Laboratory analysis by:		D. O'Dowd
Data entered by:		D. O'Dowd
Checked by:		J. Hines

Comments:

- \* Weight including tares
- NA = Not analyzed
- = This sample was not remolded

## **Saturated Hydraulic Conductivity**



### Summary of Saturated Hydraulic Conductivity Tests

Sample Number	K <sub>sat</sub> (cm/sec)	Oversize Corrected K <sub>sat</sub> (cm/sec)	Method of Analysis	
			Constant Head	Falling Head
Waste Rock Composite (S+T) (1.59 g/cc)	7.4E-02	---	X	
Waste Rock Composite (Moderate) (1.82 g/cc)	6.2E-02	---	X	
Coal Composite (S+T) (1.03 g/cc)	1.3E-02	---	X	
Coal Composite (Moderate) (1.15 g/cc)	6.3E-04	---	X	

--- = Oversize correction is unnecessary since coarse fraction < 5% of composite mass  
 NR = Not requested  
 NA = Not applicable



### Saturated Hydraulic Conductivity Constant Head Method

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Waste Rock Composite (S+T) (1.59 g/cc)  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18

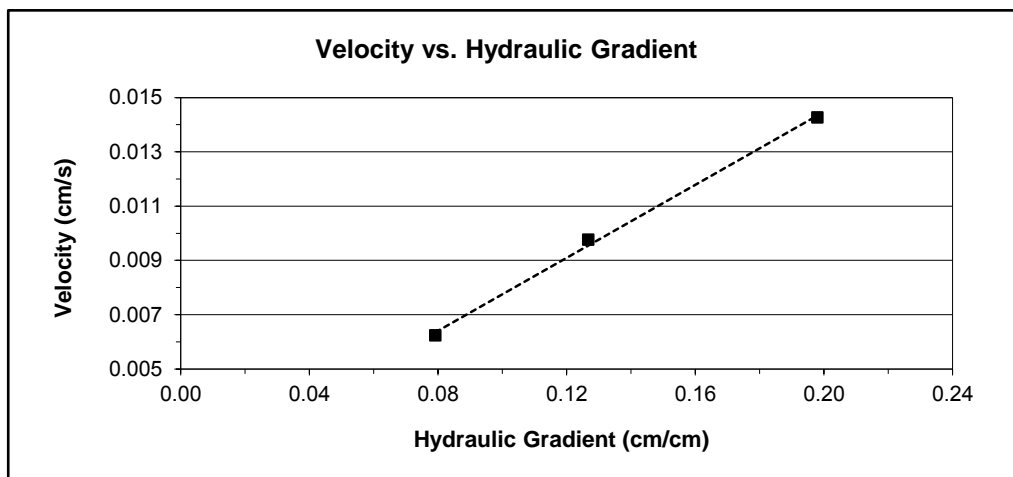
Type of water used: TAP  
 Collection vessel tare (g): 67.95  
 Sample length (cm): 12.62  
 Sample diameter (cm): 15.04  
 Sample x-sectional area (cm<sup>2</sup>): 177.56

Date	Time	Temp (°C)	Head (cm)	Q + Tare (g)	Q (cm <sup>3</sup> )	Elapsed time (sec)	Ksat (cm/sec)	Ksat @ 20°C (cm/sec)
Test # 1:								
4-May-18	10:19:30	21.0	2.5	219.87	151.9	60	7.2E-02	7.0E-02
4-May-18	10:20:30							
Test # 2:								
4-May-18	10:33:30	21.0	1.6	171.85	103.9	60	7.7E-02	7.5E-02
4-May-18	10:34:30							
Test # 3:								
4-May-18	10:50:30	21.0	1	134.34	66.4	60	7.9E-02	7.7E-02
4-May-18	10:51:30							

Average Ksat (cm/sec): 7.4E-02  
 Oversize Corrected Ksat (cm/sec): ---

Comments:

--- = Oversize correction is unnecessary since coarse fraction < 5% of composite mass



Laboratory analysis by: D. O'Dowd  
 Data entered by: D. O'Dowd  
 Checked by: J. Hines



### Saturated Hydraulic Conductivity Constant Head Method

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Waste Rock Composite (Moderate) (1.82 g/cc)  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18

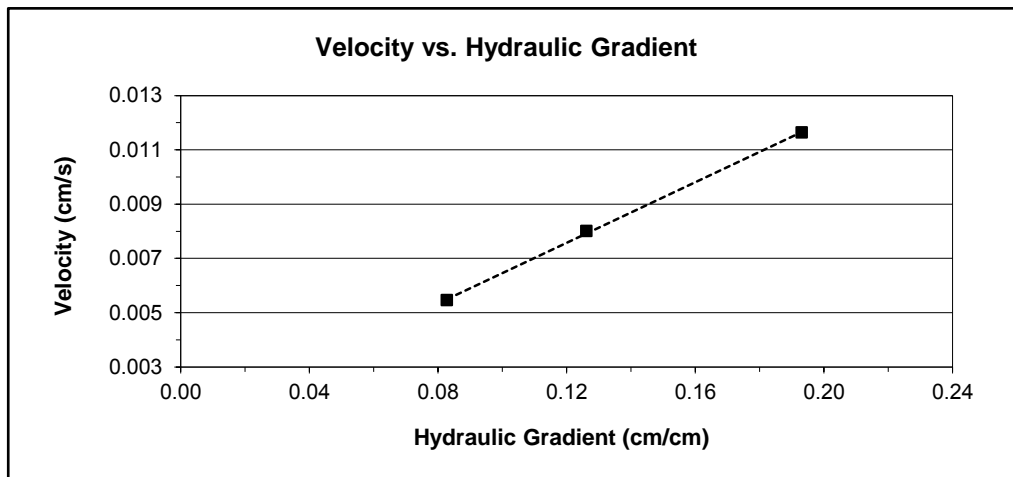
Type of water used: TAP  
 Collection vessel tare (g): 67.67  
 Sample length (cm): 12.68  
 Sample diameter (cm): 15.04  
 Sample x-sectional area (cm<sup>2</sup>): 177.66

Date	Time	Temp (°C)	Head (cm)	Q + Tare (g)	Q (cm <sup>3</sup> )	Elapsed time (sec)	Ksat (cm/sec)	Ksat @ 20°C (cm/sec)
Test # 1:								
4-May-18	10:20:00	21.0	2.45	191.70	124.0	60	6.0E-02	5.9E-02
4-May-18	10:21:00							
Test # 2:								
4-May-18	10:34:00	21.0	1.6	152.92	85.3	60	6.3E-02	6.2E-02
4-May-18	10:35:00							
Test # 3:								
4-May-18	10:51:00	21.0	1.05	125.80	58.1	60	6.6E-02	6.4E-02
4-May-18	10:52:00							

**Average Ksat (cm/sec): 6.2E-02**  
**Upsize Corrected Ksat (cm/sec): ---**

**Comments:**

--- = Upsize correction is unnecessary since coarse fraction < 5% of composite mass



Laboratory analysis by: D. O'Dowd  
 Data entered by: D. O'Dowd  
 Checked by: J. Hines



### Saturated Hydraulic Conductivity Constant Head Method

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Coal Composite (S+T) (1.03 g/cc)  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18

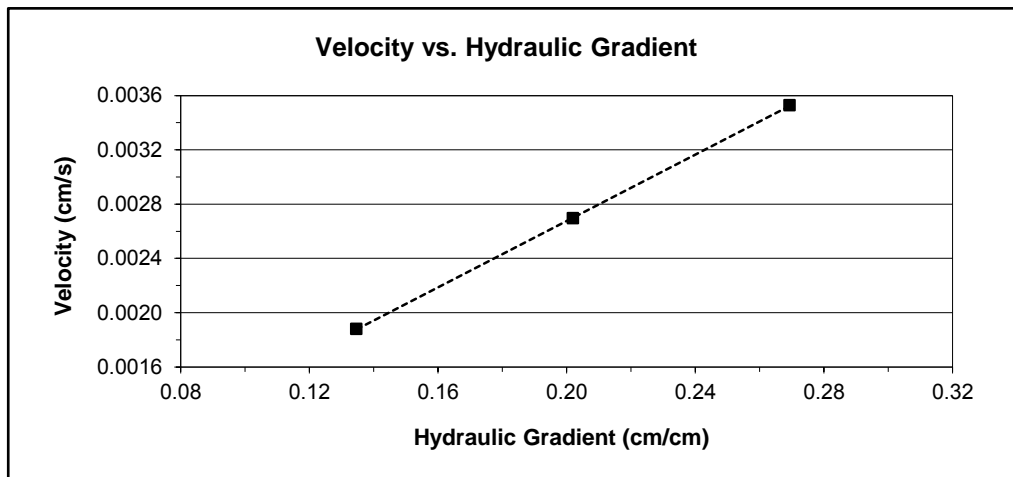
Type of water used: TAP  
 Collection vessel tare (g): 11.06  
 Sample length (cm): 12.62  
 Sample diameter (cm): 15.02  
 Sample x-sectional area (cm<sup>2</sup>): 177.26

Date	Time	Temp (°C)	Head (cm)	Q + Tare (g)	Q (cm <sup>3</sup> )	Elapsed time (sec)	Ksat (cm/sec)	Ksat @ 20°C (cm/sec)
Test # 1:								
4-May-18	10:22:30	21.0	3.4	48.57	37.5	60	1.3E-02	1.3E-02
4-May-18	10:23:30							
Test # 2:								
4-May-18	10:36:00	21.0	2.55	39.73	28.7	60	1.3E-02	1.3E-02
4-May-18	10:37:00							
Test # 3:								
4-May-18	10:53:30	21.0	1.7	31.05	20.0	60	1.4E-02	1.4E-02
4-May-18	10:54:30							

Average Ksat (cm/sec): 1.3E-02  
 Oversize Corrected Ksat (cm/sec): ---

Comments:

--- = Oversize correction is unnecessary since coarse fraction < 5% of composite mass



Laboratory analysis by: D. O'Dowd  
 Data entered by: D. O'Dowd  
 Checked by: J. Hines



### Saturated Hydraulic Conductivity Constant Head Method

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Coal Composite (Moderate) (1.15 g/cc)  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18

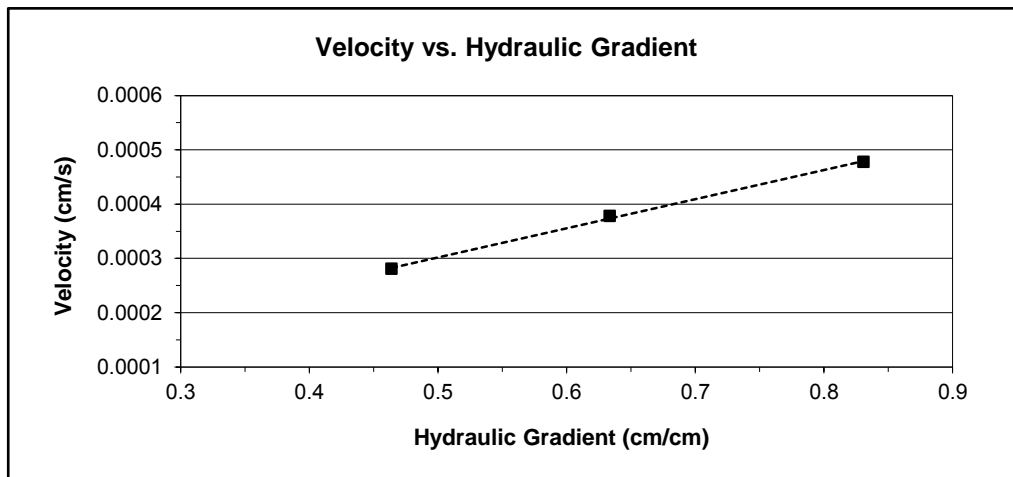
Type of water used: TAP  
 Collection vessel tare (g): 10.93  
 Sample length (cm): 12.68  
 Sample diameter (cm): 15.04  
 Sample x-sectional area (cm<sup>2</sup>): 177.59

Date	Time	Temp (°C)	Head (cm)	Q + Tare (g)	Q (cm <sup>3</sup> )	Elapsed time (sec)	Ksat (cm/sec)	Ksat @ 20°C (cm/sec)
Test # 1:								
4-May-18	10:19:00	21.0	9.9	31.27	20.3	240	6.1E-04	6.0E-04
4-May-18	10:23:00							
Test # 2:								
4-May-18	10:33:00	21.0	7.4	21.00	10.1	150	6.5E-04	6.3E-04
4-May-18	10:35:30							
Test # 3:								
4-May-18	10:50:00	21.0	5.25	19.89	9.0	180	6.8E-04	6.6E-04
4-May-18	10:53:00							

Average Ksat (cm/sec): 6.3E-04  
 Oversize Corrected Ksat (cm/sec): ---

Comments:

--- = Oversize correction is unnecessary since coarse fraction < 5% of composite mass



Laboratory analysis by: D. O'Dowd  
 Data entered by: D. O'Dowd  
 Checked by: J. Hines

# **Water Holding Capacity**





**Summary of Moisture Retention (1/3, 15 Bar Points and Water Holding Capacity\*)**

Sample Number	1/3 Bar Point Volumetric (%, cm <sup>3</sup> /cm <sup>3</sup> )	15 Bar Point Volumetric (%, cm <sup>3</sup> /cm <sup>3</sup> )	Water Holding Capacity (%, cm <sup>3</sup> /cm <sup>3</sup> )	Oversize Corrected		
				1/3 Bar Point Volumetric (%, cm <sup>3</sup> /cm <sup>3</sup> )	15 Bar Point Volumetric (%, cm <sup>3</sup> /cm <sup>3</sup> )	Water Holding Capacity (%, cm <sup>3</sup> /cm <sup>3</sup> )
Waste Rock Composite (S+T) (1.59 g/cc)	11.2	4.1	7.1	---	---	---
Waste Rock Composite (Moderate) (1.82 g/cc)	11.6	4.3	7.2	---	---	---
Coal Composite (S+T) (1.03 g/cc)	20.3	13.2	7.1	---	---	---
Coal Composite (Moderate) (1.15 g/cc)	20.2	13.0	7.2	---	---	---

\*Water Holding Capacity (WHC) is defined here as the difference in the moisture content of the sample at -1/3 bar of water potential (commonly referred to as 'Field Capacity') and the moisture content of the sample at -15 bars of water potential (commonly referred to as 'Wilting Point').

--- = Oversize correction is unnecessary since coarse fraction < 5% of composite mass

NA = Not applicable

NR = Not requested



**Moisture Retention Data**

**Pressure Plate**

(-1/3 Bar)

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Waste Rock Composite (S+T) (1.59 g/cc)  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18

Dry wt. of sample (g): 3568.96  
 Tare wt., ring (g): 286.93  
 Tare wt., screen & clamp (g): 66.07  
 Initial sample volume (cm<sup>3</sup>): 2240.86  
 Initial dry bulk density (g/cm<sup>3</sup>): 1.59  
 Assumed particle density (g/cm<sup>3</sup>): 2.59  
 Initial calculated total porosity (%): 38.39

	Date	Time	Weight* (g)	Matric Potential (-cm water)	Moisture Content † (% vol)	
Pressure plate:	14-May-18	11:50	4160.90	337	11.18	##

Volume Adjusted Data<sup>1</sup>

	Matric Potential (-cm water)	Adjusted Volume (cm <sup>3</sup> )	% Volume Change <sup>2</sup> (%)	Adjusted Density (g/cm <sup>3</sup> )	Adjusted Calculated Porosity (%)
Pressure plate:	337	2136.27	-4.67%	1.67	35.38

**Moisture content at -1/3 bar (% cm<sup>3</sup>/cm<sup>3</sup>): 11.2**

**Comments:**

- <sup>1</sup> Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent volume change measurements obtained after the pressure plate testing. "---" indicates no volume changes occurred.
- <sup>2</sup> Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '---' denotes no volume change occurred.
- \* Weight including tares
- † Assumed density of water is 1.0 g/cm<sup>3</sup>
- ## Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

**Technician Notes:**

Laboratory analysis by: D. O'Dowd  
 Data entered by: C. Krous  
 Checked by: J. Hines



### Moisture Retention Data

#### Dew Point Potentiometer

(-15 Bar)

Sample Number: Waste Rock Composite (S+T) (1.59 g/cc)

Initial sample bulk density (g/cm<sup>3</sup>): 1.59

Fraction of bulk sample used (<2.00mm fraction) (%): 38.40

Dry weight\* of dew point potentiometer sample (g): 160.89

Tare weight, jar (g): 116.40

	Date	Time	Weight* (g)	Water Potential (-cm water)	Moisture Content <sup>†</sup> (% vol)	
Dew point potentiometer:	11-May-18	10:25	163.83	12849	4.24	##
	10-May-18	13:35	163.66	17948	3.99	##

#### Volume Adjusted Data<sup>1</sup>

	Water Potential (-cm water)	Adjusted Volume (cm <sup>3</sup> )	% Volume Change <sup>2</sup> (%)	Adjusted Density (g/cm <sup>3</sup> )	Adjusted Calc. Porosity (%)
Dew point potentiometer:	12849	2136.27	-4.67%	1.67	35.38
	17948	2136.27	-4.67%	1.67	35.38

**Moisture content at -15 bar (% cm<sup>3</sup>/cm<sup>3</sup>): 4.1**

**Upsize Corrected Moisture content at -15 bar (% cm<sup>3</sup>/cm<sup>3</sup>): NA**

#### Comments:

<sup>1</sup> Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent the volume change measurements obtained after the pressure plate point. "----" indicates no volume changes occurred.

<sup>2</sup> Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '---' denotes no volume change occurred.

\* Weight including tares

<sup>†</sup> Adjusted for >2.00mm (#10 sieve) material not used in DPP testing. Assumed moisture content of material >2.00mm is zero, and assumed density of water is 1.0 g/cm<sup>3</sup>.

## Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

Laboratory analysis by: M. Garcia

Data entered by: C. Krous

Checked by: J. Hines



**Moisture Retention Data**

**Pressure Plate**

(-1/3 Bar)

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Waste Rock Composite (Moderate) (1.82 g/cc)  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18

Dry wt. of sample (g): 4110.90  
 Tare wt., ring (g): 289.38  
 Tare wt., screen & clamp (g): 53.80  
 Initial sample volume (cm<sup>3</sup>): 2252.89  
 Initial dry bulk density (g/cm<sup>3</sup>): 1.82  
 Assumed particle density (g/cm<sup>3</sup>): 2.59  
 Initial calculated total porosity (%): 29.42

	Date	Time	Weight* (g)	Matric Potential (-cm water)	Moisture Content † (% vol)
Pressure plate:	14-May-18	11:45	4714.80	337	11.57

Volume Adjusted Data<sup>1</sup>

	Matric Potential (-cm water)	Adjusted Volume (cm <sup>3</sup> )	% Volume Change <sup>2</sup> (%)	Adjusted Density (g/cm <sup>3</sup> )	Adjusted Calculated Porosity (%)
Pressure plate:	337	---	---	---	---

**Moisture content at -1/3 bar (% cm<sup>3</sup>/cm<sup>3</sup>): 11.6**

**Comments:**

- <sup>1</sup> Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent volume change measurements obtained after the pressure plate testing. "---" indicates no volume changes occurred.
- <sup>2</sup> Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '---' denotes no volume change occurred.
- \* Weight including tares
- † Assumed density of water is 1.0 g/cm<sup>3</sup>
- ‡ Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

**Technician Notes:**

Laboratory analysis by: D. O'Dowd  
 Data entered by: C. Krous  
 Checked by: J. Hines



### Moisture Retention Data

#### Dew Point Potentiometer

(-15 Bar)

Sample Number: Waste Rock Composite (Moderate) (1.82 g/cc)

Initial sample bulk density (g/cm<sup>3</sup>): 1.82

Fraction of bulk sample used (<2.00mm fraction) (%): 38.40

Dry weight\* of dew point potentiometer sample (g): 157.22

Tare weight, jar (g): 114.24

	Date	Time	Weight* (g)	Water Potential (-cm water)	Moisture Content <sup>†</sup> (% vol)
Dew point potentiometer:	11-May-18	10:15	159.97	13563	4.49
	10-May-18	12:15	159.83	16521	4.25

#### Volume Adjusted Data<sup>1</sup>

	Water Potential (-cm water)	Adjusted Volume (cm <sup>3</sup> )	% Volume Change <sup>2</sup> (%)	Adjusted Density (g/cm <sup>3</sup> )	Adjusted Calc. Porosity (%)
Dew point potentiometer:	13563	---	---	---	---
	16521	---	---	---	---

**Moisture content at -15 bar (% cm<sup>3</sup>/cm<sup>3</sup>): 4.3**

**Upsize Corrected Moisture content at -15 bar (% cm<sup>3</sup>/cm<sup>3</sup>): NA**

#### Comments:

<sup>1</sup> Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent the volume change measurements obtained after the pressure plate point. "----" indicates no volume changes occurred.

<sup>2</sup> Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '---' denotes no volume change occurred.

\* Weight including tares

<sup>†</sup> Adjusted for >2.00mm (#10 sieve) material not used in DPP testing. Assumed moisture content of material >2.00mm is zero, and assumed density of water is 1.0 g/cm<sup>3</sup>.

<sup>‡</sup> Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

Laboratory analysis by: M. Garcia

Data entered by: C. Krous

Checked by: J. Hines



**Moisture Retention Data**

**Pressure Plate**

(-1/3 Bar)

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Coal Composite (S+T) (1.03 g/cc)  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18

Dry wt. of sample (g): 2299.31  
 Tare wt., ring (g): 289.57  
 Tare wt., screen & clamp (g): 61.48  
 Initial sample volume (cm<sup>3</sup>): 2237.34  
 Initial dry bulk density (g/cm<sup>3</sup>): 1.03  
 Assumed particle density (g/cm<sup>3</sup>): 1.95  
 Initial calculated total porosity (%): 47.25

	Date	Time	Weight* (g)	Matric Potential (-cm water)	Moisture Content † (% vol)	
Pressure plate:	14-May-18	12:00	3017.20	337	20.30	##

Volume Adjusted Data<sup>1</sup>

	Matric Potential (-cm water)	Adjusted Volume (cm <sup>3</sup> )	% Volume Change <sup>2</sup> (%)	Adjusted Density (g/cm <sup>3</sup> )	Adjusted Calculated Porosity (%)
Pressure plate:	337	1807.13	-19.23%	1.27	34.70

**Moisture content at -1/3 bar (% cm<sup>3</sup>/cm<sup>3</sup>): 20.3**

**Comments:**

- <sup>1</sup> Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent volume change measurements obtained after the pressure plate testing. "---" indicates no volume changes occurred.
- <sup>2</sup> Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '---' denotes no volume change occurred.
- \* Weight including tares
- † Assumed density of water is 1.0 g/cm<sup>3</sup>
- ## Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

**Technician Notes:**

Laboratory analysis by: D. O'Dowd  
 Data entered by: C. Krous  
 Checked by: J. Hines



### Moisture Retention Data

#### Dew Point Potentiometer

(-15 Bar)

Sample Number: Coal Composite (S+T) (1.03 g/cc)

Initial sample bulk density (g/cm<sup>3</sup>): 1.03

Fraction of bulk sample used (<2.00mm fraction) (%): 82.69

Dry weight\* of dew point potentiometer sample (g): 136.19

Tare weight, jar (g): 115.29

	Date	Time	Weight* (g)	Water Potential (-cm water)	Moisture Content <sup>†</sup> (% vol)	
Dew point potentiometer:	14-May-18	10:05	138.92	12136	13.75	##
	11-May-18	14:45	138.78	16317	13.04	##

#### Volume Adjusted Data<sup>1</sup>

	Water Potential (-cm water)	Adjusted Volume (cm <sup>3</sup> )	% Volume Change <sup>2</sup> (%)	Adjusted Density (g/cm <sup>3</sup> )	Adjusted Calc. Porosity (%)
Dew point potentiometer:	12136	1807.13	-19.23%	1.27	34.70
	16317	1807.13	-19.23%	1.27	34.70

**Moisture content at -15 bar (% cm<sup>3</sup>/cm<sup>3</sup>): 13.2**

**Upsize Corrected Moisture content at -15 bar (% cm<sup>3</sup>/cm<sup>3</sup>): NA**

#### Comments:

<sup>1</sup> Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent the volume change measurements obtained after the pressure plate point. "----" indicates no volume changes occurred.

<sup>2</sup> Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '---' denotes no volume change occurred.

\* Weight including tares

† Adjusted for >2.00mm (#10 sieve) material not used in DPP testing. Assumed moisture content of material >2.00mm is zero, and assumed density of water is 1.0 g/cm<sup>3</sup>.

## Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

Laboratory analysis by: M. Garcia

Data entered by: C. Krous

Checked by: J. Hines



**Moisture Retention Data**

**Pressure Plate**

(-1/3 Bar)

Job Name: Enviromin, Inc.  
 Job Number: DB18.1057.00  
 Sample Number: Coal Composite (Moderate) (1.15 g/cc)  
 Project Name: NWP Column Study  
 Date Sampled: 1/30/18

Dry wt. of sample (g): 2582.12  
 Tare wt., ring (g): 290.07  
 Tare wt., screen & clamp (g): 58.32  
 Initial sample volume (cm<sup>3</sup>): 2251.10  
 Initial dry bulk density (g/cm<sup>3</sup>): 1.15  
 Assumed particle density (g/cm<sup>3</sup>): 1.95  
 Initial calculated total porosity (%): 41.13

	Date	Time	Weight* (g)	Matric Potential (-cm water)	Moisture Content † (% vol)	
Pressure plate:	14-May-18	12:00	3345.84	337	20.19	##

Volume Adjusted Data<sup>1</sup>

	Matric Potential (-cm water)	Adjusted Volume (cm <sup>3</sup> )	% Volume Change <sup>2</sup> (%)	Adjusted Density (g/cm <sup>3</sup> )	Adjusted Calculated Porosity (%)
Pressure plate:	337	2056.64	-8.64%	1.26	35.56

**Moisture content at -1/3 bar (% cm<sup>3</sup>/cm<sup>3</sup>): 20.2**

**Comments:**

- <sup>1</sup> Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent volume change measurements obtained after the pressure plate testing. "---" indicates no volume changes occurred.
- <sup>2</sup> Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '---' denotes no volume change occurred.
- \* Weight including tares
- † Assumed density of water is 1.0 g/cm<sup>3</sup>
- ## Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

**Technician Notes:**

Laboratory analysis by: D. O'Dowd  
 Data entered by: C. Krous  
 Checked by: J. Hines





### Moisture Retention Data

#### Dew Point Potentiometer

(-15 Bar)

Sample Number: Coal Composite (Moderate) (1.15 g/cc)

Initial sample bulk density (g/cm<sup>3</sup>): 1.15

Fraction of bulk sample used (<2.00mm fraction) (%): 82.69

Dry weight\* of dew point potentiometer sample (g): 140.62

Tare weight, jar (g): 116.62

	Date	Time	Weight* (g)	Water Potential (-cm water)	Moisture Content <sup>†</sup> (% vol)	
Dew point potentiometer:	15-May-18	10:10	143.67	12646	13.18	##
	14-May-18	10:25	143.62	15909	12.99	##

#### Volume Adjusted Data<sup>1</sup>

	Water Potential (-cm water)	Adjusted Volume (cm <sup>3</sup> )	% Volume Change <sup>2</sup> (%)	Adjusted Density (g/cm <sup>3</sup> )	Adjusted Calc. Porosity (%)
Dew point potentiometer:	12646	2056.64	-8.64%	1.26	35.56
	15909	2056.64	-8.64%	1.26	35.56

**Moisture content at -15 bar (% cm<sup>3</sup>/cm<sup>3</sup>): 13.0**

**Upsize Corrected Moisture content at -15 bar (% cm<sup>3</sup>/cm<sup>3</sup>): NA**

#### Comments:

<sup>1</sup> Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent the volume change measurements obtained after the pressure plate point. "----" indicates no volume changes occurred.

<sup>2</sup> Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '---' denotes no volume change occurred.

\* Weight including tares

<sup>†</sup> Adjusted for >2.00mm (#10 sieve) material not used in DPP testing. Assumed moisture content of material >2.00mm is zero, and assumed density of water is 1.0 g/cm<sup>3</sup>.

## Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

Laboratory analysis by: M. Garcia

Data entered by: C. Krous

Checked by: J. Hines

# **Laboratory Tests and Methods**



## Tests and Methods

Dry Bulk Density:	ASTM D7263
Moisture Content:	ASTM D7263, ASTM D2216
Calculated Porosity:	ASTM D7263
Saturated Hydraulic Conductivity:	
Constant Head:	ASTM D 5856 (modified apparatus)
(Rigid Wall)	
Pressure Plate Method:	ASTM D6836 (modified apparatus)
Water Potential (Dewpoint Potentiometer) Method:	ASTM D6836
Water Holding Capacity (calc):	ASTM D6836; Stephens, D. B. 1996, pp.11-12, Vadose Zone Hydrology. CRC Press, Inc., Boca Raton, FL

## **Appendix B2 – Mineralogy**

# Coal Composite

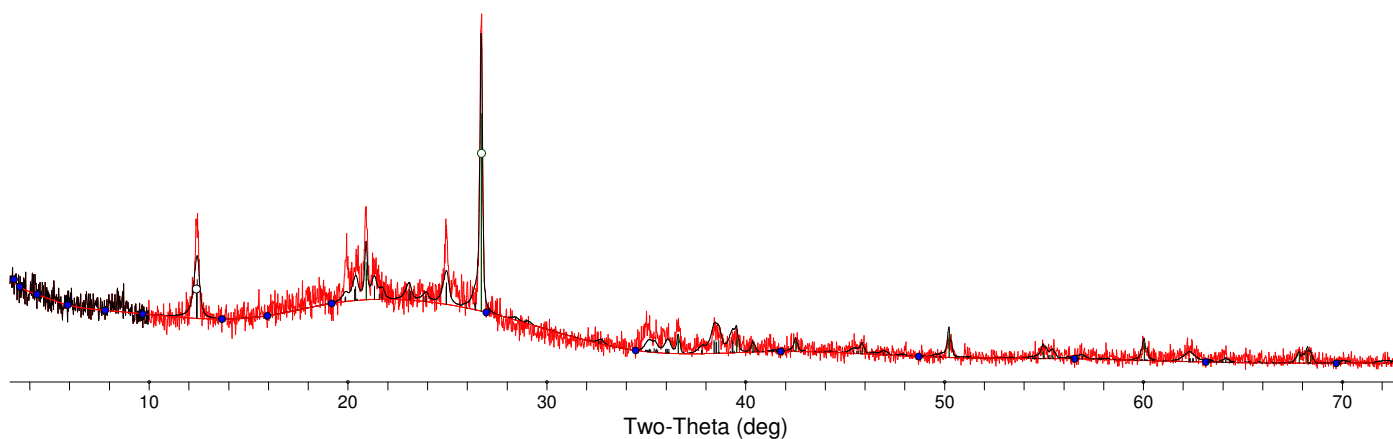
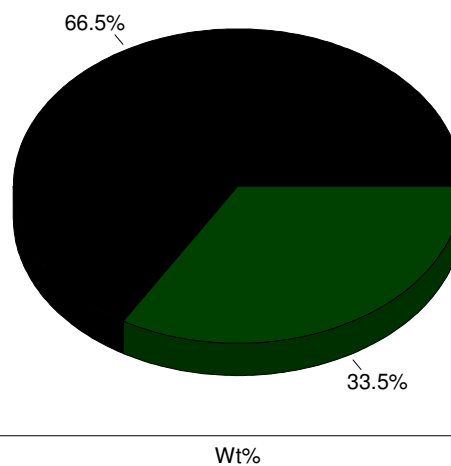
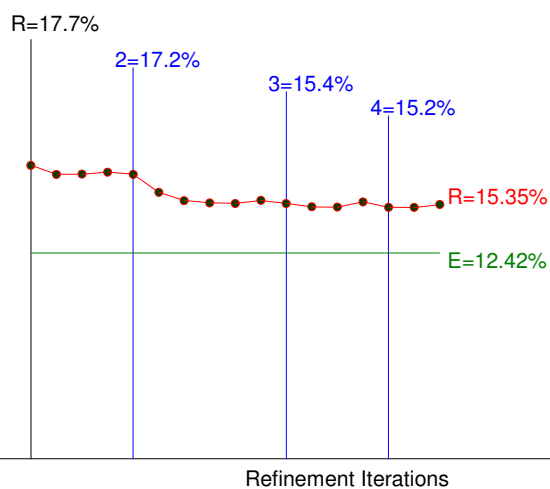
FILE: [Coal composite.xml]  
 SCAN: 3.0/73.0/0.02/3(sec), Cu, I(p)=511.0, 02/26/18 03:07p  
 PROC: [WPF Control File]

- K-alpha2 Peak Present
- Allow Negative Isotropic B
- Allow Negative Occupancy
- Apply Anomalous Scattering
- [Diffractometer LP] Two-Theta Range of Fit = 10.0 - 73.0(deg)
- Zero Offset of Goniometer - 2Theta = 0.034795(0.008641)
- Monochromator Correction for LP Factor = 1.0
- K-alpha2/K-alpha1 Intensity Ratio = 0.5

Profile Shape Function (PSF) for All Phases: pseudo-Voigt, Fixed-BG, Lambda=1.54059Å (Cu/K-alpha1)

Phase ID (2)	Source	I/Ic	Wt%	#L
■ Kaolinite 1A - Al <sub>2</sub> Si <sub>2</sub> O <sub>5</sub> (OH) <sub>4</sub>	PDF#97-003-1135	1.05(0%)	66.5 (2.3)	279
■ Quartz low - SiO <sub>2</sub>	PDF#97-006-2405	4.13(0%)	33.5 (1.1)	54
XRF(Wt%): SiO <sub>2</sub> =65.0%, Al <sub>2</sub> O <sub>3</sub> =26.7%				

NOTE: Fitting Halted at Iteration 17(4): R=15.35% (E=12.42%, R/E=1.24, P=18, EPS=0.5)



# Waste Rock

FILE: [Waste Rock.raw]

SCAN: 3.0/73.0/0.02/2(sec), Cu, I(p)=1464, 02/20/18 01:19p

PROC: [WPF Control File]

- K-alpha2 Peak Present
- Allow Negative Isotropic B
- Allow Negative Occupancy
- Apply Anomalous Scattering

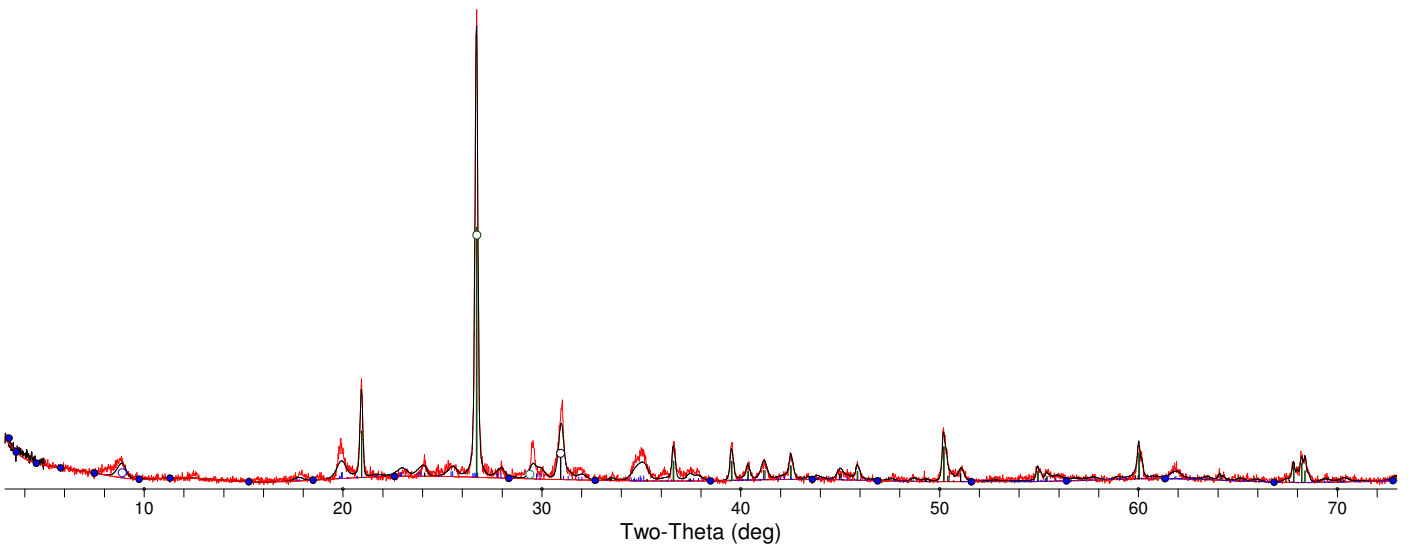
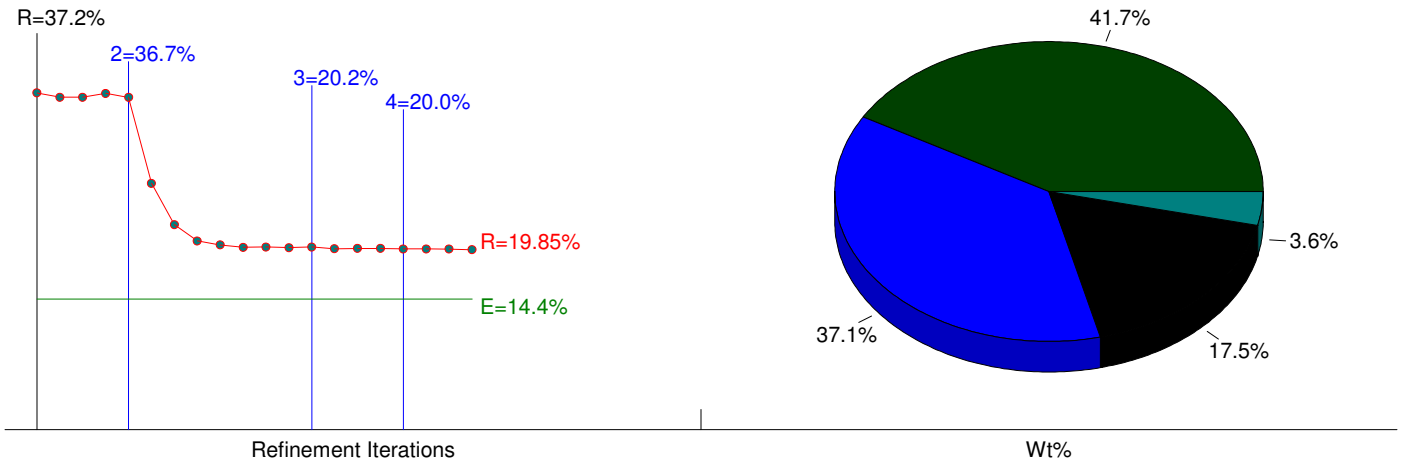
- [Diffractometer LP] Two-Theta Range of Fit = 5.0 - 73.0(deg)
- Zero Offset of Goniometer - 2Theta = 0.063901(0.004741)
- Monochromator Correction for LP Factor = 1.0
- K-alpha2/K-alpha1 Intensity Ratio = 0.5

Profile Shape Function (PSF) for All Phases: pseudo-Voigt, Fixed-BG, Lambda=1.54059Å (Cu/K-alpha1)

Phase ID (4)	Source	I/IC	Wt%	#L
<span style="color: green;">■</span> Quartz low - SiO <sub>2</sub>	PDF#97-017-3226	4.20(0%)	41.7 (0.7)	54
<span style="color: blue;">■</span> Muscovite 2M1 - (K <sub>0.82</sub> Na <sub>0.18</sub> )(Fe <sub>0.03</sub> Al <sub>1.97</sub> )(AlSi <sub>3</sub> )O <sub>10</sub> (OH) <sub>2</sub>	PDF#97-006-8548	0.47(0%)	37.1 (0.8)	193
<span style="color: black;">■</span> Dolomite - CaMg(CO <sub>3</sub> ) <sub>2</sub>	PDF#97-017-1520	2.30(0%)	17.5 (0.5)	38
<span style="color: teal;">■</span> Calcite - Ca(CO <sub>3</sub> )	PDF#97-004-0543	2.90(0%)	3.6 (0.3)	20

XRF(Wt%): Fe2O3=0.2%, CaO=7.4%, K2O=3.6%, SiO2=58.7%, Al2O3=14.3%, MgO=3.8%, Na2O=0.5%, CO2=10.0%

NOTE: Fitting Halted at Iteration 20(4): R=19.85% (E=14.4%, R/E=1.38, P=24, EPS=0.5)



## **Appendix B3 – Chemistry/Multi-Acid Digests**

**CLIENT** : Enviromin Inc.  
**PROJECT** : NWP Column Study  
**SGS Project #** : 1805  
**Test** : Metals by Two-Acid Digestion with ICP-MS Finish  
**Date** : March 2, 2018

Sample ID	Ag ppm	Al %	Ba ppm	Ca %	Cr ppm	Cu ppm	Fe %	K %	Li ppm	Mg %	Mn ppm	Na %	Ni ppm
Method Code	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B
LOD	0.01	0.01	5	0.01	1	0.5	0.01	0.01	1	0.01	2	0.01	0.5
Waste Rock A	0.38	0.61	872	4.93	24	33.3	2.78	0.22	9	1.7	536	0.01	53.2
Waste Rock B	0.37	0.63	759	4.7	23	29.7	2.84	0.22	10	1.77	529	0.02	50.5
Coal Composite A	0.37	0.39	133	0.32	9	19	0.34	0.1	<1	0.05	17	0.01	9.4
Coal Composite B	1.72	0.39	131	0.33	11	23.7	0.41	0.09	<1	0.05	22	0.01	9.4
<b>Duplicate</b>													
Waste Rock B	0.38	0.63	770	4.83	23	33.9	2.79	0.22	10	1.74	548	0.02	51.7
<b>QC</b>													
XRAL01A	2.04	0.53	3260	1.96	122	106	1.98	0.14	3	0.29	298	0.01	42.1
Certified Values	2.18	0.53	3540	1.91	123	105	1.91	0.16	3.5	0.27	305	0.01	41.42
Tolerance (%)	67.43	15.09	10.45	11.52	12.20	11.19	11.52	25.00	81.43	18.52	11.48	300.00	13.01



**CLIENT** : Enviromin Inc.  
**PROJECT** : NWP Column Study  
**SGS Project #** : 1805  
**Test** : Metals by Two-Acid Digestion with ICP-MS Finish  
**Date** : March 2, 2018

Sample ID	P %	S %	Sr ppm	Ti %	V ppm	Zn ppm	Zr ppm	As ppm	Be ppm	Bi ppm	Cd ppm	Ce ppm	Co ppm
Method Code	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B
LOD	0.005	0.01	0.5	0.01	1	1	0.5	1	0.1	0.02	0.01	0.05	0.1
Waste Rock A	0.09	0.14	109	<0.01	26	170	7.4	7	0.9	0.21	1.31	14.1	12.4
Waste Rock B	0.09	0.15	107	<0.01	25	165	7.3	4	0.9	0.19	1.24	14	11.7
Coal Composite A	0.01	0.04	29	<0.01	14	37	7.8	11	0.6	0.21	0.43	4.67	2.3
Coal Composite B	0.01	0.04	30	<0.01	14	37	8.5	20	0.6	0.77	0.4	4.77	2.4
<b>Duplicate</b>													
Waste Rock B	0.09	0.16	106	<0.01	25	170	7.4	4	0.9	0.19	1.24	14.2	11.7
<b>QC</b>													
XRAL01A	0.08	0.19	62.8	<0.01	229	189	6.2	1100	0.4	11.8	2.9	17.5	6.6
Certified Values	0.07	0.18	62.39	#N/A	225	179	6.5	1050	0.39	11.71	2.82	#N/A	6.48
Tolerance (%)	28.57	22.22	12.01	#N/A	11.11	11.73	29.23	10.3	74.4	10.4	11.0	#N/A	13.9

**CLIENT** : Enviromin Inc.  
**PROJECT** : NWP Column Study  
**SGS Project #** : 1805  
**Test** : Metals by Two-Acid Digestion with ICP-MS Finish  
**Date** : March 2, 2018

Sample ID	Cs ppm	Ga ppm	Ge ppm	Hf ppm	Hg ppm	In ppm	La ppm	Lu ppm	Mo ppm	Nb ppm	Pb ppm	Rb ppm	Sb ppm
Method Code	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B
LOD	0.05	0.1	0.1	0.05	0.01	0.02	0.1	0.01	0.05	0.05	0.2	0.2	0.05
Waste Rock A	1.51	1.6	<0.1	0.16	0.07	0.04	4.8	0.12	3.89	<0.05	21.6	11.4	0.91
Waste Rock B	1.57	1.6	<0.1	0.17	0.03	0.04	5	0.12	3.8	<0.05	20.2	11.1	0.71
Coal Composite A	1.57	1.3	<0.1	0.15	0.11	0.03	1.9	0.07	0.94	0.17	9.9	10.6	0.43
Coal Composite B	1.75	1.4	<0.1	0.16	0.14	0.03	1.9	0.07	1.06	0.19	9.7	10.5	0.42
<b>Duplicate</b>													
Waste Rock B	1.61	1.6	<0.1	0.18	0.04	0.04	4.9	0.12	3.78	<0.05	20.7	11.7	0.71
<b>QC</b>													
XRAL01A	1.09	1.9	<0.1	0.17	8.39	0.22	8.5	0.11	10.7	<0.05	69	7.7	103
Certified Values	#N/A	#N/A	#N/A	#N/A	8.00	#N/A	8.00	#N/A	9.79	#N/A	72.43	#N/A	100
Tolerance (%)	#N/A	#N/A	#N/A	#N/A	10.4	#N/A	13.1	#N/A	11.2	#N/A	10.7	#N/A	10.0

**CLIENT** : Enviromin Inc.  
**PROJECT** : NWP Column Study  
**SGS Project #** : 1805  
**Test** : Metals by Two-Acid Digestion with ICP-MS Finish  
**Date** : March 2, 2018

Sample ID	Sc ppm	Se ppm	Sn ppm	Ta ppm	Tb ppm	Te ppm	Th ppm	Tl ppm	U ppm	W ppm	Y ppm	Yb ppm
Method Code	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B	ICM12B
LOD	0.1	1	0.3	0.05	0.02	0.05	0.1	0.02	0.05	0.1	0.05	0.1
Waste Rock A	6	2	0.5	<0.05	0.54	0.05	5.7	0.04	1.4	<0.1	13.6	0.8
Waste Rock B	6	2	0.5	<0.05	0.53	<0.05	5.6	0.04	1.35	<0.1	13.3	0.8
Coal Composite A	3.5	<1	0.5	<0.05	0.19	<0.05	1.9	0.03	0.71	<0.1	5.45	0.4
Coal Composite B	3.6	<1	0.5	<0.05	0.19	0.05	2	0.05	0.72	<0.1	5.38	0.5
<b>Duplicate</b>												
Waste Rock B	6.1	2	0.5	<0.05	0.53	0.05	5.7	0.05	1.36	<0.1	13.5	0.8
<b>QC</b>												
XRAL01A	3.3	5	2.7	<0.05	0.33	0.13	2.9	4.15	3.49	10.2	9.92	0.7
Certified Values	2.88	#N/A	2.39	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	10.4	9.38	#N/A
Tolerance (%)	18.8	#N/A	41.4	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	12.4	11.3	#N/A

**CLIENT** : Enviromin Inc.  
**PROJECT** : NWP Column Study  
**SGS Project #** : 1805  
**Test** : Metals by Four-Acid Digestion with ICP-MS Finish  
**Date** : March 26, 2018

Sample ID	Ag ppm	Al %	Ba ppm	Ca %	Cr ppm	Cu ppm	Fe %	K %	Li ppm	Mg %	Mn ppm	Na %	Ni ppm
Method Code	ICM40B	ICM40B	ICM40B	ICM40B	ICM40B	ICM40B	ICM40B	ICM40B	ICM40B	ICM40B	ICM40B	ICM40B	ICM40B
LOD	0.02	0.01	1	0.01	1	0.5	0.01	0.01	1	0.01	2	0.01	0.5
Waste Rock A	0.4	6.55	1330	4.45	108	35.6	3.06	2.64	45	2.01	524	0.1	55.4
Waste Rock B	0.43	6.57	1380	4.45	113	33.4	3.03	2.66	45	1.94	494	0.1	56.4
Coal Composite A	0.24	6.27	317	0.31	54	18.9	0.54	0.96	39	0.18	23	0.04	11.4
Coal Composite B	0.93	6.23	319	0.31	58	17.4	0.65	0.94	41	0.17	29	0.04	11.7
<b>Duplicate</b>													
Coal Composite B <b>QC</b>	0.77	6.24	317	0.32	56	19.6	0.65	0.97	42	0.17	26	0.04	11.6
OREAS 901	0.42	6.58	222	0.09	62	1350	3.95	3.45	19	0.6	284	0.05	36.7
Certified Values	0.439	6.81	229	0.092	57	1410.0	4.03	3.67	17.9	0.6	290	0.042	39.9
Tolerance (%)	21.39	10.37	11.09	37.17	14.39	10.09	10.62	10.68	23.97	14.17	11.72	69.52	13.13

**CLIENT** : Enviromin Inc.  
**PROJECT** : NWP Column Study  
**SGS Project #** : 1805  
**Test** : Metals by Four-Acid Digestion with ICP-MS Finish  
**Date** : March 26, 2018

Sample ID	P %	S %	Sr ppm	Ti %	V ppm	Zn ppm	Zr ppm	As ppm	Be ppm	Bi ppm	Cd ppm	Ce ppm	Co ppm
Method Code	ICM40B	ICM40B	ICM40B	ICM40B	ICM40B	ICM40B	ICM40B	ICM40B	ICM40B	ICM40B	ICM40B	ICM40B	ICM40B
LOD	0.01	0.01	0.5	0.01	2	1	0.5	1	0.1	0.04	0.02	0.05	0.1
Waste Rock A	0.1	0.16	145	0.29	192	165	99	7	2	0.2	1.3	64.1	12
Waste Rock B	0.1	0.15	156	0.3	187	168	96.1	5	1.8	0.2	1.32	63.2	12.2
Coal Composite A	0.03	0.16	108	0.31	108	37	85.6	4	1.3	0.22	0.46	42.9	2.9
Coal Composite B	0.03	0.19	107	0.3	101	37	79.9	8	1.6	0.22	0.46	39.7	3.2
<b>Duplicate</b>													
Coal Composite B <b>QC</b>	0.03	0.18	111	0.3	103	38	81.3	10	1.4	0.25	0.44	40	3.4
OREAS 901	0.06	0.04	30.1	0.31	77	22	185	66	6.5	4.39	0.06	91.2	70.5
Certified Values	0.062	0.036	31	#N/A	81	24	176	71	6.17	4.75	#N/A	95	73
Tolerance (%)	30.16	79.44	14.03	#N/A	16.17	20.42	10.71	13.52	14.05	12.11	#N/A	10.13	10.34

**CLIENT** : Enviromin Inc.  
**PROJECT** : NWP Column Study  
**SGS Project #** : 1805  
**Test** : Metals by Four-Acid Digestion with ICP-MS Finish  
**Date** : March 26, 2018

Sample ID	Cs ppm	Ga ppm	Hf ppm	In ppm	La ppm	Lu ppm	Mo ppm	Nb ppm	Pb ppm	Rb ppm	Sb ppm	Sc ppm	Se ppm
Method Code	ICM40B	ICM40B	ICM40B	ICM40B	ICM40B	ICM40B	ICM40B	ICM40B	ICM40B	ICM40B	ICM40B	ICM40B	ICM40B
LOD	1	0.1	0.02	0.02	0.1	0.01	0.05	0.1	0.5	0.2	0.05	0.5	2
Waste Rock A	9	18.1	2.62	0.05	34.6	0.3	4.39	13.7	21.7	124	1.83	11	3
Waste Rock B	8	17.6	2.56	0.05	34.9	0.3	4.27	13.4	21.3	120	1.73	10.6	2
Coal Composite A	5	14.8	2.55	0.05	22.6	0.27	1.75	8.6	10.4	59.6	1.18	9.7	<2
Coal Composite B	5	14.6	2.52	0.05	20.7	0.26	1.83	8.3	10.2	55.8	1.24	9.8	<2
<b>Duplicate</b>													
Coal Composite B <b>QC</b>	5	15	2.46	0.05	20.7	0.27	1.84	7.9	10.3	55.6	1.22	9.5	<2
OREAS 901	5	18.9	5.13	0.26	46.4	0.54	3.28	11.6	16.2	157	2.46	13.9	3
Certified Values	5.12	18.7	5.27	0.26	47	0.53	3.36	#N/A	17.4	161	2.61	14	#N/A
Tolerance (%)	254.14	11.34	10.95	29.23	10.53	14.72	13.72	#N/A	17.18	10.31	14.79	18.93	#N/A

**CLIENT** : Enviromin Inc.  
**PROJECT** : NWP Column Study  
**SGS Project #** : 1805  
**Test** : Metals by Four-Acid Digestion with ICP-MS Finish  
**Date** : March 26, 2018

Sample ID	Sn ppm	Ta ppm	Tb ppm	Te ppm	Th ppm	Tl ppm	U ppm	W ppm	Y ppm	Yb ppm
Method Code	ICM40B	ICM40B	ICM40B	ICM40B	ICM40B	ICM40B	ICM40B	ICM40B	ICM40B	ICM40B
LOD	0.3	0.05	0.05	0.05	0.2	0.02	0.05	0.1	0.1	0.1
Waste Rock A	2.2	0.92	0.67	<0.05	10.8	0.93	4.25	1.3	21.4	2
Waste Rock B	1.9	0.91	0.65	<0.05	10.8	0.88	4.25	1.1	21.3	1.9
Coal Composite A	1.7	0.96	0.52	0.05	7.2	0.6	2.78	1	16.4	1.8
Coal Composite B	1.8	2.06	0.49	<0.05	6.9	0.54	2.69	0.9	16.1	1.7
<b>Duplicate</b>										
Coal Composite B <b>QC</b>	1.7	1.79	0.5	<0.05	6.9	0.56	2.72	0.9	16	1.7
OREAS 901	3.5	0.84	1.24	0.08	15.5	0.77	10.3	3.8	37.7	3.6
Certified Values	3.33	0.76	1.18	0.09	16.1	0.78	10.3	#N/A	37.4	3.58
Tolerance (%)	32.52	26.45	20.59	148.89	13.11	16.41	11.21	#N/A	10.67	16.98

**CLIENT** : Enviromin Inc.  
**PROJECT** : NWP Column Study  
**SGS Project #** : 1805  
**TEST** : Modified Acid-Base Accounting  
**Date** : March 2, 2018

Sample ID	Paste pH	TIC %	CaCO3 NP	C(T) %	C(T) %	TOC %	S(T) %	S(SO4) %	S(S-2) %	Insoluble S %	AP	Modified NP	Net Modified NP	Fizz Test
Method Code	Sobek	CSB02V	Calc.	CSA06V	CSA06V	Calc.	CSA06V	CSA07V	CSA08D	Calc.	Calc.	Modified	Calc.	Sobek
LOD	0.20	0.01	#N/A	0.005	0.01	#N/A	0.005	0.01	0.01	#N/A	#N/A	0.5	#N/A	#N/A
Waste Rock A	7.67	2.24	186.7	7.3	-	5.06	0.141	0.02	0.08	0.04	2.5	161.4	158.9	Moderate
Waste Rock B	7.75	2.24	186.7	6.47	-	4.23	0.152	0.02	0.1	0.03	3.1	169.2	166.1	Moderate
Coal Composite A	4.49	<0.01	<0.8	>30	36.5	36.5	0.16	<0.01	<0.01	0.16	<0.3	-15.8	-15.8	None
Coal Composite B	4.41	<0.01	<0.8	>30	37.5	37.5	0.18	<0.01	<0.01	0.18	<0.3	-19.8	-19.8	None
<b>Duplicate</b>														
Waste Rock A	7.66							0.02				161.8		Moderate
Waste Rock B				6.5			0.143		0.11					
Coal Composite B		<0.01			37.4									
<b>QC</b>														
CaCO3					12.1									
GTS-2A				1.97			0.327							
RTS-3A								1	2.55					
SY-4		0.95												
NBM-1												39.9		Slight
Blank		<0.01		<0.005	<0.01		<0.005	<0.01	<0.01					
Certified Values		0.91		2.01	12.0		0.341	0.98	2.46			42.0		Slight
Tolerance +/-		0.07		0.11	1.2		0.01	0.12	0.25			3.0		

**Note:**

AP = Acid potential in tonnes CaCO3 equivalent per 1000 tonnes of material. AP is determined from the measured sulphide sulphur content.

NP = Neutralization potential in tonnes CaCO3 equivalent per 1000 tonnes of material.

NET Modified NP = Modified NP - AP

Carbonate NP is calculated from TIC originating from carbonate minerals and is expressed in kg CaCO3/tonne.

Sulphate Sulphur determined by 25% HCl Leach with S by ICP Finish.

Sulphide Sulphur determined by Sobek 1:7 Nitric Acid Leach with S by ICP Finish.

Insoluble S is acid insoluble S (Total S - (Sulphate S + Sulphide S)).



## **Appendix B4 – Background Water Quality**



# ANALYTICAL SUMMARY REPORT

March 23, 2018

Enviromin Inc  
524 Professional Dr  
Bozeman, MT 59718

Work Order: B18031023      Quote ID: B4093 - Enviromin Lab

Project Name: NWP Columns

Energy Laboratories Inc Billings MT received the following 2 samples for Enviromin Inc on 3/14/2018 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B18031023-001	NWP GW	03/13/18 9:00	03/14/18	Aqueous	Biochemical Oxygen Demand, 5 Day
B18031023-002	NWP GW	03/13/18 9:00	03/14/18	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity Carbon, Dissolved Organic Chemical Oxygen Demand Preparation for COD testing

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:



**CLIENT:** Enviromin Inc  
**Project:** NWP Columns  
**Work Order:** B18031023

**Report Date:** 03/23/18

## **CASE NARRATIVE**

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Tests associated with analyst identified as ELI-CA were subcontracted to Energy Laboratories, PO Box 247, Casper, WY, EPA Number WY00002.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Columns  
**Lab ID:** B18031023-001  
**Client Sample ID:** NWP GW

**Report Date:** 03/23/18  
**Collection Date:** 03/13/18 09:00  
**DateReceived:** 03/14/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
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#### AGGREGATE ORGANICS

Oxygen Demand, Biochemical (BOD)	<15	mg/L		20		A5210 B	03/14/18 14:43 / rik
No BOD dilution depleted greater than 2.0 mg/L DO.							

**Report Definitions:** RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Columns  
**Lab ID:** B18031023-002  
**Client Sample ID:** NWP GW

**Report Date:** 03/23/18  
**Collection Date:** 03/13/18 09:00  
**Date Received:** 03/14/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>INORGANICS</b>							
Alkalinity, Total as CaCO3	25	mg/L		4		A2320 B	03/15/18 20:38 / rco
Bicarbonate as HCO3	30	mg/L		4		A2320 B	03/15/18 20:38 / rco
Carbonate as CO3	ND	mg/L		4		A2320 B	03/15/18 20:38 / rco
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	1.6	mg/L		0.5		A5310 C	03/21/18 20:32 / eli-ca
Oxygen Demand, Chemical (COD)	ND	mg/L		5		E410.4	03/15/18 15:29 / mej
<b>METALS, DISSOLVED</b>							
Aluminum	0.26	mg/L		0.03		E200.7	03/15/18 12:47 / rlh
Antimony	ND	mg/L		0.001		E200.8	03/15/18 15:09 / jpv
Arsenic	ND	mg/L		0.001		E200.8	03/15/18 15:09 / jpv
Barium	0.08	mg/L		0.05		E200.7	03/15/18 12:47 / rlh
Beryllium	ND	mg/L		0.001		E200.7	03/15/18 12:47 / rlh
Boron	ND	mg/L		0.05		E200.7	03/15/18 12:47 / rlh
Cadmium	ND	mg/L		0.001		E200.8	03/15/18 15:09 / jpv
Calcium	10	mg/L		1		E200.7	03/15/18 12:47 / rlh
Chromium	ND	mg/L		0.005		E200.8	03/15/18 15:09 / jpv
Cobalt	ND	mg/L		0.005		E200.8	03/15/18 15:09 / jpv
Copper	ND	mg/L		0.005		E200.7	03/15/18 12:47 / rlh
Gold	ND	mg/L	L	0.02		E200.7	03/15/18 12:47 / rlh
Iron	0.31	mg/L		0.02		E200.7	03/15/18 12:47 / rlh
Lead	ND	mg/L		0.001		E200.8	03/15/18 15:09 / jpv
Lithium	ND	mg/L		0.1		E200.7	03/16/18 14:45 / rlh
Magnesium	2	mg/L		1		E200.7	03/15/18 12:47 / rlh
Manganese	0.001	mg/L		0.001		E200.8	03/15/18 15:09 / jpv
Molybdenum	ND	mg/L		0.001		E200.8	03/16/18 12:26 / jpv
Nickel	ND	mg/L		0.005		E200.8	03/15/18 15:09 / jpv
Potassium	ND	mg/L		1		E200.7	03/16/18 14:45 / rlh
Selenium	ND	mg/L		0.001		E200.8	03/15/18 15:09 / jpv
Silicon	2.3	mg/L		0.1		E200.7	03/15/18 12:47 / rlh
Silver	ND	mg/L		0.001		E200.8	03/15/18 15:09 / jpv
Sodium	ND	mg/L		1		E200.7	03/15/18 12:47 / rlh
Strontium	0.03	mg/L		0.01		E200.7	03/15/18 12:47 / rlh
Tellurium	ND	mg/L	L	0.04		E200.7	03/16/18 14:45 / rlh
Thallium	ND	mg/L		0.0005		E200.8	03/15/18 15:09 / jpv
Tin	ND	mg/L		0.01		E200.8	03/15/18 15:09 / jpv
Titanium	0.021	mg/L		0.005		E200.8	03/15/18 15:09 / jpv
Uranium	ND	mg/L		0.0003		E200.8	03/15/18 15:09 / jpv
Vanadium	ND	mg/L		0.01		E200.8	03/15/18 15:09 / jpv
Zinc	ND	mg/L		0.01		E200.7	03/15/18 12:47 / rlh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 L - Lowest available reporting limit for the analytical method used.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** Enviromin Inc  
**Project:** NWP Columns

**Report Date:** 03/22/18  
**Work Order:** B18031023

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: A5310 C</b>							Analytical Run: TOC3-C_180321A		
<b>Lab ID: CCV-9806</b>	Continuing Calibration Verification Standard						03/21/18 19:27		
Organic Carbon, Dissolved (DOC)	4.99	mg/L	0.50	100	90	110			
<b>Method: A5310 C</b>							Batch: R233466		
<b>Lab ID: LCS-10002</b>	Laboratory Control Sample						Run: TOC3-C_180321A 03/21/18 18:57		
Organic Carbon, Dissolved (DOC)	4.89	mg/L	0.50	95	90	110			
<b>Lab ID: MBLK</b>	Method Blank						Run: TOC3-C_180321A 03/21/18 19:12		
Organic Carbon, Dissolved (DOC)	0.2	mg/L	0.1						
<b>Lab ID: B18031023-002DMS</b>	Sample Matrix Spike						Run: TOC3-C_180321A 03/21/18 20:01		
Organic Carbon, Dissolved (DOC)	21.5	mg/L	2.0	98	85	115			
<b>Lab ID: B18031023-002DMSD</b>	Sample Matrix Spike Duplicate						Run: TOC3-C_180321A 03/21/18 20:17		
Organic Carbon, Dissolved (DOC)	21.8	mg/L	2.0	99	85	115	1.3	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Columns

**Report Date:** 03/23/18  
**Work Order:** B18031023

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: A2320 B</b> <span style="float: right;">Batch: R296336</span>										
<b>Lab ID: MBLK</b>		Method Blank					Run: Metrohm 2_180315A			03/15/18 19:27
Alkalinity, Total as CaCO3		2	mg/L	0.7						
<b>Lab ID: LCS</b>		Laboratory Control Sample					Run: Metrohm 2_180315A			03/15/18 19:31
Alkalinity, Total as CaCO3		98.7	mg/L	4.0	97	90	110			
<b>Lab ID: B18030952-001ADUP</b>	3	Sample Duplicate					Run: Metrohm 2_180315A			03/15/18 19:43
Alkalinity, Total as CaCO3		186	mg/L	4.0				0.3	10	
Bicarbonate as HCO3		226	mg/L	4.0				0.3	10	
Carbonate as CO3		ND	mg/L	4.0					10	
<b>Lab ID: B18030957-001BMS</b>		Sample Matrix Spike					Run: Metrohm 2_180315A			03/15/18 19:58
Alkalinity, Total as CaCO3		451	mg/L	4.0	98	80	120			
<b>Lab ID: B18031082-001ADUP</b>	3	Sample Duplicate					Run: Metrohm 2_180315A			03/15/18 21:07
Alkalinity, Total as CaCO3		156	mg/L	4.0				0.2	10	
Bicarbonate as HCO3		190	mg/L	4.0				0.2	10	
Carbonate as CO3		ND	mg/L	4.0					10	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Columns

**Report Date:** 03/23/18  
**Work Order:** B18031023

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: A5210 B</b>								Batch: 180314_1_BOD5-W		
<b>Lab ID: DiI-H201_180314</b>		Dilution Water Blank				Run: BOD-SP2000_180314A			03/14/18 11:07	
Oxygen Demand, Biochemical (BOD)		0.080	mg/L	0.20		0	0.2			
<b>Lab ID: GGA1_180314</b>		Laboratory Control Sample				Run: BOD-SP2000_180314A			03/14/18 11:15	
Oxygen Demand, Biochemical (BOD)		220	mg/L	64	113	85	115			
<b>Lab ID: B18031008-001ADUP</b>		Sample Duplicate				Run: BOD-SP2000_180314A			03/14/18 14:54	
Oxygen Demand, Biochemical (BOD)		180	mg/L	86				1.9	15	
<b>Lab ID: B18031045-003ADUP</b>		Sample Duplicate				Run: BOD-SP2000_180314A			03/14/18 15:53	
Oxygen Demand, Biochemical (BOD)		120	mg/L	86				2.9	15	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.





# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Columns

**Report Date:** 03/23/18  
**Work Order:** B18031023

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E410.4										Batch: 119399
<b>Lab ID:</b> MB-119399		Method Blank								Run: SPEC3_180315A 03/15/18 15:29
Oxygen Demand, Chemical (COD)		ND	mg/L	3						
<b>Lab ID:</b> LCS-119399		Laboratory Control Sample								Run: SPEC3_180315A 03/15/18 15:29
Oxygen Demand, Chemical (COD)		23.6	mg/L	5.0	97	90	110			
<b>Lab ID:</b> B18030996-001CMS		Sample Matrix Spike								Run: SPEC3_180315A 03/15/18 15:29
Oxygen Demand, Chemical (COD)		216	mg/L	20	97	90	110			
<b>Lab ID:</b> B18030996-001CMSD		Sample Matrix Spike Duplicate								Run: SPEC3_180315A 03/15/18 15:29
Oxygen Demand, Chemical (COD)		214	mg/L	20	94	90	110	1.2	10	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Columns

**Report Date:** 03/23/18  
**Work Order:** B18031023

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>								Analytical Run: ICP203-B_180315A		
<b>Lab ID: ICV</b>	13 Continuing Calibration Verification Standard									03/15/18 09:57
Aluminum		2.52	mg/L	0.10	101	95	105			
Barium		2.47	mg/L	0.10	99	95	105			
Beryllium		1.22	mg/L	0.010	98	95	105			
Boron		2.51	mg/L	0.10	100	95	105			
Calcium		24.4	mg/L	1.0	98	95	105			
Copper		2.45	mg/L	0.010	98	95	105			
Gold		2.45	mg/L	0.10	98	95	105			
Iron		2.49	mg/L	0.020	100	95	105			
Magnesium		25.2	mg/L	1.0	101	95	105			
Silicon		4.99	mg/L	0.10	100	95	105			
Sodium		26.1	mg/L	1.0	104	95	105			
Strontium		2.51	mg/L	0.10	100	95	105			
Zinc		2.52	mg/L	0.010	101	95	105			
<b>Method: E200.7</b>								Batch: R296355		
<b>Lab ID: MB-6500DIS180315A</b>	13 Method Blank									Run: ICP203-B_180315A 03/15/18 10:05
Aluminum		ND	mg/L	0.06						
Barium		ND	mg/L	0.0010						
Beryllium		ND	mg/L	0.0005						
Boron		ND	mg/L	0.01						
Calcium		ND	mg/L	0.07						
Copper		ND	mg/L	0.004						
Gold		ND	mg/L	0.02						
Iron		ND	mg/L	0.02						
Magnesium		ND	mg/L	0.02						
Silicon		ND	mg/L	0.07						
Sodium		ND	mg/L	0.1						
Strontium		ND	mg/L	0.001						
Zinc		ND	mg/L	0.002						
<b>Lab ID: LFB-6500DIS180315A</b>	13 Laboratory Fortified Blank									Run: ICP203-B_180315A 03/15/18 10:13
Aluminum		4.98	mg/L	0.10	100	85	115			
Barium		0.983	mg/L	0.10	98	85	115			
Beryllium		0.485	mg/L	0.010	97	85	115			
Boron		1.01	mg/L	0.10	101	85	115			
Calcium		49.8	mg/L	1.0	100	85	115			
Copper		0.966	mg/L	0.010	97	85	115			
Gold		0.949	mg/L	0.10	95	85	115			
Iron		5.02	mg/L	0.020	100	85	115			
Magnesium		48.9	mg/L	1.0	98	85	115			
Silicon		9.95	mg/L	0.10	99	85	115			
Sodium		51.2	mg/L	1.0	102	85	115			
Strontium		0.997	mg/L	0.10	100	85	115			
Zinc		1.01	mg/L	0.010	101	85	115			

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Columns

**Report Date:** 03/23/18  
**Work Order:** B18031023

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>										
Batch: R296355										
<b>Lab ID:</b>	<b>B18031054-001BMS2</b>	13	Sample Matrix Spike							
							Run: ICP203-B_180315A	03/15/18 13:15		
Aluminum		5.35	mg/L	0.065	99	70	130			
Barium		1.01	mg/L	0.050	97	70	130			
Beryllium		0.446	mg/L	0.0010	89	70	130			
Boron		1.03	mg/L	0.050	100	70	130			
Calcium		95.0	mg/L	1.0	99	70	130			
Copper		0.963	mg/L	0.0050	96	70	130			
Gold		0.865	mg/L	0.024	86	70	130			
Iron		5.31	mg/L	0.020	98	70	130			
Magnesium		69.9	mg/L	1.0	97	70	130			
Silicon		14.5	mg/L	0.10	99	70	130			
Sodium		155	mg/L	1.0	96	70	130			
Strontium		1.51	mg/L	0.010	99	70	130			
Zinc		0.988	mg/L	0.010	99	70	130			
<b>Lab ID:</b>	<b>B18031054-001BMSD</b>	13	Sample Matrix Spike Duplicate							
							Run: ICP203-B_180315A	03/15/18 13:19		
Aluminum		5.40	mg/L	0.065	100	70	130	1.0	20	
Barium		1.02	mg/L	0.050	98	70	130	1.1	20	
Beryllium		0.452	mg/L	0.0010	90	70	130	1.2	20	
Boron		1.04	mg/L	0.050	102	70	130	1.3	20	
Calcium		95.9	mg/L	1.0	101	70	130	1.0	20	
Copper		0.972	mg/L	0.0050	97	70	130	0.9	20	
Gold		0.884	mg/L	0.024	88	70	130	2.3	20	
Iron		5.37	mg/L	0.020	100	70	130	1.1	20	
Magnesium		69.9	mg/L	1.0	97	70	130	0.0	20	
Silicon		14.5	mg/L	0.10	99	70	130	0.3	20	
Sodium		153	mg/L	1.0	92	70	130	1.3	20	
Strontium		1.52	mg/L	0.010	99	70	130	0.3	20	
Zinc		1.00	mg/L	0.010	100	70	130	1.4	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Columns

**Report Date:** 03/23/18  
**Work Order:** B18031023

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.7</b>								Analytical Run: ICP204-B_180316A			
<b>Lab ID: ICV</b>	3	Continuing Calibration Verification Standard						03/16/18 09:25			
Lithium		1.30	mg/L	0.10	104	95	105				
Potassium		25.9	mg/L	1.0	104	95	105				
Tellurium		2.51	mg/L	0.10	100	95	105				
<b>Method: E200.7</b>								Batch: R296442			
<b>Lab ID: MB-7400DIS180316A</b>	3	Method Blank						Run: ICP204-B_180316A 03/16/18 09:33			
Lithium		ND	mg/L	0.02							
Potassium		ND	mg/L	0.1							
Tellurium		ND	mg/L	0.04							
<b>Lab ID: LFB-7400DIS180316A</b>	3	Laboratory Fortified Blank						Run: ICP204-B_180316A 03/16/18 09:41			
Lithium		1.03	mg/L	0.10	103	85	115				
Potassium		51.0	mg/L	1.0	102	85	115				
Tellurium		1.03	mg/L	0.10	103	85	115				
<b>Lab ID: B18031023-002BMS2</b>	3	Sample Matrix Spike						Run: ICP204-B_180316A 03/16/18 14:53			
Lithium		0.986	mg/L	0.10	99	70	130				
Potassium		49.6	mg/L	1.0	99	70	130				
Tellurium		0.974	mg/L	0.038	97	70	130				
<b>Lab ID: B18031023-002BMSD</b>	3	Sample Matrix Spike Duplicate						Run: ICP204-B_180316A 03/16/18 14:56			
Lithium		0.980	mg/L	0.10	98	70	130	0.7	20		
Potassium		49.1	mg/L	1.0	98	70	130	1.1	20		
Tellurium		0.968	mg/L	0.038	97	70	130	0.6	20		

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Columns

**Report Date:** 03/23/18  
**Work Order:** B18031023

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.8</b>								Analytical Run: ICPMS206-B_180315A			
<b>Lab ID: QCS</b>	15 Initial Calibration Verification Standard							03/15/18 12:27			
Antimony		0.0490	mg/L	0.050	98	90	110				
Arsenic		0.0505	mg/L	0.0050	101	90	110				
Cadmium		0.0255	mg/L	0.0010	102	90	110				
Chromium		0.0522	mg/L	0.010	104	90	110				
Cobalt		0.0523	mg/L	0.010	105	90	110				
Lead		0.0511	mg/L	0.010	102	90	110				
Manganese		0.259	mg/L	0.010	104	90	110				
Nickel		0.0526	mg/L	0.010	105	90	110				
Selenium		0.0508	mg/L	0.0050	102	90	110				
Silver		0.0258	mg/L	0.0050	103	90	110				
Thallium		0.0504	mg/L	0.10	101	90	110				
Tin		0.0500	mg/L	0.10	100	90	110				
Titanium		0.0490	mg/L	0.010	98	90	110				
Uranium		0.0199	mg/L	0.0010	99	90	110				
Vanadium		0.0505	mg/L	0.10	101	90	110				

<b>Method: E200.8</b>								Batch: R296376		
<b>Lab ID: LFB</b>	15 Laboratory Fortified Blank							Run: ICPMS206-B_180315A		03/15/18 12:41
Antimony		0.0480	mg/L	0.050	96	85	115			
Arsenic		0.0493	mg/L	0.0050	99	85	115			
Cadmium		0.0482	mg/L	0.0010	96	85	115			
Chromium		0.0487	mg/L	0.010	97	85	115			
Cobalt		0.0492	mg/L	0.010	98	85	115			
Lead		0.0495	mg/L	0.010	99	85	115			
Manganese		0.0485	mg/L	0.010	97	85	115			
Nickel		0.0468	mg/L	0.010	94	85	115			
Selenium		0.0484	mg/L	0.0050	97	85	115			
Silver		0.0191	mg/L	0.0050	96	85	115			
Thallium		0.0478	mg/L	0.10	96	85	115			
Tin		0.0480	mg/L	0.10	96	85	115			
Titanium		0.0563	mg/L	0.010	113	85	115			
Uranium		0.0501	mg/L	0.0010	100	85	115			
Vanadium		0.0473	mg/L	0.10	95	85	115			

<b>Lab ID: LRB</b>	15 Method Blank							Run: ICPMS206-B_180315A		03/15/18 12:48
Antimony		ND	mg/L	0.00002						
Arsenic		ND	mg/L	0.0001						
Cadmium		ND	mg/L	0.00002						
Chromium		ND	mg/L	0.00004						
Cobalt		ND	mg/L	0.00003						
Lead		ND	mg/L	0.00002						
Manganese		ND	mg/L	0.00004						
Nickel		ND	mg/L	0.00005						
Selenium		ND	mg/L	0.0004						

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Columns

**Report Date:** 03/23/18  
**Work Order:** B18031023

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>										
Batch: R296376										
<b>Lab ID: LRB</b>	15	Method Blank								
Run: ICPMS206-B_180315A										
03/15/18 12:48										
Silver		ND	mg/L	0.00002						
Thallium		0.00008	mg/L	0.00002						
Tin		ND	mg/L	0.00008						
Titanium		ND	mg/L	0.0002						
Uranium		ND	mg/L	0.00003						
Vanadium		ND	mg/L	0.00009						
<b>Lab ID: B18030913-002BMS</b>	15	Sample Matrix Spike								
Run: ICPMS206-B_180315A										
03/15/18 15:17										
Antimony		0.0481	mg/L	0.0010	96	70	130			
Arsenic		0.0568	mg/L	0.0010	105	70	130			
Cadmium		0.0494	mg/L	0.0010	96	70	130			
Chromium		0.0493	mg/L	0.0050	97	70	130			
Cobalt		0.0519	mg/L	0.0050	99	70	130			
Lead		0.0492	mg/L	0.0010	98	70	130			
Manganese		0.0585	mg/L	0.0010	99	70	130			
Nickel		0.0511	mg/L	0.0050	102	70	130			
Selenium		0.893	mg/L	0.0010		70	130			A
Silver		0.0183	mg/L	0.0010	92	70	130			
Thallium		0.0381	mg/L	0.00050	76	70	130			
Tin		0.0475	mg/L	0.010	95	70	130			
Titanium		0.0609	mg/L	0.0050	113	70	130			
Uranium		7.13	mg/L	0.00030		70	130			A
Vanadium		0.0695	mg/L	0.010	107	70	130			
<b>Lab ID: B18030913-002BMSD</b>	15	Sample Matrix Spike Duplicate								
Run: ICPMS206-B_180315A										
03/15/18 15:20										
Antimony		0.0474	mg/L	0.0010	94	70	130	1.5	20	
Arsenic		0.0582	mg/L	0.0010	108	70	130	2.4	20	
Cadmium		0.0480	mg/L	0.0010	93	70	130	2.9	20	
Chromium		0.0507	mg/L	0.0050	100	70	130	2.8	20	
Cobalt		0.0509	mg/L	0.0050	97	70	130	2.0	20	
Lead		0.0482	mg/L	0.0010	96	70	130	2.1	20	
Manganese		0.0567	mg/L	0.0010	95	70	130	3.2	20	
Nickel		0.0511	mg/L	0.0050	102	70	130	0.0	20	
Selenium		0.908	mg/L	0.0010		70	130	1.6	20	A
Silver		0.0178	mg/L	0.0010	89	70	130	2.9	20	
Thallium		0.0384	mg/L	0.00050	77	70	130	1.0	20	
Tin		0.0466	mg/L	0.010	93	70	130	2.1	20	
Titanium		0.0600	mg/L	0.0050	111	70	130	1.5	20	
Uranium		7.05	mg/L	0.00030		70	130	1.2	20	A
Vanadium		0.0706	mg/L	0.010	109	70	130	1.5	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Columns

**Report Date:** 03/23/18  
**Work Order:** B18031023

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>								Analytical Run: ICPMS207-B_180316A		
<b>Lab ID: QCS</b>	Initial Calibration Verification Standard									
Molybdenum		0.0491	mg/L	0.0050	98	90	110			03/16/18 11:14
<b>Method: E200.8</b>								Batch: R296473		
<b>Lab ID: LRB</b>	Method Blank									
Molybdenum		ND	mg/L	0.00010						Run: ICPMS207-B_180316A 03/16/18 11:23
<b>Lab ID: LFB</b>	Laboratory Fortified Blank									
Molybdenum		0.0505	mg/L	0.0050	101	85	115			Run: ICPMS207-B_180316A 03/16/18 11:51
<b>Lab ID: B18031023-002BMS</b>	Sample Matrix Spike									
Molybdenum		0.0501	mg/L	0.0010	100	70	130			Run: ICPMS207-B_180316A 03/16/18 12:29
<b>Lab ID: B18031023-002BMSD</b>	Sample Matrix Spike Duplicate									
Molybdenum		0.0511	mg/L	0.0010	102	70	130	1.9	20	Run: ICPMS207-B_180316A 03/16/18 12:32

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# Work Order Receipt Checklist

Enviromin Inc

B18031023

Login completed by: Siobhan H. Coop

Date Received: 3/14/2018

Reviewed by: BL2000\raschim

Received by: srm

Reviewed Date: 3/15/2018

Carrier name: Return-UPS Ground

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	0.2°C On Ice		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>

---

## Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

---

## Contact and Corrective Action Comments:

None





Trust our People. Trust our Data.

# Chain of Custody & Analytical Request Record

www.energylab.com

Page 1 of 1

### Account Information (Billing information)

Company Name Environin Inc  
 Contact Kylie Bodie  
 Phone 406-581-8201  
 Mailing Address 524 Professional Dr.  
 City, State, Zip Bozeman, MT 59718  
 Email Kyliebodie@environin.com  
 Receive Invoice  Hard Copy  Email  Hard Copy  Email  
 Purchase Order 4093 Quote 4093 Bottle Order

### Report Information (if different than Account information)

Company Name  
 Contact  
 Phone  
 Mailing Address  
 City, State, Zip  
 Email  
 Receive Report  Hard Copy  Email  
 Special Report Formats:  LEVEL IV  NELAC  EDD/EDT (contact laboratory)  Other PDF

### Comments

\*Please also analyze for dissolved selenium in diss. metals sample

### Project Information

Project Name, PWSID, Permit, etc. NWP Columns  
 Sampler Name Kylie Bodie Sampler Phone 425.299.5987  
 Sample Origin State MT EPA/State Compliance  Yes  No  
 MIMING CLIENTS, please indicate sample type.  
 \*If ore has been processed or refined, call before sending.  
 Byproduct 11 (e)2 material  Unprocessed ore (NOT ground or refined)\*

Matrix Codes  
 A - Air  
 W - Water  
 S - Soils/Solids  
 V - Vegetation  
 B - Bioassay  
 O - Other  
 DW - Drinking Water

### Analysis Requested

Analysis Requested	DOC	Dissolved Metals	Alkalinity	BOD	COD
	X	X	X	X	X

All turnaround times are standard unless marked as RUSH. Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling - See Instructions Page

Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	Received by (print)		Date/Time	Signature
					Signature	Signature		
1 NWP GW	3/13/18	9:00	5	W	Kylie Bodie	Kylie Bodie	3-14-18 9:10	Kylie Bodie
2								
3								
4								
5								
6								
7								
8								
9								
10								

RUSH TAT

B18031023-001,002

Custody Record MUST be signed Kylie Bodie Date/Time 3/13/18 15:00 Signature Kylie Bodie  
 Shipped By WPS Cooler ID(s) Y N C B Custody Seals Y N C B Intact Y N Receipt Temp °C    Receipt Temp Blank Y N On Ice Y N Payment Type CC Cash    Check    Amount \$     
 Received by Laboratory (print)    Date/Time 3-14-18 9:10 Signature Kylie Bodie Receipt Number (cash/check only)   

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

## **Appendix C – Bottle Roll Test Laboratory Reports**



# ANALYTICAL SUMMARY REPORT

February 14, 2018

Enviromin Inc  
524 Professional Dr  
Bozeman, MT 59718

Work Order: B18012053                      Quote ID: B4375 - SPLP Testing  
Project Name: NWP Columns

Energy Laboratories Inc Billings MT received the following 2 samples for Enviromin Inc on 1/30/2018 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B18012053-001	Coal Reject	01/29/18 9:00	01/30/18	Splp Extract	Carbon, Dissolved Organic Preparation, Dissolved Filtration SPLP Extraction, Regular
B18012053-002	Coal Reject Dup	01/29/18 9:00	01/30/18	Splp Extract	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:



**CLIENT:** Enviromin Inc  
**Project:** NWP Columns  
**Work Order:** B18012053

**Report Date:** 02/14/18

## **CASE NARRATIVE**

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Tests associated with analyst identified as ELI-CA were subcontracted to Energy Laboratories, PO Box 247, Casper, WY, EPA Number WY00002.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Columns  
**Lab ID:** B18012053-001  
**Client Sample ID:** Coal Reject

**Report Date:** 02/14/18  
**Collection Date:** 01/29/18 09:00  
**DateReceived:** 01/30/18  
**Matrix:** Splp Extract

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	16	mg/L	D	4		A5310 C	02/13/18 08:28 / eli-ca

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Columns  
**Lab ID:** B18012053-002  
**Client Sample ID:** Coal Reject Dup

**Report Date:** 02/14/18  
**Collection Date:** 01/29/18 09:00  
**DateReceived:** 01/30/18  
**Matrix:** Splp Extract

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	17	mg/L	D	4		A5310 C	02/13/18 08:48 / eli-ca

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** Enviromin Inc  
**Project:** NWP Columns

**Report Date:** 02/13/18  
**Work Order:** B18012053

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: A5310 C</b> <span style="float: right;">Batch: 51161</span>									
<b>Lab ID: MB-118305</b> Organic Carbon, Dissolved (DOC)	Method Blank 0.4	mg/L	0.1						
						Run: TOC3-C_180209A			02/10/18 01:24
<b>Lab ID: MB-118223</b> Organic Carbon, Dissolved (DOC)	Method Blank 9	mg/L	0.1						
						Run: TOC3-C_180209A			02/10/18 01:40
<b>Method: A5310 C</b> <span style="float: right;">Analytical Run: TOC3-C_180212A</span>									
<b>Lab ID: CCV-9806</b> Organic Carbon, Dissolved (DOC)	Continuing Calibration Verification Standard 5.06	mg/L	0.50	101	90	110			
									02/13/18 03:04
<b>Method: A5310 C</b> <span style="float: right;">Batch: 51161</span>									
<b>Lab ID: LCS-10002</b> Organic Carbon, Dissolved (DOC)	Laboratory Control Sample 5.34	mg/L	0.50	104	90	110			
						Run: TOC3-C_180212A			02/13/18 02:35
<b>Lab ID: C18020198-002GMS</b> Organic Carbon, Dissolved (DOC)	Sample Matrix Spike 10.9	mg/L	0.50	101	85	115			
						Run: TOC3-C_180212A			02/13/18 03:40
<b>Lab ID: C18020198-002GMSD</b> Organic Carbon, Dissolved (DOC)	Sample Matrix Spike Duplicate 11.3	mg/L	0.50	109	85	115	4.1	20	
						Run: TOC3-C_180212A			02/13/18 03:56

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# Work Order Receipt Checklist

Enviromin Inc

B18012053

Login completed by: Leslie S. Cadreau

Date Received: 1/30/2018

Reviewed by: BL2000\tedwards

Received by: wcj

Reviewed Date: 2/1/2018

Carrier name: Return-UPS Ground N/C

- Shipping container/cooler in good condition? Yes  No  Not Present
- Custody seals intact on all shipping container(s)/cooler(s)? Yes  No  Not Present
- Custody seals intact on all sample bottles? Yes  No  Not Present
- Chain of custody present? Yes  No
- Chain of custody signed when relinquished and received? Yes  No
- Chain of custody agrees with sample labels? Yes  No
- Samples in proper container/bottle? Yes  No
- Sample containers intact? Yes  No
- Sufficient sample volume for indicated test? Yes  No
- All samples received within holding time?  
(Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.) Yes  No
- Temp Blank received in all shipping container(s)/cooler(s)? Yes  No  Not Applicable
- Container/Temp Blank temperature: 4.8°C Blue Ice
- Water - VOA vials have zero headspace? Yes  No  No VOA vials submitted
- Water - pH acceptable upon receipt? Yes  No  Not Applicable

## Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

## Contact and Corrective Action Comments:

Additional volume for sample GE was received on 02/02/18 by Sonya Mallet at 5.1°C on blue ice from Return UPS Ground.





Trust our People. Trust our Data.

# Chain of Custody & Analytical Request Record

www.energylab.com

### Comments

Please run SPLP using provided unfiltered groundwater, then analyze for DOC. See sheet if questions.

All turnaround times are standard unless marked as RUSH. Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling - See Instructions Page

ELI LAB ID Laboratory Use Only  
RUSH TAT  
B18012053-001  
-003  
-002

### Report Information (if different than Account Information)

Company/Name  
Contact  
Phone  
Mailing Address  
City, State, Zip  
Email  
Receive Report  Hard Copy  Email  
Special Report/Formats:  
 LEVEL IV  NELAC  EDD/EDT (contact laboratory)  Other PDF

### Account Information (Billing information)

Company/Name: Environmin Inc  
Contact: Kylie Boodle  
Phone: 404-581-8241  
Mailing Address: 524 Professional Dr.  
City, State, Zip: Bozeman, MT 59718  
Email: kylie.boodle@environmin.com  
Receive Invoice  Hard Copy  Email  
Purchase Order: 4093  
Bottle Order

### Project Information

Project Name, PWSID, Permit, etc.: NWP Columns  
Sampler Name: Kylie Boodle  
Sampler Phone  
EPA/State Compliance:  Yes  No  
MINING CLIENTS: please indicate sample type.  
\*If ore has been processed or refined, call before sending.  
 Byproduct 11 (e)2 material  Unprocessed ore (NOT ground or refined)\*

### Analysis Requested

Matrix Codes	Number of Containers	Matrix (See Codes Above)	Collection	
			Date	Time
A - Air	2	S	1/29/18	9:00
W - Water	4	W	1/29/18	9:00
S - Solids	2	S	1/29/18	9:00
V - Vegetation				
B - Bioassay				
O - Other				
DW - Drinking Water				

See Attached  
SPLP, analyze for DOC

### Sample Identification

Sample Identification (Name, Location, Interval, etc.)	Collection		Date/Time	Signature
	Date	Time		
1 Coal reject	1/29/18	9:00	1/29/18 15:00	Kylie Boodle
2 GW	1/29/18	9:00		
3 Coal reject dup.	1/29/18	9:00		
4				
5				
6				
7				
8				
9				
10				

Custody Record MUST be signed by (print) Kylie Boodle  
Date/Time 1/29/18 15:00  
Signature Kylie Boodle  
Received by (print) Kylie Boodle  
Date/Time 1/29/18 15:00  
Signature Kylie Boodle

Shipped By: WPS  
Cooler ID(s): Y N C B  
Intact: Y N  
Receipt Temp: °C  
Temp Blank: Y N  
On Ice: Y N  
Payment Type: Cash  
Amount: \$  
Receipt Number (cash/check only):

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. All subcontracted data will be clearly notated on your analytical report.

## **Appendix D – Sample Analysis Methods**

## Appendix D

### Sample Analysis Methods

<b>Dissolved Organic Carbon (DOC)</b>	
<b>Sampling Frequency</b>	Bimonthly (influent and effluent)
<b>Standard Method Number</b>	A5310 C
<b>QA/QC</b>	10% duplicates
<b>Special Conditions</b>	Filtered with 25 mm (0.2 um pore size) PTFE filters; preserved to pH < 2 with phosphoric acid
<b>Sample Volume</b>	250 mL, 80 mL minimum requirement
<b>Sample Container</b>	Sampling and storage of samples in dark glass bottles is required.
<b>Storage Conditions</b>	4°C until analysis
<b>Holding Time (Max.)</b>	28 days
<b>Detection Limit</b>	0.5 mg/L
<b>Nitrate-Nitrogen</b>	
<b>Sampling Frequency</b>	Weekly (influent and effluent)
<b>Standard Method Number</b>	10206
<b>QA/QC</b>	10% duplicates
<b>Special Conditions</b>	Filtered with 25 mm (0.2 um pore size) PTFE filters
<b>Sample Volume</b>	1 ml
<b>Sample Container</b>	Hach TNT 835 vial
<b>Storage Conditions</b>	NA
<b>Holding Time (Max.)</b>	NA, samples will be analyzed immediately
<b>Detection Limit</b>	0.2 mg/L
<b>Sulfate</b>	
<b>Sampling Frequency</b>	Bimonthly (influent and effluent)
<b>Standard Method Number</b>	10227
<b>QA/QC</b>	10% duplicates
<b>Special Conditions</b>	Filtered with 25 mm (0.2 um pore size) PTFE filters
<b>Sample Volume</b>	2 ml
<b>Sample Container</b>	Hach TNT 865 vial
<b>Storage Conditions</b>	NA
<b>Holding Time (Max.)</b>	NA, samples will be analyzed immediately
<b>Detection Limit</b>	150 mg/L

<b>Phosphate-Phosphorus</b>	
<b>Sampling Frequency</b>	Bimonthly
<b>Standard Method Number</b>	10209
<b>QA/QC</b>	10% duplicates
<b>Special Conditions</b>	Filtered with 25 mm (0.2 um pore size) PTFE filters
<b>Sample Volume</b>	0.4 ml
<b>Sample Container</b>	Hach TNT 845 vial
<b>Storage Conditions</b>	NA
<b>Holding Time (Max.)</b>	NA, samples will be analyzed immediately
<b>Detection Limit</b>	2 mg/l
<b>Total Dissolved Metals</b>	
<b>Sampling Frequency</b>	Monthly (influent and effluent)
<b>Standard Method Number</b>	E200.7 and E200.8
<b>QA/QC</b>	10% duplicates
<b>Special Conditions</b>	Filtered with 25 mm (0.2 um pore size) PTFE filters, preserved to pH < 2 with nitric acid
<b>Sample Volume</b>	250 ml, 100 ml minimum
<b>Sample Container</b>	250 ml plastic container (Energy Labs)
<b>Storage Conditions</b>	4°C until analysis
<b>Holding Time (Max.)</b>	6 months
<b>Detection Limit</b>	Varies from 0.0003-0.07 mg/l, depending on constituent
<b>Dissolved Selenium</b>	
<b>Sampling Frequency</b>	Bimonthly (influent and effluent)
<b>Standard Method Number</b>	E200.8
<b>QA/QC</b>	10% duplicates
<b>Special Conditions</b>	Filtered with 25 mm (0.2 um pore size) PTFE filters, preserved to pH < 2 with nitric acid
<b>Sample Volume</b>	250 ml, 20 ml minimum
<b>Sample Container</b>	250 ml plastic container (Energy Labs)
<b>Storage Conditions</b>	4°C until analysis
<b>Holding Time (Max.)</b>	6 months
<b>Detection Limit</b>	0.001 mg/l
<b>Selenium Speciation</b>	
<b>Sampling Frequency</b>	Monthly (influent and effluent)
<b>Standard Method Number</b>	E200.2 for digestion
<b>QA/QC</b>	10% duplicates

<b>Special Conditions</b>	Unfiltered, preserved to pH < 2 with hydrochloric acid
<b>Sample Volume</b>	250 ml, 10 ml minimum
<b>Sample Container</b>	250 ml plastic container (Energy Labs)
<b>Storage Conditions</b>	4°C until analysis
<b>Holding Time (Max.)</b>	6 months
<b>Detection Limit</b>	0.001 mg/L
<b>Microbial Community (16S rRNA gene) Analysis</b>	
<b>Sampling Frequency</b>	Beginning and end of each experiment
<b>Standard Method Number</b>	NA
<b>QA/QC</b>	Optimized DNA extractions methods and PCR conditions
<b>Special Conditions</b>	Destructive sampling. Samples will be removed from the top, middle, and bottom of each column.
<b>Sample Mass</b>	50-100 g
<b>Sample Container</b>	50 ml Falcon tubes
<b>Storage Conditions</b>	4°C until further processing, preserved with RNA/DNA Shield (Zymo Research)
<b>Holding Time (Max.)</b>	1 year
<b>Detection Limit</b>	NA (if extractable DNA is present)
<b>Dissolved Oxygen Analyses</b>	
<b>Sampling Frequency</b>	Weekly
<b>Standard Method Number</b>	NA
<b>QA/QC</b>	10% duplicates
<b>Special Conditions</b>	The DO probe will be calibrated before each use to limit analytical error. DO samples will be collected in a three-way tubing connector via a rubber sampling port.
<b>Sample Volume</b>	Approximately 5 ml
<b>Sample Container</b>	60 ml syringe
<b>Storage Conditions</b>	NA
<b>Holding Time (Max.)</b>	NA
<b>Detection Limit</b>	0.01 mg/l

## 1.1 Carbon Analysis (DOC)

Organic carbon in a sample is converted to carbon dioxide (CO<sub>2</sub>) by catalytic combustion or wet chemical oxidation. The CO<sub>2</sub> formed can be measured directly by an infrared detector or converted to methane (CH<sub>4</sub>) and measured by a flame ionization detector. The amount of CO<sub>2</sub> or CH<sub>4</sub> is directly proportional to the concentration of carbonaceous material in the sample. DOC was measured by Energy Laboratories of Billings, MT.

## 1.2 Anions (Nitrate and Sulfate)

Nitrate-N concentrations were measured using the TNT 835 kit from Hach, standard method number 10206. Under this method, nitrate ions present in solutions that contain sulfuric and phosphoric acids react with 2,6-dimethylphenol to form 4-nitro-2,6-dimethylphenol, a colored compound. Absorbance is then measured at 345 nm (Hach, 2013).

Sulfate concentrations were measured using the TNT 865 kit from Hach, standard method number 10227. Under this method, sulfate ions in solution react with barium chloride in aqueous solution to form a barium sulfate precipitate. The resulting turbidity is measured at 880 nm (Hach, 2012).

## 1.3 Total Phosphorus

Total phosphorus concentrations were measured using the TNT 845 kit from Hach, standard method number 10209. Under this method, organic and condensed inorganic forms of phosphate are converted to reactive orthophosphate using acid and heat. Ammonium molybdate and antimony potassium tartrate react in an acid medium with a dilute solution of phosphorus to form an antimony-phospho-molybdate complex. This complex is then reduced to a blue color by ascorbic acid. The absorbance of the blue color is measured at 714 nm (Hach, 2016).

## 1.4 Dissolved Oxygen

A FOSPOR-R oxygen sensor probe connected to a NeoFox-GT fluorometer (Ocean Optics, Dunedin, FL) was used to measure DO. The probe was calibrated prior to each use. The DO probe was connected to a three-way tubing connector, which was then connected to influent and effluent tubing as well as a rubber stopper. The rubber stopper was pierced with the probe to measure DO in the influent or effluent liquid as it flowed around the probe.

## 1.5 Temperature

All refrigerators were connected to temperature controllers to ensure that column, feed medium, and effluent collection chamber temperatures remain within 1°C of 10°C.

## 1.6 Volumetric Flow Rate

The volumetric flow rate was checked weekly. Pump settings were adjusted accordingly in order to achieve a volumetric flow rate of 0.007 ml/min. When necessary, pump tubing was replaced to prevent clogs from precipitation or particulate build up.

## 1.7 Dissolved Selenium and Selenium Speciation

Dissolved selenium concentrations were measured via inductively coupled plasma mass spectrometry (ICP-MS) following the US Environmental Protection Agency Method 200.8 (Creed et al, 1994). Samples were treated using dilute HNO<sub>3</sub> to achieve a pH below 2. An ICP-MS was used to analyze dissolved Se using direct injection in standard mode and with a hydrogen gas collision cell to minimize interferences. A certified environmental standard was used for calibration. An internal standard solution was continuously added with samples to assess instrument performance and consistency during operation.

Selenium was speciated to quantify selenate and selenite concentrations using high performance liquid chromatography (HPLC), coupled to ICP-MS, following the standard methods of Energy Laboratories. Samples were preserved with 37 wt% trace metals grade hydrochloric acid to below pH 2 and shipped to Energy for speciation analysis. Selected samples were periodically analyzed in duplicate on the instrument. Check standards were also analyzed during each sample set to ensure consistent performance of the instrument.

## 1.8 Dissolved Metals by ICP/ICPMS

Metal concentrations were measured by ICP-MS following the US Environmental Protection Agency Method 200.7-8 (Creed et al, 1994). Samples were treated using dilute HNO<sub>3</sub> to achieve pH below 2. An ICP-MS was used to analyze total metals using direct injection in standard mode and with a hydrogen gas collision cell to minimize interferences. A certified environmental standard was used for calibration. An internal standard solution was continuously added with samples to assess instrument performance and consistency during operation.

## 1.9 Microbial Community Analysis

**DNA extraction.** DNA was extracted following the method described by Hwang et. al. (2012). Prior to DNA extraction with the FastDNA Spin Kit for Soil (MP Biomedicals, Solon, OH, USA), 10g samples were suspended in 5 mL of sodium phosphate buffer and sodium dodecyl sulfate (SDS, 5 percent final concentration), both supplied from the FastDNA kit. Samples were vortexed briefly and subjected to three freeze-thaw cycles in a -70°C ethanol bath, followed by heating for 5-10 min in a 70°C water bath. Samples were vortexed between each cycle. The mixture was centrifuged at 750 × g for 5 min to separate large particles. The supernatant was then transferred into three lysing matrix tubes (supplied in the FastDNA kit for triplicate DNA extractions) and DNA extraction was carried out according to the manufacturer's instructions. The triplicate DNA extracts were pooled and stored at -20°C. The DNA concentration was measured with a Qubit fluorimeter (Invitrogen, Carlsbad, CA, USA). Microbial community analysis results can be found in Section 5.2.5.

**Bacterial 16S rRNA gene amplification.** Extracted DNA was amplified using a polymerase chain reaction following the method described by Hwang et. al. (2009). SSU rRNA genes were amplified with universal bacterial primers (8F and 529R) with Illumina overhang adapter sequences (Illumina, San Diego, CA, USA) in the following design: 8F (5'-Illumina forward overhang adaptor sequence-AGAGTTTGATCCTGGCTCAG-3') and 529r (5'-Illumina reverse overhang adaptor sequence-CGCGGCTGCTGGCAC-3') primer pairs, which are synthesized by Integrated DNA Technologies (Coralville, Iowa, USA). Each 25 µL polymerase chain reaction (PCR) mixture consisted of 12.5 µL of 2X Platinum Taq DNA Polymerase Mix (Madison, WI, USA), 1.0 µL of 8F and 529R (20 pmol/µL of each), 5 - 10 ng of template DNA, and an adjusted volume of sterile molecular biology grade water for a final 50 µL reaction volume. Negative controls (no DNA template) were prepared concurrently.

PCR was carried out on the Mastercycler ProS (Eppendorf, Hamburg, Germany) with the following conditions: 95 °C for 3 min, followed by 25 cycles of 94 °C for 20 s, 58 °C for 15 s, 72 °C for 40 s, and a final extension at 72 °C for 5 min. For all samples, amplicons from three separate reactions were pooled and analyzed via gel electrophoresis on a gel-red stained, 1.0 percent PCR grade agarose gel.

Libraries were subsequently prepared following Illumina's protocol "16S Metagenomic Sequencing Library Preparation" for sequencing on the Illumina Miseq System. PCR products were first cleaned with Ampure XP beads, followed by index PCR via attachment of Illumina-designed dual indices to the respective amplicons, hence generating a "library" for each sample. The samples were cleaned again with Ampure XP beads after index PCR. DNA from each library was quantified with a fluorometric kit (QuantIT PicoGreen; Invitrogen), normalized to specifications according to Illumina's protocol, mixed with Illumina-generated PhiX control library (10 percent PhiX), and loaded for sequencing on the Illumina Miseq v.3 platform.

**Sequence processing.** Sequence reads were processed with the 16S rDNA pipeline of the Microbiome Helper software package (Comeau et al., 2017) Read pairs were assembled into 452 base pair contigs. The contigs were then screened for ambiguous base pairs, alignment positions, and chimeric sequences. The unique contig sequences were classified using the ARB-Silva curated 16S learning set. Sequences were binned into phylotypes according to their taxonomic classification at maximum sequence identity and a relative abundance plot for each library was constructed.

## **Appendix E – Respirometry Studies**



## **Appendix E – Respirometry Studies**

**Objective:**

Enviromin is working with NWP Coal Canada to evaluate the potential to develop suboxic zones in support of nitrate and selenium reduction within unsaturated coal spoil for its Crown Mountain Project. Preliminary modeling of gas and water flux has demonstrated the potential to develop suboxic zones within layered coal and waste rock deposits at Crown Mountain over a period of years, but these models were limited by a lack of data describing the consumption of oxygen through abiotic reaction with coal (e.g., oxidation of sulfide and hydrocarbon) and aerobic microbial metabolism. Inclusion of this consumption term in the models will improve NWP's ability to design waste rock facilities for Crown Mountain, and will likely reduce the predicted time needed for development of suboxic zones. To address this data gap, respirometry batch experiments are being conducted.

Batch experiments were conducted in multiple sets of sterile serum bottles at 4, 10 and 25°C temperature conditions for 100% spoil, 100% coal reject, 97% spoil with 3% coal reject, 90% spoil with 10% coal reject, 100% killed control coal reject, and 100% killed control spoil. Comparison of results with a killed (autoclaved) control demonstrates that oxygen consumption is dominantly biotic, although a small amount of abiotic oxygen consumption was also evident. Killed control samples were autoclaved for 30 minutes at 121°C.

**Methods:**

Microcosms were constructed by placing 65 grams of spoil and/or coal material into sterile serum bottles that were aseptically sealed (see Table 1). Five replicate bottles were incubated at each temperature, 4, 10, and 25°C. Oxygen content was measured periodically with a NeoFox Phase Fluorometer (Ocean Optics, Dunedin, FL).

**Table 1. Summary of mass addition to microcosms**

<b>Experiment Identification</b>	<b>Mass of Coal Reject (grams)</b>	<b>Mass of Spoil (grams)</b>
100% Spoil	0.00	65.00
100% Coal Reject	65.00	0.00
97% Spoil with 3% Coal Reject	1.95	63.05
90% Spoil with 10% Coal Reject	6.50	58.50
100% Killed Control Coal Reject	65.00	0.00
100% Killed Control Spoil	0.00	65.00

**Results:**

Oxygen was consumed to a concentration that was below detection in all cases to-date, excluding the killed control microcosms which are still on-going. Oxygen was consumed more rapidly in the presence of coal and at higher temperature. The data collected from these tests provide relevant oxygen consumption rates for use in modeling.

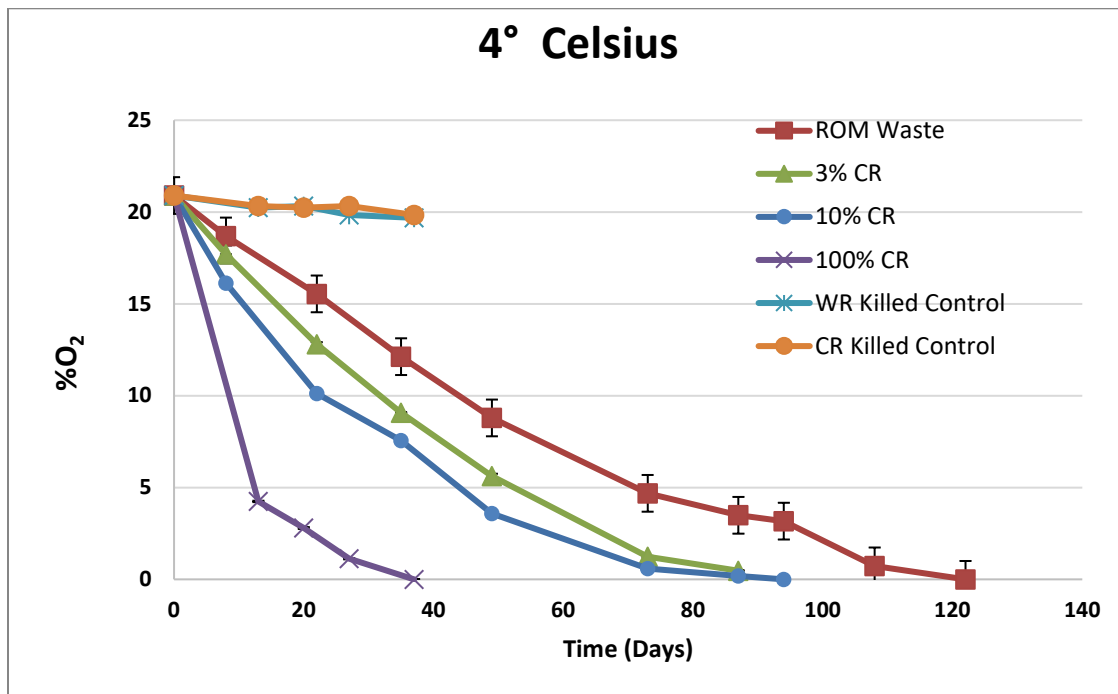
As demonstrated in these respirometry microcosms, coal reject has a large capacity to scrub oxygen. Oxygen is also scrubbed from spoil, although at a slower rate dependent on the amount of coal reject included in spoil microcosms for testing. The following kinetic parameters were modeled:

**Table 2. Summary of O<sub>2</sub> respirometry kinetic parameters**

	V <sub>max</sub>	K <sub>s</sub>
4 °C	1.57	13.4
10 °C	1.44	9.63
25 °C	1.27	4.88

Monod constants were determined from microcosms by plotting initial velocity (Vo) against the amount of coal (by percent) at three temperature conditions. The Monod equation was fit to the data using least-squares regression to determine constants Vmax and Ks.

The following figures depict the time it takes for oxygen to deplete at temperatures of 4, 10, and 25 °C with varying coal concentrations.



**Figure 1: Respirometry experiment at 4 degrees Celsius, n=5 per experiment**

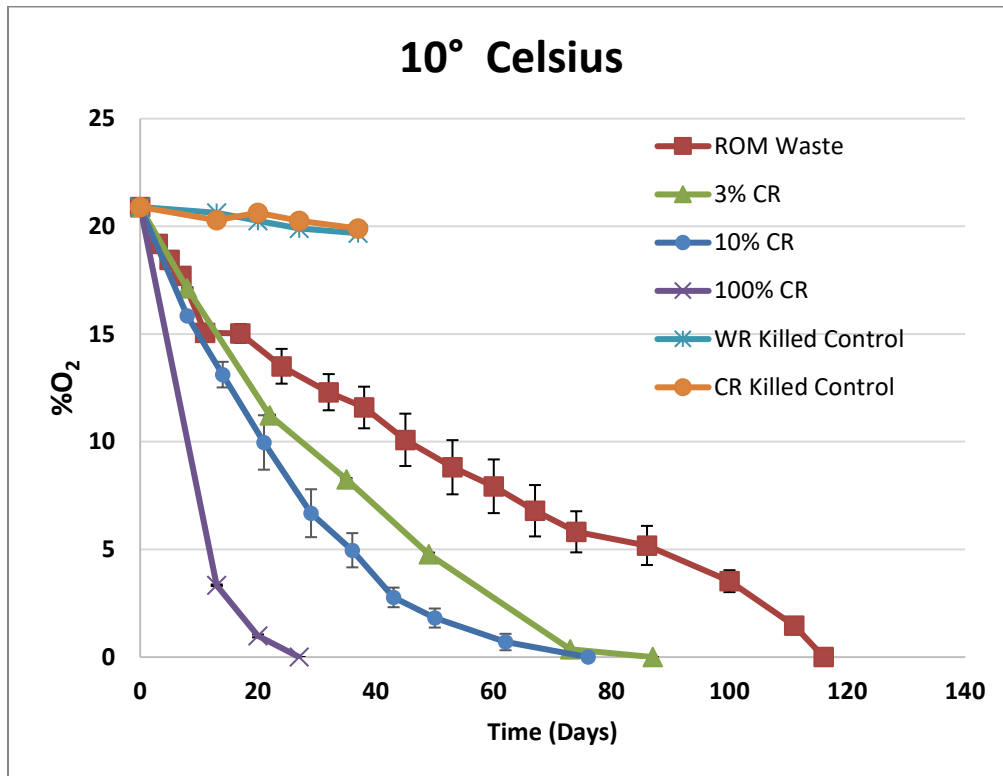


Figure 2: Respirometry experiment at 10 degrees Celsius, n=5 per experiment

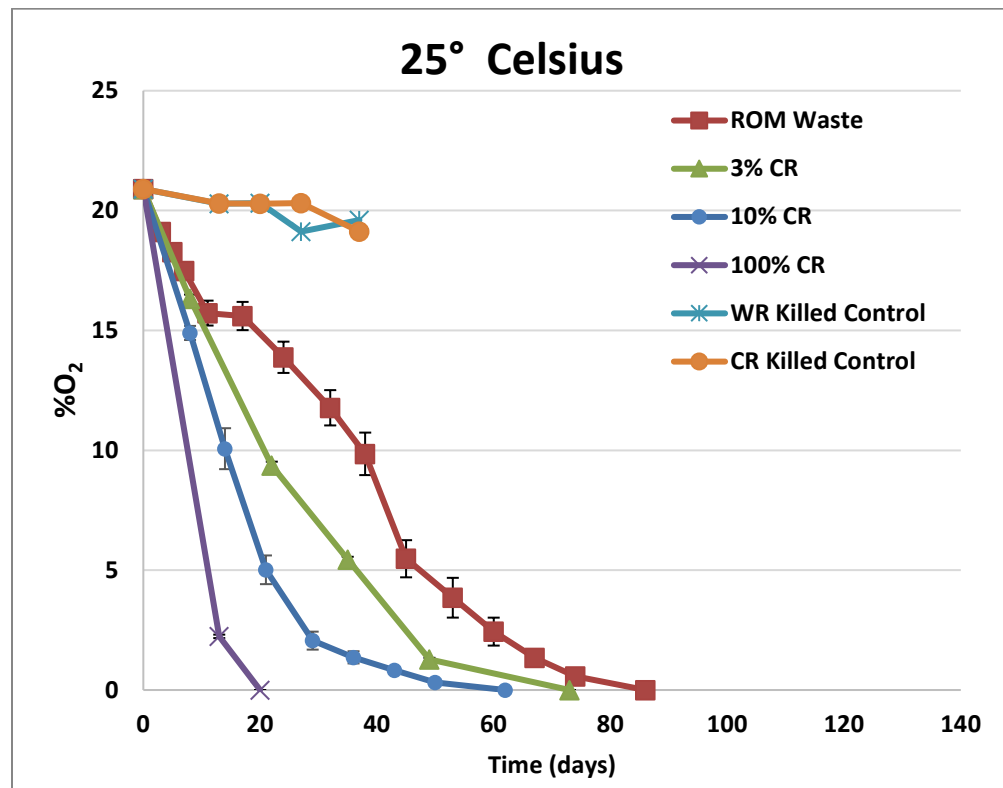


Figure 3: Respirometry experiment at 25 degrees Celsius, n=5 per experiment

## **Appendix F – Comparison of Sukunka and Crown Mountain Microbial Communities**



524 Professional Drive  
Bozeman, MT 59718  
(406) 581-8261

Date: 9 March 2018

To: Art Palm, NWP Coal Canada

From: Seth D'Imperio, Lisa Kirk

RE: Comparison of Sukunka waste rock and Crown Mountain groundwater microbial communities

### Rationale

The proposed column study (Phase 2) to determine the feasibility of a structured unsaturated rock fill for nitrate and selenium removal is predicated on the metabolic activity of native microbes. As there is not waste rock material from the NWP site to use in this study, a surrogate material must be used in its place. Materials from the Glencore Chamberlain exploration site, above the Sukunka River Valley in northeast British Columbia were collected for use as a proxy material as they are expected to have similar mineralogy, chemistry, and community composition to the waste rock eventually generated by mining activities at the NWP site. The proposed column studies will use ground water retrieved from the NWP mine site in their operation, so the microbial community associated with this water will also play a role in the feasibility study. To assess the suitability of the Sukunka waste rock (SWR) materials and the NWP ground water (NWP\_GW) for use in the feasibility study the microbial community present in these materials were compared.

### Methods

Waste rock materials were collected on 30 November 2017 as described previously (Enviromin, 2017). The waste rock was subsampled for community analysis and a total of 8, 15g subsamples were analyzed.

The 15g waste rock subsamples were immediately submerged in 15 ml of DNA/RNA shield preservative (Zymo Research, Irvine, CA) in 50 ml conical tubes. Conical tubes were vortexed twice for 15 seconds at maximum speed to dislodge biofilms from the waste rock surfaces. Samples were allowed to settle for 2 minutes then aqueous material and suspended solids samples were centrifuged for 5 minutes at 10,000 X g in 1.5ml microcentrifuge tubes to concentrate biomass. Two 40ml groundwater samples were filtered through sterile 0.22µm pore size cellulose acetate filters via syringe and the filters were retained. Concentrated biomass and small particulate or filters were transferred to Lysing Matrix A tubes and DNA extraction was carried out using the FastDNA Genomic DNA kit (MP Biomedicals, Carlsbad, CA) according to manufacturer's protocol. DNA from 3 extractions from each elevation was

combined and concentrated using the DNA Clean & Concentrator kit from Zymo Research (Irvine, CA). DNA was quantified on a Qubit Fluorimeter (Life Technologies, Frederick, MD) using the HS DNA quantification reagent set.

Extracted, concentrated DNA was sent to the Centre for Comparative Genomics and Evolutionary Bioinformatics at Dalhousie University. The V6-V8 region of the 16S gene was amplified and a library for each sample was produced using 6mer nucleic acid barcoding. The samples were processed on an Illumina MiSeq sequencing apparatus with paired end reads. Analysis followed the Microbiome Helper streamlined standard operating procedure (Comeau et al. 2017) . Briefly; individual reads were quality checked using FastQC and sequences that passed quality checking were assembled into paired-end contigs using the pear tool in the QIIME software package. Contigs were analyzed using Chimera\_Filter to remove potentially chimeric sequences. Non-chimeric, quality checked contigs of length greater than 400 bases were assigned to an operational taxonomic unit (OTU) and clustered using the tools in the QIIME software package. Rarefaction curves were produced using the alpha rarefaction tools in the QIIME software package. Taxonomic assignments were made for each OTU based on the GreenGenes taxonomy picking reference table. Singletons and reads with the lowest 0.1% confidence were removed from the OTU table as these are assumed to be artifacts of bleed-through between MiSeq runs. OTU tables were analyzed using the Statistical Analysis of Metagenomic Profiles (STAMP) software package.

### Results

The relative abundance of all organisms with 2% relative abundance or greater at Sekunka (SWR) and in Crown Mountain groundwater is presented in Table 1. The genus *Polynucleobacter* was detected at relatively high abundance in the NWP\_GW so this group of organisms would be present in the proposed column study. The SWR samples and NWP\_GW have low relative abundance of iron cycling organisms including *Acidiferrobacter* and *Ferrovum* though these metabolic functions are still present in organisms identified in the SWR and NWP\_GW communities such as *Albidiferax*. The SWR and NWP\_GW communities also contain denitrifying and selenium reducing organisms that will be essential to column function, such as *Dechloromonas* and *Cupriavidus*.

Table 1. Relative abundance of genera identified in SWR and NWP ground water samples above 2%

GENUS	SWR	NWP_GW
<i>ACIDIFERROBACTER</i>	0.2%	0.1%
<i>ALBIDIFERAX</i>	0.8%	1.2%
<i>ANAEROMYXOBACTER</i>	2.1%	0.0%
<i>AQUAMONAS</i>	0.1%	0.0%
<i>BURKHOLDERIA</i>	0.0%	0.2%
<i>COMAMONAS</i>	5.8%	0.6%
<i>CUPRIAVIDUS</i>	5.8%	0.6%
<i>CYTOPHAGA</i>	0.7%	1.4%
<i>DECHLOROMONAS</i>	0.4%	0.1%
<i>DENITRATISOMA</i>	1.4%	0.0%
<i>FERROVUM</i>	0.0%	0.0%
<i>FLUVIICOLA</i>	0.0%	18.4%
<i>GAIELLA</i>	0.5%	0.0%
<i>GEMMATIMONAS</i>	1.2%	0.0%
<i>GEOBACILLUS</i>	0.0%	0.0%
<i>HALIANGIUM</i>	4.2%	0.0%
<i>IGNAVIBACTERIUM</i>	0.0%	0.0%
<i>KAISTOBACTER</i>	8.5%	0.0%
<i>LEVILINEA</i>	2.3%	0.0%
<i>MARINOBACTER</i>	0.0%	0.6%
<i>METHYLOCAPSA</i>	0.0%	0.0%
<i>METHYLOSINUS</i>	0.5%	0.0%
<i>NITROSPIRA</i>	0.2%	0.0%
<i>OXALOBACTER</i>	2.2%	0.0%
<i>POLAROMONAS</i>	0.0%	0.1%
<i>POLYNUCLEOBACTER</i>	0.0%	1.7%
<i>RUBRIVIVAX</i>	0.0%	0.1%
<i>SEDIMINIBACTERIUM</i>	0.5%	3.1%
<i>SIDEROXYDANS</i>	1.4%	0.0%
<i>SPHINGOMONAS</i>	14.4%	1.3%
<i>SYNTROPHUS</i>	0.4%	0.1%
<i>THERMOMONAS</i>	0.4%	0.0%
<i>THIOBACILLUS</i>	3.3%	0.0%
<i>XANTHOMONAS</i>	15.1%	0.0%



Conclusions

The microbial community detected in the SWR and NWP\_GW samples show some similarity, to one another and to the microbial community identified in other regional coal deposits. While the relative abundance of some organisms differs, the total community diversity and functional capacity of the materials collected for the column work suggest that these materials are an acceptable proxy for the waste rock material that will eventually be generated through mining activities at the Crown Mountain site.

## **Appendix G – Column Microbial Community Analysis**

Taxonomy						Sample								
Kingdom	Phylum	Class	Order	Family	Genus	Sekunka_WR	CR_0% Oxygen	WR_0% Oxygen	CR_5% Oxygen	WR_5% Oxygen	CR_10% Oxygen	WR_10% Oxygen	CR_21% Oxygen	WR_21% Oxygen
Bacteria	Proteobacteria	Alphaproteobacteria	Sphingomonadales	Sphingomonadaceae	Kaistobacter	8.06%	2.47%	0.09%	2.05%	8.97%	4.65%	6.71%	2.01%	3.21%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Micrococcaceae		7.72%	2.24%	0.32%	3.94%	6.21%	3.32%	7.41%	1.45%	1.79%
Bacteria	Proteobacteria	Deltaproteobacteria	Desulfuromonadales	Geobacteraceae	Geobacter	0.01%	0.00%	13.83%	16.11%	0.05%	1.07%	0.06%	0.01%	2.31%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhizobiales			2.67%	3.68%	0.91%	2.86%	3.89%	4.29%	5.01%	3.59%	4.43%
Bacteria	Bacteroidetes	[Saprospirae]	[Saprospirales]	Chitinophagaceae		0.73%	11.81%	0.71%	2.05%	3.07%	2.63%	2.14%	3.32%	4.65%
Bacteria	Proteobacteria	Betaproteobacteria	Burkholderiales	Comamonadaceae		4.66%	1.70%	5.32%	3.07%	4.27%	2.85%	3.46%	1.51%	1.58%
Bacteria	Bacteroidetes	Cytophagia	Cytophagales	Cytophagaceae		0.82%	4.23%	0.33%	4.08%	4.09%	3.42%	3.09%	3.97%	3.96%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhodospirillales	Rhodospirillaceae		0.37%	3.48%	0.37%	2.67%	1.36%	1.19%	0.83%	13.18%	2.83%
Bacteria	Proteobacteria	Gammaproteobacteria	Xanthomonadales	Xanthomonadaceae		14.12%	0.60%	0.05%	1.74%	1.29%	0.78%	0.71%	0.25%	3.70%
Bacteria	Bacteroidetes	Sphingobacteriia	Sphingobacteriales	Sphingobacteriaceae		13.51%	1.58%	0.41%	0.81%	0.04%	0.20%	0.19%	4.60%	1.03%
Bacteria	Proteobacteria					0.64%	1.09%	0.10%	1.52%	2.40%	2.83%	4.70%	0.35%	4.46%
Bacteria	Proteobacteria	Betaproteobacteria	Ellin6067			1.50%	1.71%	0.19%	0.74%	3.55%	2.83%	3.53%	0.94%	2.98%
Bacteria	Proteobacteria	Deltaproteobacteria	Desulfuromonadales	Geobacteraceae	Other	0.01%	0.00%	0.30%	7.32%	0.00%	9.89%	0.00%	0.00%	0.01%
Bacteria	Proteobacteria	Betaproteobacteria				3.14%	0.72%	0.08%	0.55%	1.21%	1.61%	2.40%	4.39%	1.23%
Bacteria	Proteobacteria	Deltaproteobacteria	Myxococcales			2.26%	1.40%	0.09%	0.91%	2.22%	1.99%	3.35%	0.53%	2.33%
Bacteria	Verrucomicrobia	Verrucomicrobiae	Verrucomicrobiales	Verrucomicrobiaceae		0.01%	5.28%	0.18%	1.15%	1.57%	0.71%	0.11%	3.22%	1.75%
Bacteria	Proteobacteria	Betaproteobacteria	Burkholderiales	Oxalobacteraceae		0.18%	0.59%	4.65%	1.13%	0.14%	3.69%	0.21%	1.11%	0.50%
Bacteria	Proteobacteria	Betaproteobacteria	Hydrogenophilales	Hydrogenophilaceae	Thiobacillus	3.14%	0.62%	0.03%	0.39%	2.12%	1.46%	2.40%	0.21%	1.39%
Bacteria	Acidobacteria	Acidobacteria-6	iii1-15			0.80%	0.81%	0.05%	0.98%	1.55%	1.90%	2.35%	0.23%	2.18%
Bacteria	Proteobacteria	Gammaproteobacteria	Pseudomonadales	Pseudomonadaceae	Pseudomonas	0.01%	0.49%	4.61%	1.11%	1.20%	0.78%	1.03%	0.47%	0.94%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Micrococcaceae	Arthrobacter	0.84%	0.71%	0.76%	1.47%	2.25%	1.16%	2.50%	0.56%	0.39%
Bacteria	Proteobacteria	Gammaproteobacteria	Pseudomonadales	Moraxellaceae	Psychrobacter	0.00%	0.00%	10.58%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Firmicutes	Clostridia	Clostridiales	Peptococcaceae	Desulfosporosinus	0.00%	0.03%	4.47%	3.48%	0.01%	2.49%	0.03%	0.03%	0.01%
Bacteria	Bacteroidetes	[Saprospirae]	[Saprospirales]	Chitinophagaceae	Sediminibacterium	0.41%	1.36%	5.77%	0.73%	0.03%	1.27%	0.00%	0.34%	0.49%
Bacteria	Proteobacteria	Betaproteobacteria	MND1			0.08%	0.48%	0.05%	1.09%	1.55%	1.61%	3.01%	1.03%	0.85%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhizobiales	Hyphomicrobiaceae	Rhodoplanes	0.56%	0.96%	0.05%	1.12%	0.72%	0.80%	1.35%	2.84%	1.20%
Bacteria	Proteobacteria	Betaproteobacteria	Burkholderiales	Comamonadaceae	Other	1.57%	0.64%	0.15%	0.78%	1.54%	1.47%	1.95%	0.61%	0.78%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	ACK-M1		0.11%	0.99%	3.06%	0.87%	0.37%	0.84%	0.03%	1.16%	1.93%
Bacteria	Proteobacteria	Deltaproteobacteria	Myxococcales	Haliangiaceae		4.12%	0.44%	0.00%	0.39%	0.96%	0.71%	0.82%	1.41%	0.35%
Bacteria	Proteobacteria	Deltaproteobacteria	Syntrophobacteriales	Syntrophobacteraceae		0.42%	0.81%	0.08%	0.77%	1.48%	1.57%	2.04%	0.30%	1.32%
Bacteria	Bacteroidetes	Sphingobacteriia	Sphingobacteriales			0.35%	1.45%	0.04%	1.03%	0.73%	1.55%	0.61%	1.36%	1.12%
Bacteria	Proteobacteria	Betaproteobacteria	Burkholderiales	Oxalobacteraceae	Other	2.03%	0.78%	0.73%	0.71%	0.51%	0.51%	0.20%	1.67%	1.05%
Bacteria	Chloroflexi	Ellin6529				2.22%	0.64%	0.05%	0.49%	1.25%	0.98%	1.45%	0.27%	0.86%
Bacteria	Proteobacteria	Gammaproteobacteria	Other	Other	Other	0.10%	0.42%	0.32%	0.58%	1.76%	1.42%	1.12%	0.47%	0.90%
Bacteria	Proteobacteria	Gammaproteobacteria	Legionellales	Legionellaceae		0.04%	0.53%	0.05%	1.29%	1.63%	0.91%	1.37%	0.56%	0.53%
Bacteria	Proteobacteria	Gammaproteobacteria	Legionellales	Coxiellaceae		0.03%	0.53%	0.94%	0.39%	1.02%	0.87%	0.66%	1.16%	0.72%
Bacteria	Verrucomicrobia	[Spartobacteria]	[Chthoniobacteriales]	[Chthoniobacteraceae]	Chthoniobacter	0.00%	4.18%	0.01%	0.27%	0.23%	0.05%	0.00%	1.21%	0.04%
Bacteria	Bacteroidetes	Cytophagia	Cytophagales	Cytophagaceae	Hymenobacter	0.00%	0.00%	5.89%	0.00%	0.00%	0.01%	0.01%	0.01%	0.05%
Bacteria	Chlamydiae	Chlamydiia	Chlamydiales			0.01%	0.49%	0.03%	0.55%	0.55%	0.39%	0.25%	2.60%	1.02%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhizobiales	Other	Other	0.39%	0.51%	0.63%	0.33%	1.05%	0.68%	0.78%	0.69%	0.71%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Nocardiodaceae		0.94%	0.95%	0.06%	0.40%	0.73%	0.49%	1.00%	0.97%	0.21%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhodospirillales	Acetobacteraceae		0.06%	1.11%	0.87%	0.52%	0.54%	0.51%	0.19%	1.27%	0.55%
Bacteria	Proteobacteria	Alphaproteobacteria	Sphingomonadales	Sphingomonadaceae	Sphingomonas	0.04%	1.09%	3.01%	0.57%	0.12%	0.05%	0.04%	0.21%	0.35%
Bacteria	Proteobacteria	Gammaproteobacteria	Xanthomonadales	Sinobacteraceae		0.90%	0.35%	0.01%	1.05%	0.42%	0.81%	0.84%	0.27%	0.53%
Bacteria	Proteobacteria	Alphaproteobacteria	Ellin329			0.06%	1.04%	0.14%	0.79%	0.21%	0.30%	0.36%	1.34%	0.77%
Bacteria	Actinobacteria	Thermoleophilia	Gaiellales	Gaiellaceae		0.35%	0.46%	0.00%	0.44%	0.69%	0.63%	1.05%	0.76%	0.59%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhodobacterales	Rhodobacteraceae	Rhodobacter	0.02%	0.27%	0.19%	0.11%	2.66%	0.06%	0.08%	0.15%	1.27%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales			0.76%	0.23%	0.31%	0.47%	1.05%	0.59%	1.06%	0.15%	0.15%

Taxonomy						Sample								
Kingdom	Phylum	Class	Order	Family	Genus	Sekunka_WR	CR_0% Oxygen	WR_0% Oxygen	CR_5% Oxygen	WR_5% Oxygen	CR_10% Oxygen	WR_10% Oxygen	CR_21% Oxygen	WR_21% Oxygen
Bacteria	Proteobacteria	Alphaproteobacteria	Rhodobacterales	Rhodobacteraceae	Other	0.00%	0.04%	0.03%	0.16%	0.03%	0.00%	0.00%	0.01%	4.46%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhizobiales	Bradyrhizobiaceae	Bradyrhizobium	0.06%	1.00%	0.09%	0.84%	0.24%	0.22%	0.10%	1.11%	1.04%
Bacteria	Firmicutes	Bacilli	Bacillales	Planococcaceae	Sporosarcina	0.00%	0.00%	4.63%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Verrucomicrobia	Verrucomicrobiae	Verrucomicrobiales	Verrucomicrobiaceae	Prostheco bacter	0.00%	1.29%	0.03%	0.79%	0.17%	0.00%	0.00%	0.39%	1.93%
Bacteria	Chlamydiae	Chlamydiia	Chlamydiales	Parachlamydiaceae	Candidatus Protochlamydia	0.08%	0.96%	0.12%	1.29%	0.09%	0.19%	0.19%	0.35%	1.31%
Bacteria	Acidobacteria	iii1-8	DS-18			0.54%	1.02%	0.01%	0.20%	0.81%	0.67%	0.64%	0.15%	0.50%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhizobiales	Phyllobacteriaceae		0.17%	1.03%	0.05%	0.45%	0.46%	0.36%	0.44%	0.69%	0.45%
Bacteria	Nitrospirae	Nitrospira	Nitrospirales	Nitrospiraceae	Nitrospira	0.44%	0.35%	0.03%	0.33%	0.60%	0.75%	0.87%	0.20%	0.50%
Bacteria	Proteobacteria	Betaproteobacteria	Rhodocyclales	Rhodocyclaceae	Other	0.01%	0.14%	0.21%	3.21%	0.23%	0.10%	0.00%	0.08%	0.08%
Bacteria	Proteobacteria	Alphaproteobacteria	Caulobacterales	Caulobacteraceae	Phenylobacterium	0.28%	0.93%	0.04%	0.24%	0.14%	0.22%	0.06%	1.70%	0.42%
Bacteria	Chloroflexi	S085				0.19%	0.40%	0.04%	0.35%	0.50%	0.63%	0.98%	0.05%	0.80%
Bacteria	Proteobacteria	Gammaproteobacteria	Legionellales	Coxiellaceae	Aquicella	0.01%	0.42%	0.00%	0.08%	1.45%	0.44%	0.78%	0.09%	0.54%
Bacteria	Actinobacteria	Acidimicrobiia	Acidimicrobiales			0.33%	0.35%	0.04%	0.18%	0.45%	0.40%	0.57%	0.91%	0.21%
Bacteria	Actinobacteria	Acidimicrobiia	Acidimicrobiales	C111		0.60%	0.31%	0.00%	0.16%	0.71%	0.66%	0.51%	0.12%	0.19%
Bacteria	Proteobacteria	Alphaproteobacteria	Caulobacterales	Caulobacteraceae		0.07%	0.32%	0.13%	0.24%	0.55%	0.13%	0.21%	0.91%	0.60%
Bacteria	Proteobacteria	Alphaproteobacteria				0.29%	0.26%	0.04%	0.22%	0.37%	0.66%	0.53%	0.28%	0.44%
Bacteria	Proteobacteria	Betaproteobacteria	Methylophilales	Methylophilaceae	Methylotenera	0.22%	0.15%	0.00%	0.56%	0.49%	0.53%	0.87%	0.03%	0.21%
Bacteria	Proteobacteria	Alphaproteobacteria	Other	Other	Other	0.01%	0.50%	0.10%	0.44%	0.05%	0.07%	0.10%	0.75%	0.96%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Nocardiaceae	Nocardia	0.03%	0.01%	0.00%	0.12%	0.22%	2.00%	0.46%	0.04%	0.09%
Bacteria	Gemmatimonadetes	Gemm-1				0.26%	0.41%	0.03%	0.15%	0.40%	0.45%	0.66%	0.15%	0.45%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Other	Other	0.07%	0.66%	0.04%	0.54%	0.05%	0.08%	0.13%	0.80%	0.59%
Bacteria	Acidobacteria	Acidobacteriia	Acidobacteriales	Acidobacteriaceae		0.00%	0.15%	1.23%	0.42%	0.00%	0.44%	0.00%	0.54%	0.00%
Bacteria	WPS-2					0.00%	0.24%	0.00%	0.01%	0.00%	0.00%	0.00%	2.50%	0.00%
Unassigne	Other	Other	Other	Other	Other	0.03%	0.64%	0.12%	0.26%	0.30%	0.17%	0.22%	0.81%	0.22%
Bacteria	Bacteroidetes	[Saprospirae]	[Saprospirales]	Saprospiraceae		0.07%	0.62%	0.01%	0.03%	0.72%	0.57%	0.32%	0.15%	0.19%
Bacteria	Verrucomicrobia	Opitutae	Opitutales	Opitutaceae	Opitutus	0.20%	0.55%	0.04%	0.15%	0.41%	0.41%	0.44%	0.15%	0.31%
Bacteria	Proteobacteria	Gammaproteobacteria	Legionellales	Legionellaceae	Legionella	0.03%	0.15%	0.00%	0.42%	0.64%	0.31%	0.45%	0.30%	0.33%
Bacteria	Bacteroidetes	[Saprospirae]	[Saprospirales]			0.04%	0.73%	0.04%	0.20%	0.39%	0.21%	0.13%	0.41%	0.46%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhizobiales	Rhizobiaceae	Agrobacterium	0.00%	0.31%	0.01%	0.41%	0.00%	0.01%	0.00%	0.01%	1.77%
Bacteria	Gemmatimonadetes	Gemmatimonadetes	N1423WL			0.35%	0.37%	0.00%	0.15%	0.50%	0.34%	0.51%	0.03%	0.22%
Bacteria	Gemmatimonadetes	Gemmatimonadetes				1.04%	0.08%	0.00%	0.06%	0.45%	0.17%	0.42%	0.03%	0.21%
Bacteria	Proteobacteria	Betaproteobacteria	Other	Other	Other	0.12%	0.26%	0.00%	0.21%	0.44%	0.33%	0.37%	0.34%	0.35%
Bacteria	Proteobacteria	Deltaproteobacteria	Bdellovibrionales	Bacteriovoracaceae		0.00%	0.62%	0.06%	0.17%	0.68%	0.17%	0.08%	0.30%	0.28%
Bacteria	Verrucomicrobia	[Spartobacteria]	[Chthoniobacteriales]	[Chthoniobacteraceae]		0.00%	1.57%	0.01%	0.15%	0.00%	0.01%	0.00%	0.43%	0.19%
Bacteria	Firmicutes	Clostridia	Clostridiales	Peptostreptococcaceae		0.00%	0.00%	2.24%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%
Bacteria	Chloroflexi	Anaerolineae	Caldilineales	Caldilineaceae		0.06%	0.37%	0.00%	0.16%	0.42%	0.42%	0.38%	0.15%	0.27%
Bacteria	Chloroflexi	TK10	AKYG885	5B-12		0.21%	0.21%	0.01%	0.30%	0.24%	0.37%	0.42%	0.09%	0.32%
Bacteria	Chloroflexi	TK10	AKYG885	Dolo_23		0.24%	0.37%	0.01%	0.06%	0.28%	0.20%	0.21%	0.70%	0.09%
Bacteria	Firmicutes	Bacilli	Bacillales	Bacillaceae		0.00%	0.00%	2.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Proteobacteria	Betaproteobacteria	Burkholderiales	Comamonadaceae	Methylibium	0.03%	0.31%	0.05%	0.19%	0.45%	0.34%	0.21%	0.25%	0.13%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhizobiales	Bradyrhizobiaceae		0.00%	0.18%	1.09%	0.20%	0.12%	0.19%	0.01%	0.06%	0.10%
Bacteria	Proteobacteria	Betaproteobacteria	Nitrosomonadales	Nitrosomonadaceae	Other	1.48%	0.00%	0.00%	0.04%	0.05%	0.04%	0.24%	0.03%	0.05%
Bacteria	Acidobacteria	Acidobacteria-6	iii1-15	mb2424		0.22%	0.21%	0.00%	0.15%	0.35%	0.35%	0.30%	0.13%	0.22%
Bacteria	Gemmatimonadetes	Gemmatimonadetes	C114			0.01%	0.03%	0.00%	0.20%	0.24%	0.33%	0.69%	0.08%	0.30%
Bacteria	Chlamydiae	Chlamydiia	Chlamydiales	Parachlamydiaceae	Other	0.00%	0.17%	0.00%	0.20%	0.06%	0.09%	0.05%	0.09%	1.09%
Bacteria	Actinobacteria	Thermoleophilia	Gaiellales			0.14%	0.10%	0.00%	0.21%	0.35%	0.27%	0.35%	0.13%	0.19%
Bacteria	Chloroflexi	Anaerolineae	Ardenscatenales	Ardenscatenaceae	Ardenscatena	0.05%	0.27%	0.00%	0.12%	0.27%	0.33%	0.30%	0.20%	0.18%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Microbacteriaceae	Other	0.03%	0.08%	0.73%	0.03%	0.09%	0.01%	0.01%	0.45%	0.21%

Taxonomy						Sample								
Kingdom	Phylum	Class	Order	Family	Genus	Sekunka_WR	CR_0% Oxygen	WR_0% Oxygen	CR_5% Oxygen	WR_5% Oxygen	CR_10% Oxygen	WR_10% Oxygen	CR_21% Oxygen	WR_21% Oxygen
Bacteria	Actinobacteria	MB-A2-108	0319-7L14			0.22%	0.23%	0.03%	0.06%	0.22%	0.20%	0.35%	0.04%	0.26%
Bacteria	Acidobacteria	Solibacteres	Solibacterales	Solibacteraceae	Candidatus Solibacter	0.03%	0.22%	0.00%	0.07%	0.04%	0.10%	0.04%	0.81%	0.24%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Frankiaceae		0.01%	0.27%	0.14%	0.05%	0.01%	0.01%	0.03%	0.65%	0.32%
Bacteria	Proteobacteria	Alphaproteobacteria	Sphingomonadales	Sphingomonadaceae		0.19%	0.17%	0.22%	0.18%	0.13%	0.12%	0.15%	0.11%	0.23%
Bacteria	Verrucomicrobia	[Pedosphaerae]	[Pedosphaerales]	Other	Other	0.01%	0.45%	0.06%	0.21%	0.04%	0.07%	0.03%	0.09%	0.53%
Bacteria	Bacteroidetes	Flavobacteriia	Flavobacteriales	Flavobacteriaceae	Flavobacterium	0.29%	0.13%	0.03%	0.16%	0.19%	0.25%	0.13%	0.20%	0.09%
Bacteria	Bacteroidetes	Sphingobacteriia	Sphingobacteriales	Sphingobacteriaceae	Pedobacter	0.00%	0.00%	1.39%	0.00%	0.00%	0.00%	0.04%	0.00%	0.00%
Bacteria	Proteobacteria	Betaproteobacteria	Rhodocyclales	Rhodocyclaceae		0.42%	0.04%	0.03%	0.21%	0.21%	0.25%	0.11%	0.06%	0.10%
Bacteria	Acidobacteria	Acidobacteria-6	iii1-15	RB40		0.24%	0.19%	0.00%	0.08%	0.36%	0.25%	0.12%	0.00%	0.17%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Pseudonocardiaceae	Other	0.00%	0.18%	0.00%	0.00%	0.00%	0.00%	0.00%	1.19%	0.00%
Bacteria	Proteobacteria	Betaproteobacteria	IS-44			0.06%	0.12%	0.00%	0.06%	0.39%	0.19%	0.22%	0.22%	0.12%
Bacteria	Proteobacteria	Deltaproteobacteria	Myxococcales	OM27		0.75%	0.06%	0.00%	0.10%	0.14%	0.04%	0.21%	0.01%	0.05%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Microbacteriaceae		0.37%	0.05%	0.30%	0.03%	0.08%	0.05%	0.08%	0.23%	0.14%
Bacteria	Gemmatimonadetes	Gemmatimonadetes	KD8-87			0.03%	0.10%	0.00%	0.09%	0.26%	0.23%	0.39%	0.10%	0.12%
Bacteria	Verrucomicrobia	[Pedosphaerae]	[Pedosphaerales]	Ellin517		0.14%	0.08%	0.01%	0.10%	0.19%	0.14%	0.35%	0.15%	0.14%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Sporichthyaceae		0.52%	0.00%	0.12%	0.09%	0.12%	0.13%	0.12%	0.15%	0.06%
Bacteria	Gemmatimonadetes	Gemmatimonadetes	Gemmatimonadales	Ellin5301		0.19%	0.09%	0.01%	0.03%	0.17%	0.17%	0.49%	0.01%	0.12%
Bacteria	Verrucomicrobia	[Spartobacteria]	[Chthoniobacteriales]	[Chthoniobacteraceae]	Candidatus Xiphinematobacter	0.00%	0.72%	0.03%	0.19%	0.00%	0.01%	0.00%	0.06%	0.27%
Bacteria	Proteobacteria	Betaproteobacteria	Burkholderiales	Burkholderiaceae	Burkholderia	0.00%	0.46%	0.09%	0.04%	0.00%	0.03%	0.06%	0.54%	0.04%
Bacteria	Chloroflexi	Thermomicrobia	JG30-KF-CM45			0.15%	0.14%	0.00%	0.13%	0.21%	0.17%	0.26%	0.03%	0.15%
Bacteria	Firmicutes	Bacilli	Lactobacillales	Carnobacteriaceae	Carnobacterium	0.00%	0.00%	1.23%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhizobiales	Hyphomicrobiaceae	Hyphomicrobium	0.17%	0.17%	0.08%	0.08%	0.18%	0.18%	0.17%	0.09%	0.12%
Bacteria	Planctomycetes	vadinHA49	DH61			0.01%	0.21%	0.00%	0.01%	0.15%	0.04%	0.02%	0.75%	0.00%
Bacteria	Proteobacteria	Deltaproteobacteria	Myxococcales	Myxococcaceae		0.13%	0.40%	0.00%	0.13%	0.03%	0.03%	0.01%	0.38%	0.08%
Bacteria	FBP					0.00%	0.95%	0.13%	0.08%	0.00%	0.00%	0.00%	0.00%	0.01%
Bacteria	Verrucomicrobia	Opitutae	Opitutaes	Opitutaceae		0.87%	0.01%	0.00%	0.00%	0.05%	0.08%	0.04%	0.07%	0.04%
Bacteria	Verrucomicrobia	[Pedosphaerae]	[Pedosphaerales]			0.02%	0.13%	0.00%	0.27%	0.17%	0.10%	0.26%	0.08%	0.10%
Bacteria	Firmicutes	Clostridia	Clostridiales	Veillonellaceae	Pelosinus	0.00%	0.03%	0.57%	0.15%	0.00%	0.23%	0.06%	0.00%	0.10%
Bacteria	Proteobacteria	Gammaproteobacteria	PYR10d3			0.15%	0.01%	0.00%	0.03%	0.14%	0.16%	0.38%	0.02%	0.23%
Bacteria	Firmicutes	Bacilli	Bacillales	Staphylococcaceae	Staphylococcus	0.00%	0.00%	1.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Proteobacteria	Deltaproteobacteria	MIZ46			0.02%	0.15%	0.01%	0.09%	0.14%	0.13%	0.15%	0.29%	0.10%
Bacteria	Chloroflexi	P2-11E				0.19%	0.14%	0.01%	0.08%	0.14%	0.14%	0.24%	0.04%	0.09%
Bacteria	Chloroflexi	TK10	B07_WMSP1			0.37%	0.08%	0.00%	0.14%	0.04%	0.05%	0.15%	0.15%	0.08%
Bacteria	Proteobacteria	Alphaproteobacteria	Rickettsiales			0.00%	0.15%	0.01%	0.07%	0.01%	0.12%	0.08%	0.30%	0.26%
Bacteria	Acidobacteria	[Chloracidobacteria]	RB41	Ellin6075		0.11%	0.23%	0.00%	0.05%	0.15%	0.14%	0.20%	0.03%	0.08%
Bacteria	TM6	SJA-4				0.00%	0.18%	0.00%	0.16%	0.13%	0.13%	0.22%	0.08%	0.09%
Bacteria	Actinobacteria	Acidimicrobiia	Acidimicrobiales	Iamiaceae	Iamia	0.41%	0.05%	0.00%	0.02%	0.09%	0.06%	0.18%	0.01%	0.13%
Bacteria	WS3	PRR-12	Sediment-1	PRR-10		0.05%	0.15%	0.00%	0.08%	0.08%	0.19%	0.24%	0.03%	0.10%
Bacteria	Acidobacteria	Solibacteres	Solibacterales	[Bryobacteraceae]		0.04%	0.17%	0.00%	0.21%	0.15%	0.12%	0.06%	0.01%	0.17%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhizobiales	Hyphomicrobiaceae	Devosia	0.04%	0.13%	0.13%	0.09%	0.10%	0.15%	0.06%	0.05%	0.14%
Bacteria	Proteobacteria	Gammaproteobacteria				0.05%	0.08%	0.00%	0.15%	0.27%	0.10%	0.15%	0.03%	0.06%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Microbacteriaceae	Salinibacterium	0.01%	0.17%	0.22%	0.02%	0.01%	0.03%	0.01%	0.21%	0.17%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Cellulomonadaceae	Cellulomonas	0.00%	0.00%	0.64%	0.06%	0.00%	0.12%	0.00%	0.00%	0.00%
Bacteria	Chlorobi	OPB56				0.04%	0.17%	0.00%	0.13%	0.13%	0.06%	0.19%	0.02%	0.06%
Bacteria	Actinobacteria	Acidimicrobiia	Acidimicrobiales	EB1017		0.01%	0.12%	0.00%	0.17%	0.12%	0.08%	0.12%	0.03%	0.10%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhizobiales	Methylocystaceae		0.01%	0.22%	0.18%	0.08%	0.04%	0.01%	0.00%	0.03%	0.18%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Pseudonocardiaceae	Pseudonocardia	0.04%	0.10%	0.04%	0.01%	0.06%	0.35%	0.02%	0.09%	0.01%
Bacteria	Proteobacteria	Alphaproteobacteria	Caulobacterales	Caulobacteraceae	Caulobacter	0.00%	0.06%	0.06%	0.11%	0.10%	0.01%	0.00%	0.01%	0.36%

Taxonomy						Sample								
Kingdom	Phylum	Class	Order	Family	Genus	Sekunka_WR	CR_0% Oxygen	WR_0% Oxygen	CR_5% Oxygen	WR_5% Oxygen	CR_10% Oxygen	WR_10% Oxygen	CR_21% Oxygen	WR_21% Oxygen
Bacteria	Firmicutes	Bacilli	Lactobacillales	Enterococcaceae	Enterococcus	0.00%	0.00%	0.72%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Proteobacteria	Gammaproteobacteria	Legionellales	Other	Other	0.00%	0.01%	0.00%	0.08%	0.08%	0.16%	0.13%	0.15%	0.10%
Bacteria	Proteobacteria	Gammaproteobacteria	Xanthomonadales	Xanthomonadaceae	Other	0.58%	0.01%	0.00%	0.02%	0.01%	0.04%	0.03%	0.00%	0.01%
Bacteria	Chloroflexi	Anaerolineae	SBR1031	A4b		0.00%	0.06%	0.01%	0.10%	0.09%	0.17%	0.08%	0.14%	0.05%
Bacteria	Planctomycetes	Pla4				0.00%	0.03%	0.01%	0.15%	0.08%	0.03%	0.33%	0.00%	0.08%
Bacteria	Elusimicrobia	Elusimicrobia	Elusimicrobiales			0.03%	0.09%	0.12%	0.21%	0.05%	0.09%	0.02%	0.07%	0.01%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhizobiales	Hyphomicrobiaceae		0.06%	0.13%	0.00%	0.05%	0.08%	0.04%	0.20%	0.05%	0.08%
Bacteria	Chloroflexi	TK17				0.10%	0.01%	0.03%	0.06%	0.10%	0.13%	0.12%	0.00%	0.12%
Bacteria	Proteobacteria	Gammaproteobacteria	Xanthomonadales	Xanthomonadaceae	Arenimonas	0.34%	0.06%	0.00%	0.01%	0.13%	0.06%	0.04%	0.00%	0.00%
Bacteria	Acidobacteria	Solibacteres	Solibacterales	PAUC26f		0.02%	0.04%	0.00%	0.03%	0.04%	0.11%	0.12%	0.05%	0.23%
Bacteria	Chlamydiae	Chlamydiia				0.00%	0.01%	0.00%	0.01%	0.10%	0.08%	0.36%	0.02%	0.06%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhizobiales	Rhizobiaceae	Rhizobium	0.00%	0.35%	0.00%	0.00%	0.00%	0.00%	0.00%	0.29%	0.00%
Bacteria	Bacteroidetes	Cytophagia	Cytophagales	Cytophagaceae	Dyadobacter	0.00%	0.08%	0.53%	0.00%	0.00%	0.01%	0.02%	0.00%	0.00%
Bacteria	Actinobacteria	Thermoleophilia	Solirubrobacterales	Other	Other	0.10%	0.06%	0.01%	0.04%	0.04%	0.04%	0.10%	0.15%	0.08%
Bacteria	Proteobacteria	Alphaproteobacteria	Caulobacterales	Caulobacteraceae	Other	0.00%	0.31%	0.00%	0.15%	0.04%	0.01%	0.01%	0.09%	0.03%
Bacteria	Proteobacteria	Alphaproteobacteria	BD7-3			0.00%	0.10%	0.00%	0.01%	0.00%	0.00%	0.00%	0.51%	0.00%
Bacteria	Bacteroidetes	Flavobacteriia	Flavobacteriales	Cryomorphaceae	Fluviicola	0.01%	0.00%	0.00%	0.01%	0.49%	0.01%	0.04%	0.06%	0.00%
Bacteria	Proteobacteria	Alphaproteobacteria	Caulobacterales	Caulobacteraceae	Mycoplana	0.09%	0.05%	0.41%	0.01%	0.03%	0.01%	0.01%	0.01%	0.00%
Bacteria	Actinobacteria	Thermoleophilia	Solirubrobacterales			0.06%	0.10%	0.00%	0.03%	0.06%	0.04%	0.16%	0.13%	0.01%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhizobiales	Methylobacteriaceae	Methylobacterium	0.00%	0.06%	0.37%	0.00%	0.00%	0.04%	0.01%	0.12%	0.00%
Bacteria	Acidobacteria	Solibacteres	Solibacterales			0.03%	0.10%	0.00%	0.08%	0.04%	0.13%	0.12%	0.04%	0.06%
Bacteria	Proteobacteria	Betaproteobacteria	Burkholderiales	Other	Other	0.04%	0.04%	0.00%	0.01%	0.24%	0.06%	0.04%	0.09%	0.05%
Bacteria	Proteobacteria	Gammaproteobacteria	Xanthomonadales	Xanthomonadaceae	Lysobacter	0.20%	0.04%	0.12%	0.03%	0.01%	0.05%	0.06%	0.00%	0.04%
Bacteria	Proteobacteria	Gammaproteobacteria	Legionellales			0.00%	0.08%	0.00%	0.03%	0.12%	0.07%	0.05%	0.15%	0.04%
Bacteria	Gemmatimonadetes	Gemm-2				0.01%	0.05%	0.00%	0.08%	0.05%	0.11%	0.16%	0.01%	0.06%
Bacteria	Chlamydiae	Chlamydiia	Chlamydiales	Parachlamydiaceae	Parachlamydia	0.00%	0.05%	0.00%	0.03%	0.01%	0.04%	0.05%	0.30%	0.04%
Bacteria	Chloroflexi	Gitt-GS-136				0.15%	0.03%	0.01%	0.05%	0.08%	0.03%	0.08%	0.02%	0.08%
Bacteria	Proteobacteria	Alphaproteobacteria	Sphingomonadales	Erythrobacteraceae		0.14%	0.04%	0.06%	0.00%	0.03%	0.09%	0.11%	0.02%	0.04%
Bacteria	Acidobacteria	EC1113				0.05%	0.01%	0.00%	0.02%	0.09%	0.12%	0.13%	0.03%	0.06%
Bacteria	Nitrospirae	Nitrospira	Nitrospirales			0.04%	0.00%	0.00%	0.11%	0.06%	0.06%	0.15%	0.04%	0.04%
Bacteria	Bacteroidetes	Cytophagia	Cytophagales	Cytophagaceae	Sporocytophaga	0.03%	0.27%	0.00%	0.01%	0.01%	0.04%	0.06%	0.04%	0.03%
Bacteria	Planctomycetes	Phycisphaerae	WD2101			0.01%	0.09%	0.04%	0.05%	0.03%	0.01%	0.05%	0.19%	0.03%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Geodermatophilaceae	Other	0.00%	0.04%	0.40%	0.00%	0.01%	0.02%	0.01%	0.01%	0.00%
Bacteria	Firmicutes	Bacilli	Bacillales	Staphylococcaceae	Jeotgalicoccus	0.00%	0.00%	0.49%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Chloroflexi	TK10				0.02%	0.05%	0.00%	0.02%	0.10%	0.06%	0.16%	0.00%	0.08%
Bacteria	Proteobacteria	Deltaproteobacteria				0.14%	0.03%	0.00%	0.01%	0.10%	0.03%	0.07%	0.03%	0.08%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhodobacterales	Rhodobacteraceae	Rubellimicrobium	0.03%	0.00%	0.21%	0.03%	0.05%	0.04%	0.03%	0.03%	0.05%
Bacteria	Chloroflexi	Chloroflexi	[Roseiflexales]	[Kouleothrixaceae]		0.07%	0.05%	0.00%	0.04%	0.03%	0.09%	0.09%	0.03%	0.08%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhodobacterales	Hyphomonadaceae		0.01%	0.06%	0.00%	0.04%	0.08%	0.04%	0.07%	0.02%	0.14%
Bacteria	Proteobacteria	Deltaproteobacteria	Bdellovibrionales	Bdellovibrionaceae	Bdellovibrio	0.01%	0.01%	0.03%	0.03%	0.12%	0.03%	0.07%	0.13%	0.04%
Bacteria	Chlorobi					0.00%	0.19%	0.00%	0.10%	0.05%	0.07%	0.02%	0.03%	0.00%
Bacteria	Proteobacteria	Betaproteobacteria	Burkholderiales	Oxalobacteraceae	Ralstonia	0.00%	0.05%	0.08%	0.04%	0.04%	0.06%	0.06%	0.12%	0.00%
Bacteria	Proteobacteria	Gammaproteobacteria	Thiotrichales	Piscirickettsiaceae		0.06%	0.00%	0.01%	0.00%	0.09%	0.06%	0.15%	0.01%	0.06%
Bacteria	OD1	ZB2				0.00%	0.05%	0.00%	0.01%	0.00%	0.01%	0.00%	0.37%	0.00%
Bacteria	Actinobacteria	Thermoleophilia	Solirubrobacterales	Patulibacteraceae		0.14%	0.03%	0.00%	0.02%	0.05%	0.10%	0.04%	0.01%	0.05%
Bacteria	AD3	ABS-6				0.01%	0.04%	0.00%	0.06%	0.05%	0.04%	0.10%	0.00%	0.12%
Bacteria	Planctomycetes	OM190	CL500-15			0.02%	0.09%	0.00%	0.00%	0.14%	0.11%	0.02%	0.00%	0.03%
Bacteria	Fibrobacteres	Fibrobacteria	258ds10			0.08%	0.05%	0.00%	0.02%	0.00%	0.04%	0.15%	0.01%	0.03%

Taxonomy						Sample								
Kingdom	Phylum	Class	Order	Family	Genus	Sekunka_WR	CR_0% Oxygen	WR_0% Oxygen	CR_5% Oxygen	WR_5% Oxygen	CR_10% Oxygen	WR_10% Oxygen	CR_21% Oxygen	WR_21% Oxygen
Bacteria	Acidobacteria	Acidobacteria-6				0.00%	0.03%	0.00%	0.02%	0.04%	0.13%	0.14%	0.01%	0.01%
Bacteria	Proteobacteria	Gammaproteobacteria	Chromatiales			0.01%	0.03%	0.00%	0.06%	0.09%	0.04%	0.14%	0.01%	0.00%
Bacteria	Bacteroidetes	Cytophagia	Cytophagales	Cyclobacteriaceae		0.09%	0.00%	0.04%	0.01%	0.09%	0.07%	0.04%	0.01%	0.03%
Bacteria	Planctomycetes	Phycisphaerae	Phycisphaerales			0.00%	0.21%	0.00%	0.02%	0.00%	0.01%	0.06%	0.08%	0.00%
Bacteria	Proteobacteria	Betaproteobacteria	Methylophilales	Methylophilaceae		0.02%	0.04%	0.00%	0.22%	0.00%	0.00%	0.00%	0.05%	0.04%
Bacteria	Chloroflexi	Anaerolineae	H39			0.00%	0.09%	0.00%	0.02%	0.09%	0.03%	0.11%	0.02%	0.01%
Bacteria	Actinobacteria	Thermoleophilia	Solirubrobacterales	Solirubrobacteraceae		0.07%	0.01%	0.00%	0.01%	0.19%	0.03%	0.04%	0.00%	0.01%
Bacteria	Firmicutes	Clostridia	Clostridiales	Clostridiaceae	Other	0.01%	0.01%	0.19%	0.06%	0.00%	0.05%	0.03%	0.00%	0.00%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhizobiales	Hyphomicrobiaceae	Pedomicrobium	0.00%	0.12%	0.00%	0.05%	0.04%	0.07%	0.04%	0.01%	0.03%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Geodermatophilaceae		0.00%	0.01%	0.31%	0.00%	0.01%	0.01%	0.01%	0.00%	0.00%
Bacteria	Bacteroidetes	Cytophagia	Cytophagales	Cytophagaceae	Adhaeribacter	0.00%	0.00%	0.35%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%
Bacteria	Chlamydiae	Chlamydiia	Chlamydiales	Parachlamydiaceae		0.00%	0.06%	0.00%	0.03%	0.00%	0.01%	0.01%	0.21%	0.04%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhodospirillales	Acetobacteraceae	Other	0.00%	0.12%	0.00%	0.03%	0.00%	0.00%	0.00%	0.18%	0.03%
Bacteria	AD3	JG37-AG-4				0.01%	0.05%	0.00%	0.02%	0.03%	0.03%	0.10%	0.08%	0.04%
Bacteria	Acidobacteria	Sva0725	Sva0725			0.02%	0.04%	0.00%	0.00%	0.10%	0.08%	0.06%	0.01%	0.03%
Bacteria	Chlamydiae	Chlamydiia	Chlamydiales	Other	Other	0.00%	0.08%	0.00%	0.02%	0.05%	0.06%	0.00%	0.05%	0.08%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhizobiales	Bradyrhizobiaceae	Bosea	0.00%	0.19%	0.00%	0.00%	0.00%	0.01%	0.00%	0.08%	0.04%
Bacteria	Proteobacteria	Betaproteobacteria	Burkholderiales	Comamonadaceae	Ramlibacter	0.04%	0.04%	0.00%	0.00%	0.08%	0.03%	0.06%	0.03%	0.05%
Bacteria	Proteobacteria	Betaproteobacteria	Methylophilales	Methylophilaceae	Other	0.20%	0.03%	0.00%	0.03%	0.01%	0.03%	0.00%	0.00%	0.03%
Bacteria	Verrucomicrobia	[Pedosphaerae]	[Pedosphaerales]	auto67_4W		0.06%	0.04%	0.00%	0.03%	0.06%	0.01%	0.00%	0.01%	0.10%
Bacteria	Proteobacteria	Alphaproteobacteria	Sphingomonadales			0.06%	0.03%	0.00%	0.06%	0.04%	0.07%	0.04%	0.02%	0.00%
Bacteria	Proteobacteria	Alphaproteobacteria	Sphingomonadales	Sphingomonadaceae	Novosphingobium	0.03%	0.04%	0.00%	0.03%	0.10%	0.01%	0.04%	0.02%	0.05%
Bacteria	Chloroflexi	TK10	AKYG885	Other	Other	0.05%	0.03%	0.00%	0.03%	0.01%	0.03%	0.11%	0.00%	0.05%
Bacteria	Acidobacteria	PAUC37f				0.00%	0.04%	0.00%	0.01%	0.03%	0.04%	0.13%	0.02%	0.05%
Bacteria	Planctomycetes	BD7-11				0.31%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Planctomycetes	vadinHA49	p04_C01			0.00%	0.09%	0.00%	0.07%	0.09%	0.01%	0.00%	0.02%	0.03%
Bacteria	Chlamydiae	Chlamydiia	Chlamydiales	Criblamydiaceae		0.01%	0.01%	0.00%	0.04%	0.04%	0.08%	0.06%	0.01%	0.05%
Bacteria	Chlamydiae	Chlamydiia	Chlamydiales	Rhabdochlamydiaceae	Candidatus Rhabdochlamydia	0.00%	0.03%	0.00%	0.01%	0.00%	0.02%	0.03%	0.21%	0.01%
Bacteria	Proteobacteria	Gammaproteobacteria	Enterobacteriales	Enterobacteriaceae		0.05%	0.00%	0.24%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Microbacteriaceae	Yonghaparkia	0.23%	0.00%	0.00%	0.00%	0.05%	0.01%	0.00%	0.00%	0.00%
Bacteria	Proteobacteria	Deltaproteobacteria	Myxococcales	Nannocystaceae	Plesiocystis	0.00%	0.04%	0.01%	0.02%	0.08%	0.08%	0.03%	0.00%	0.03%
Bacteria	Proteobacteria	Gammaproteobacteria	Pseudomonadales	Moraxellaceae	Other	0.00%	0.00%	0.28%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Proteobacteria	Betaproteobacteria	Nitrosomonadales	Nitrosomonadaceae		0.01%	0.00%	0.00%	0.02%	0.01%	0.05%	0.13%	0.02%	0.04%
Bacteria	WS3	PRR-12	Sediment-1			0.01%	0.04%	0.00%	0.02%	0.04%	0.04%	0.08%	0.00%	0.04%
Bacteria	Proteobacteria	Gammaproteobacteria	Methylococcales	Other	Other	0.04%	0.00%	0.00%	0.01%	0.06%	0.03%	0.08%	0.00%	0.04%
Bacteria	Acidobacteria	Acidobacteriia	Acidobacteriales	Koribacteraceae	Candidatus Koribacter	0.01%	0.00%	0.00%	0.06%	0.01%	0.03%	0.04%	0.07%	0.04%
Bacteria	Actinobacteria	Nitriliruptoria	Euzebyales	Euzebyaceae	Euzebya	0.03%	0.01%	0.00%	0.02%	0.06%	0.05%	0.06%	0.00%	0.03%
Bacteria	Firmicutes	Bacilli	Bacillales	Alicyclobacillaceae		0.00%	0.01%	0.05%	0.01%	0.03%	0.03%	0.06%	0.04%	0.01%
Bacteria	Proteobacteria	Alphaproteobacteria	Caulobacterales			0.00%	0.00%	0.22%	0.01%	0.00%	0.00%	0.01%	0.01%	0.00%
Bacteria	Acidobacteria	Holophagae	Holophagales	Holophagaceae	Geothrix	0.00%	0.00%	0.13%	0.02%	0.00%	0.00%	0.00%	0.00%	0.10%
Bacteria	Proteobacteria	Deltaproteobacteria	Desulfobacterales	Desulfobulbaceae		0.00%	0.01%	0.00%	0.17%	0.05%	0.00%	0.01%	0.00%	0.00%
Bacteria	Actinobacteria	MB-A2-108				0.10%	0.00%	0.00%	0.00%	0.05%	0.01%	0.05%	0.01%	0.01%
Bacteria	Actinobacteria	Thermoleophilia	Solirubrobacterales	Solirubrobacteraceae	Other	0.00%	0.04%	0.03%	0.00%	0.03%	0.03%	0.04%	0.06%	0.03%
Bacteria	Spirochaetes	[Leptospirae]	[Leptospirales]	Leptospiraceae	Turneriella	0.00%	0.04%	0.00%	0.03%	0.05%	0.01%	0.03%	0.03%	0.04%
Bacteria	Verrucomicrobia	[Pedosphaerae]	[Pedosphaerales]	[Pedosphaeraceae]	Other	0.00%	0.09%	0.00%	0.00%	0.05%	0.02%	0.00%	0.07%	0.00%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhizobiales	Methylocystaceae	Other	0.00%	0.01%	0.01%	0.06%	0.00%	0.01%	0.00%	0.04%	0.08%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhizobiales	Xanthobacteraceae	Xanthobacter	0.00%	0.22%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Proteobacteria	Gammaproteobacteria	Enterobacteriales	Enterobacteriaceae	Other	0.00%	0.00%	0.22%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Taxonomy						Sample								
Kingdom	Phylum	Class	Order	Family	Genus	Sekunka_WR	CR_0% Oxygen	WR_0% Oxygen	CR_5% Oxygen	WR_5% Oxygen	CR_10% Oxygen	WR_10% Oxygen	CR_21% Oxygen	WR_21% Oxygen
Bacteria	Firmicutes	Clostridia	Clostridiales	Clostridiaceae	Clostridium	0.01%	0.01%	0.01%	0.03%	0.04%	0.02%	0.05%	0.00%	0.04%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhizobiales	Rhizobiaceae		0.00%	0.00%	0.00%	0.15%	0.01%	0.00%	0.03%	0.01%	0.00%
Bacteria	Planctomycetes	C6	d113			0.00%	0.05%	0.00%	0.01%	0.03%	0.04%	0.06%	0.02%	0.00%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhizobiales	Bradyrhizobiaceae	Other	0.03%	0.04%	0.00%	0.01%	0.03%	0.03%	0.06%	0.02%	0.00%
Bacteria	Proteobacteria	Gammaproteobacteria	Aeromonadales	Aeromonadaceae		0.00%	0.00%	0.21%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhizobiales	Xanthobacteraceae	Other	0.00%	0.14%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.06%
Bacteria	Proteobacteria	Epsilonproteobacteria	Campylobacterales	Helicobacteraceae	Sulfurimonas	0.01%	0.00%	0.00%	0.19%	0.00%	0.01%	0.00%	0.00%	0.00%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhodospirillales	Rhodospirillaceae	Other	0.00%	0.09%	0.00%	0.04%	0.00%	0.02%	0.01%	0.04%	0.00%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Propionibacteriaceae		0.00%	0.00%	0.19%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%
Bacteria	Planctomycetes	OM190	agg27			0.00%	0.01%	0.00%	0.03%	0.05%	0.04%	0.03%	0.00%	0.04%
Bacteria	Bacteroidetes	Flavobacteriia	Flavobacteriales	Flavobacteriaceae		0.00%	0.03%	0.04%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Firmicutes	Bacilli	Bacillales	Bacillaceae	Other	0.00%	0.00%	0.19%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Firmicutes	Bacilli	Bacillales	Planococcaceae	Planomicrobium	0.00%	0.00%	0.18%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%
Bacteria	Firmicutes	Clostridia	Clostridiales	Veillonellaceae		0.00%	0.00%	0.10%	0.08%	0.00%	0.01%	0.00%	0.00%	0.00%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhizobiales	Xanthobacteraceae	Labrys	0.00%	0.09%	0.00%	0.02%	0.00%	0.00%	0.00%	0.03%	0.05%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Intrasporangiaceae	Other	0.03%	0.13%	0.00%	0.00%	0.00%	0.00%	0.02%	0.01%	0.00%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Nocardiaceae	Rhodococcus	0.10%	0.00%	0.08%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Nocardoidaceae	Friedmanniella	0.00%	0.00%	0.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	BRC1	PRR-11				0.00%	0.04%	0.00%	0.01%	0.04%	0.03%	0.04%	0.01%	0.01%
Bacteria	Chloroflexi	Thermomicrobia				0.04%	0.04%	0.00%	0.01%	0.01%	0.00%	0.04%	0.03%	0.00%
Bacteria	TM6	SJA-4	S1198			0.00%	0.03%	0.00%	0.03%	0.12%	0.00%	0.00%	0.00%	0.00%
Bacteria	Proteobacteria	Deltaproteobacteria	Myxococcales	0319-6G20		0.00%	0.04%	0.00%	0.00%	0.00%	0.00%	0.01%	0.13%	0.00%
Bacteria	Bacteroidetes	[Saprospirae]	[Saprospirales]	Chitinophagaceae	Segetibacter	0.00%	0.05%	0.00%	0.00%	0.00%	0.01%	0.00%	0.10%	0.00%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Intrasporangiaceae		0.03%	0.03%	0.00%	0.02%	0.00%	0.01%	0.01%	0.08%	0.00%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Microbacteriaceae	Cryocola	0.00%	0.00%	0.14%	0.00%	0.01%	0.00%	0.00%	0.01%	0.00%
Bacteria	Proteobacteria	Gammaproteobacteria	Xanthomonadales	Sinobacteraceae	Steroidobacter	0.02%	0.00%	0.00%	0.00%	0.04%	0.03%	0.03%	0.00%	0.04%
Bacteria	Proteobacteria	Gammaproteobacteria	Alteromonadales	211ds20		0.03%	0.00%	0.00%	0.02%	0.01%	0.03%	0.03%	0.01%	0.03%
Bacteria	Gemmatimonadetes	Gemmatimonadetes	Gemmatimonadales	Gemmatimonadaceae	Gemmatimonas	0.01%	0.00%	0.00%	0.02%	0.00%	0.02%	0.02%	0.00%	0.09%
Bacteria	Planctomycetes	Planctomycetia	Gemmatales	Gemmataceae	Gemmata	0.00%	0.03%	0.04%	0.04%	0.01%	0.00%	0.01%	0.00%	0.03%
Bacteria	OD1	ABY1				0.00%	0.01%	0.00%	0.03%	0.03%	0.04%	0.02%	0.01%	0.01%
Bacteria	Proteobacteria	Gammaproteobacteria	Pseudomonadales	Moraxellaceae		0.00%	0.04%	0.00%	0.02%	0.01%	0.01%	0.03%	0.00%	0.04%
Bacteria	Actinobacteria	Thermoleophilia	Solirubrobacterales	Conexibacteraceae	Other	0.01%	0.03%	0.00%	0.00%	0.00%	0.01%	0.05%	0.06%	0.00%
Bacteria	Proteobacteria	Betaproteobacteria	Burkholderiales	Comamonadaceae	Rubrivivax	0.00%	0.00%	0.00%	0.09%	0.01%	0.00%	0.00%	0.00%	0.04%
Bacteria	NKB19	TSBW08				0.00%	0.00%	0.00%	0.00%	0.05%	0.03%	0.00%	0.04%	0.03%
Bacteria	Actinobacteria	Acidimicrobiia	Acidimicrobiales	Other	Other	0.02%	0.04%	0.00%	0.00%	0.03%	0.02%	0.01%	0.00%	0.03%
Bacteria	Actinobacteria	Thermoleophilia	Gaiellales	AK1AB1_02E		0.03%	0.01%	0.00%	0.00%	0.04%	0.02%	0.03%	0.00%	0.01%
Bacteria	Proteobacteria	Gammaproteobacteria	Methylococcales	Crenotrichaceae	Crenothrix	0.01%	0.01%	0.00%	0.03%	0.01%	0.00%	0.06%	0.00%	0.01%
Bacteria	Bacteroidetes	Sphingobacteriia	Sphingobacteriales	Sphingobacteriaceae	Sphingobacterium	0.00%	0.00%	0.14%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhodobacterales	Rhodobacteraceae	Paracoccus	0.00%	0.00%	0.14%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Proteobacteria	Betaproteobacteria	Burkholderiales	Alcaligenaceae		0.00%	0.00%	0.14%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Micrococcaceae	Other	0.02%	0.05%	0.00%	0.00%	0.00%	0.01%	0.00%	0.06%	0.00%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhizobiales	Hyphomicrobiaceae	Parvibaculum	0.00%	0.00%	0.00%	0.04%	0.00%	0.00%	0.00%	0.02%	0.08%
Bacteria	Chloroflexi	Anaerolineae	CFB-26			0.00%	0.05%	0.00%	0.01%	0.01%	0.01%	0.01%	0.02%	0.03%
Bacteria	Bacteroidetes	Cytophagia	Cytophagales	Flammeovirgaceae		0.00%	0.04%	0.00%	0.00%	0.00%	0.01%	0.00%	0.09%	0.00%
Bacteria	Proteobacteria	Deltaproteobacteria	Desulfobacterales	Other	Other	0.00%	0.00%	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Bacteroidetes	Cytophagia	Cytophagales	Cytophagaceae	Flectobacillus	0.00%	0.04%	0.00%	0.02%	0.00%	0.00%	0.00%	0.06%	0.01%
Bacteria	Planctomycetes	vadinHA49	PHOS-HE93			0.00%	0.04%	0.00%	0.00%	0.00%	0.04%	0.03%	0.00%	0.01%
Bacteria	NC10	44919	Other	Other	Other	0.00%	0.01%	0.00%	0.03%	0.04%	0.01%	0.01%	0.01%	0.01%



Taxonomy						Sample								
Kingdom	Phylum	Class	Order	Family	Genus	Sekunka_WR	CR_0% Oxygen	WR_0% Oxygen	CR_5% Oxygen	WR_5% Oxygen	CR_10% Oxygen	WR_10% Oxygen	CR_21% Oxygen	WR_21% Oxygen
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Kineosporiaceae	Kineococcus	0.00%	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhodospirillales	Acetobacteraceae	Roseococcus	0.00%	0.00%	0.00%	0.00%	0.04%	0.00%	0.00%	0.08%	0.00%
Bacteria	Acidobacteria	AT-s54				0.00%	0.03%	0.00%	0.00%	0.01%	0.02%	0.00%	0.05%	0.00%
Bacteria	Proteobacteria	Betaproteobacteria	Methylophilales			0.01%	0.00%	0.00%	0.01%	0.01%	0.01%	0.00%	0.05%	0.01%
Bacteria	Proteobacteria	Alphaproteobacteria	Sphingomonadales	Other	Other	0.01%	0.03%	0.00%	0.00%	0.04%	0.01%	0.01%	0.01%	0.00%
Bacteria	Acidobacteria	Solibacteres	Solibacterales	Solibacteraceae		0.01%	0.01%	0.00%	0.01%	0.01%	0.02%	0.00%	0.00%	0.04%
Bacteria	Proteobacteria	Betaproteobacteria	Gallionellales	Gallionellaceae	Gallionella	0.00%	0.01%	0.00%	0.03%	0.01%	0.01%	0.01%	0.00%	0.03%
Bacteria	Proteobacteria	Betaproteobacteria	Burkholderiales	Comamonadaceae	Variovorax	0.00%	0.00%	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Bacteroidetes	Flavobacteriia	Flavobacteriales	Cryomorphaceae	Crocinitomix	0.02%	0.01%	0.00%	0.00%	0.01%	0.02%	0.03%	0.01%	0.00%
Bacteria	Planctomycetes	Planctomycetia	Pirellulales	Pirellulaceae		0.00%	0.01%	0.00%	0.00%	0.00%	0.05%	0.01%	0.01%	0.01%
Bacteria	Proteobacteria	Gammaproteobacteria	Pseudomonadales	Moraxellaceae	Perlucidibaca	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.09%	0.00%
Bacteria	Chlamydiae	Chlamydiia	Chlamydiales	Chlamydiaceae		0.01%	0.00%	0.00%	0.00%	0.03%	0.03%	0.01%	0.03%	0.00%
Bacteria	Verrucomicrobia	[Pedosphaerae]	[Pedosphaerales]	Ellin515		0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	0.09%	0.00%
Bacteria	Bacteroidetes	Cytophagia	Cytophagales	Other	Other	0.00%	0.01%	0.00%	0.00%	0.01%	0.03%	0.00%	0.04%	0.00%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhodospirillales	Rhodospirillaceae	Magnetospirillum	0.00%	0.00%	0.00%	0.09%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Proteobacteria	Gammaproteobacteria	Pasteurellales	Pasteurellaceae	Aggregatibacter	0.00%	0.01%	0.00%	0.00%	0.05%	0.01%	0.01%	0.01%	0.00%
Bacteria	Proteobacteria	Gammaproteobacteria	[Marinicellales]	[Marinicellaceae]		0.00%	0.01%	0.01%	0.00%	0.00%	0.01%	0.01%	0.00%	0.05%
Bacteria	BHI80-139					0.01%	0.01%	0.00%	0.00%	0.03%	0.03%	0.01%	0.00%	0.01%
Bacteria	FCPU426					0.00%	0.01%	0.00%	0.03%	0.01%	0.02%	0.01%	0.00%	0.01%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhizobiales	Bartonellaceae	Other	0.00%	0.00%	0.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Proteobacteria	Betaproteobacteria	Burkholderiales	Oxalobacteraceae	Cupriavidus	0.00%	0.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Cellulomonadaceae	Other	0.04%	0.00%	0.03%	0.00%	0.00%	0.01%	0.01%	0.00%	0.00%
Bacteria	Firmicutes	Clostridia	Clostridiales	Clostridiaceae	Caloramator	0.00%	0.00%	0.01%	0.02%	0.00%	0.05%	0.01%	0.00%	0.00%
Bacteria	Bacteroidetes	[Saprosirae]	[Saprosirales]	Chitinophagaceae	Flavisolibacter	0.01%	0.01%	0.00%	0.01%	0.01%	0.03%	0.01%	0.00%	0.00%
Bacteria	NKB19					0.01%	0.00%	0.00%	0.01%	0.00%	0.01%	0.03%	0.03%	0.00%
Bacteria	Proteobacteria	Gammaproteobacteria	Legionellales	Legionellaceae	Tatlockia	0.00%	0.04%	0.00%	0.01%	0.01%	0.01%	0.00%	0.02%	0.00%
Bacteria	Tenericutes	Mollicutes	Mycoplasmatales	Mycoplasmataceae	Mycoplasma	0.00%	0.03%	0.00%	0.00%	0.00%	0.03%	0.01%	0.03%	0.00%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Nocardioideaceae	Other	0.00%	0.04%	0.00%	0.00%	0.00%	0.00%	0.00%	0.04%	0.00%
Bacteria	Proteobacteria	Deltaproteobacteria	Myxococcales	Polyangiaceae	Sorangium	0.00%	0.04%	0.00%	0.00%	0.03%	0.00%	0.00%	0.02%	0.00%
Bacteria	Proteobacteria	Gammaproteobacteria	Alteromonadales	Alteromonadaceae	HB2-32-21	0.01%	0.00%	0.00%	0.00%	0.01%	0.06%	0.00%	0.00%	0.00%
Bacteria	Proteobacteria	Deltaproteobacteria	Myxococcales	Polyangiaceae		0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	0.01%	0.05%	0.00%
Bacteria	Bacteroidetes	Cytophagia	Cytophagales	Cytophagaceae	Larkinella	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.08%
Bacteria	Bacteroidetes	Flavobacteriia	Flavobacteriales	Flavobacteriaceae	Myroides	0.00%	0.00%	0.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhizobiales	Aurantimonadaceae		0.00%	0.00%	0.05%	0.03%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Proteobacteria	Alphaproteobacteria	Sphingomonadales	Sphingomonadaceae	Other	0.00%	0.00%	0.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Tenericutes	Mollicutes				0.00%	0.00%	0.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Chloroflexi	Anaerolineae	envOPS12			0.00%	0.00%	0.00%	0.02%	0.00%	0.02%	0.01%	0.03%	0.00%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhizobiales	Phyllobacteriaceae	Other	0.01%	0.01%	0.04%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%
Bacteria	Bacteroidetes	Flavobacteriia	Flavobacteriales	Cryomorphaceae		0.00%	0.04%	0.00%	0.00%	0.00%	0.00%	0.03%	0.00%	0.00%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Streptomycetaceae		0.00%	0.01%	0.00%	0.02%	0.01%	0.00%	0.03%	0.00%	0.00%
Bacteria	Firmicutes	Bacilli	Bacillales	Paenibacillaceae	Paenibacillus	0.00%	0.03%	0.00%	0.00%	0.00%	0.00%	0.01%	0.03%	0.00%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Micromonosporaceae	Catellatospora	0.00%	0.00%	0.00%	0.00%	0.01%	0.03%	0.02%	0.01%	0.00%
Bacteria	Proteobacteria	Betaproteobacteria	A21b	UD5		0.00%	0.00%	0.00%	0.00%	0.01%	0.03%	0.02%	0.01%	0.00%
Bacteria	Acidobacteria	Acidobacteria-6	CCU21			0.01%	0.03%	0.00%	0.00%	0.01%	0.01%	0.01%	0.00%	0.00%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Streptomycetaceae	Streptomyces	0.01%	0.01%	0.00%	0.00%	0.00%	0.01%	0.03%	0.00%	0.00%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhizobiales	Rhizobiaceae	Kaistia	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	0.05%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Dermabacteraceae	Brachybacterium	0.00%	0.00%	0.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Bacteroidetes	Flavobacteriia	Flavobacteriales	Flavobacteriaceae	Aequorivita	0.00%	0.00%	0.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Taxonomy						Sample								
Kingdom	Phylum	Class	Order	Family	Genus	Sekunka_WR	CR_0% Oxygen	WR_0% Oxygen	CR_5% Oxygen	WR_5% Oxygen	CR_10% Oxygen	WR_10% Oxygen	CR_21% Oxygen	WR_21% Oxygen
Bacteria	Firmicutes	Bacilli	Lactobacillales	Streptococcaceae	Lactococcus	0.00%	0.00%	0.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Proteobacteria	Gammaproteobacteria	Pseudomonadales	Moraxellaceae	Acinetobacter	0.00%	0.00%	0.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Acidobacteria	Acidobacteriia	Acidobacteriales	Koribacteraceae		0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	0.01%	0.01%	0.04%
Bacteria	Chloroflexi	Ktedonobacteria	TK10			0.00%	0.01%	0.00%	0.00%	0.01%	0.02%	0.01%	0.01%	0.00%
Bacteria	Acidobacteria	Solibacteres	Solibacterales	[Bryobacteraceae]	Other	0.00%	0.01%	0.00%	0.02%	0.00%	0.01%	0.01%	0.01%	0.00%
Bacteria	Actinobacteria	Acidimicrobiia	Acidimicrobiales	JdFBGBact		0.01%	0.00%	0.00%	0.00%	0.01%	0.01%	0.01%	0.00%	0.01%
Bacteria	Cyanobacteria	4C0d-2	MLE1-12			0.00%	0.00%	0.00%	0.00%	0.03%	0.01%	0.01%	0.01%	0.00%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhizobiales	Beijerinckiaceae		0.01%	0.00%	0.00%	0.00%	0.00%	0.01%	0.03%	0.00%	0.01%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhizobiales	Bradyrhizobiaceae	Balneimonas	0.01%	0.00%	0.01%	0.00%	0.00%	0.01%	0.02%	0.00%	0.00%
Bacteria	Verrucomicrobia	[Pedosphaerae]	[Pedosphaerales]	R4-41B		0.00%	0.01%	0.00%	0.00%	0.01%	0.00%	0.01%	0.00%	0.01%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Geodermatophilaceae	Geodermatophilus	0.00%	0.00%	0.04%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%
Bacteria	Bacteroidetes	Cytophagia	Cytophagales	Cytophagaceae	Pontibacter	0.00%	0.00%	0.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Firmicutes	Bacilli	Lactobacillales	Other	Other	0.00%	0.00%	0.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhizobiales	Rhizobiaceae	Other	0.00%	0.04%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%
Bacteria	Verrucomicrobia	[Methylacidiphilae]	S-BQ2-57			0.00%	0.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.03%	0.00%
Bacteria	Gemmatimonadetes	Gemm-5				0.00%	0.00%	0.00%	0.02%	0.01%	0.01%	0.01%	0.00%	0.00%
Bacteria	Proteobacteria	Betaproteobacteria	Rhodocyclales	Rhodocyclaceae	Dechloromonas	0.01%	0.00%	0.00%	0.02%	0.00%	0.01%	0.00%	0.00%	0.01%
Bacteria	Bacteroidetes	Bacteroidia	Bacteroidales			0.00%	0.00%	0.00%	0.01%	0.00%	0.01%	0.03%	0.00%	0.00%
Bacteria	Chloroflexi	Thermomicrobia	AKYG1722			0.01%	0.01%	0.00%	0.00%	0.00%	0.01%	0.02%	0.00%	0.00%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Sanguibacteraceae	Sanguibacter	0.01%	0.00%	0.04%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhodobacterales	Rhodobacteraceae		0.01%	0.00%	0.04%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	NC10	44919	Methylomirabiliales	Methylomirabiliaceae	Other	0.00%	0.00%	0.00%	0.01%	0.01%	0.00%	0.01%	0.01%	0.00%
Bacteria	Gemmatimonadetes					0.00%	0.01%	0.00%	0.00%	0.00%	0.01%	0.01%	0.00%	0.01%
Bacteria	Bacteroidetes	[Saprospirae]	[Saprospirales]	Saprospiraceae	Saprospira	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%	0.03%	0.00%
Bacteria	Proteobacteria	Gammaproteobacteria	Xanthomonadales	Xanthomonadaceae	Stenotrophomonas	0.02%	0.00%	0.01%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhizobiales	Phyllobacteriaceae	Mesorhizobium	0.00%	0.01%	0.00%	0.00%	0.00%	0.01%	0.01%	0.00%	0.00%
Bacteria	Firmicutes	Bacilli	Bacillales	Planococcaceae	Paenisporosarcina	0.00%	0.00%	0.04%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Firmicutes	Bacilli	Lactobacillales	Streptococcaceae	Other	0.00%	0.00%	0.04%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Proteobacteria	Gammaproteobacteria	Pasteurellales			0.00%	0.00%	0.00%	0.00%	0.00%	0.04%	0.00%	0.00%	0.00%
Bacteria	Gemmatimonadetes	Gemmatimonadetes	Ellin5290			0.01%	0.00%	0.00%	0.01%	0.00%	0.01%	0.01%	0.00%	0.00%
Bacteria	Proteobacteria	Gammaproteobacteria	Chromatiales	Other	Other	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.01%
Bacteria	OD1	SM2F11				0.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Proteobacteria	Gammaproteobacteria	Methylococcales			0.00%	0.00%	0.01%	0.01%	0.00%	0.00%	0.01%	0.00%	0.00%
Bacteria	Firmicutes	Bacilli	Bacillales	Thermoactinomycetacea	Planifilum	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.02%	0.00%	0.00%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Micromonosporaceae	Other	0.00%	0.00%	0.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Firmicutes	Bacilli	Bacillales	Bacillaceae	Natronobacillus	0.00%	0.00%	0.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Proteobacteria	Gammaproteobacteria	Xanthomonadales	Other	Other	0.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bacteria	Proteobacteria	Alphaproteobacteria	Rhizobiales	Methylocystaceae	Methylosinus	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%
Bacteria	Actinobacteria	Actinobacteria	Actinomycetales	Intrasporangiaceae	Janibacter	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

## **Appendix H – Column Chemistry Data**

**H1 – Phase I Lab Reports**

**H2 – Phase II Lab Reports**

## **Appendix H1 – Phase I Lab Reports**



# ANALYTICAL SUMMARY REPORT

June 13, 2018

Enviromin Inc  
524 Professional Dr  
Bozeman, MT 59718

Work Order: B18052371                      Quote ID: B4093 - Enviromin Lab

Project Name: NWP Column Study

Energy Laboratories Inc Billings MT received the following 9 samples for Enviromin Inc on 5/25/2018 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B18052371-001	R1-5-24	05/24/18 9:00	05/25/18	Aqueous	Metals by ICP/ICPMS, Dissolved Carbon, Dissolved Organic Selenium By CVAA, Total Selenium IV, Total Selenium-VI, Total
B18052371-002	R2-5-24	05/24/18 9:00	05/25/18	Aqueous	Same As Above
B18052371-003	R3-5-24	05/24/18 9:00	05/25/18	Aqueous	Same As Above
B18052371-004	R4-5-24	05/24/18 9:00	05/25/18	Aqueous	Same As Above
B18052371-005	R5-5-24	05/24/18 9:00	05/25/18	Aqueous	Same As Above
B18052371-006	R6-5-24	05/24/18 9:00	05/25/18	Aqueous	Same As Above
B18052371-007	F1-5-24	05/24/18 9:00	05/25/18	Aqueous	Same As Above
B18052371-008	F2-5-24	05/24/18 9:00	05/25/18	Aqueous	Same As Above
B18052371-009	F3-5-24	05/24/18 9:00	05/25/18	Aqueous	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:



**CLIENT:** Enviromin Inc  
**Project:** NWP Column Study  
**Work Order:** B18052371

**Report Date:** 06/13/18

## CASE NARRATIVE

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Tests associated with analyst identified as ELI-CA were subcontracted to Energy Laboratories, PO Box 247, Casper, WY, EPA Number WY00002.

Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 East Lyndale Ave, Helena, MT, EPA Number MT00945.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18052371-001  
**Client Sample ID:** R1-5-24

**Report Date:** 06/13/18  
**Collection Date:** 05/24/18 09:00  
**Date Received:** 05/25/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	29	mg/L	D	20		A5310 C	06/01/18 21:46 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	1.87	mg/L		0.03		E200.7	05/30/18 14:04 / eli-h
Antimony	ND	mg/L		0.001		E200.8	05/30/18 15:33 / eli-h
Arsenic	0.010	mg/L		0.001		E200.8	05/30/18 15:33 / eli-h
Barium	ND	mg/L		0.05		E200.8	05/30/18 15:33 / eli-h
Beryllium	ND	mg/L		0.001		E200.8	05/30/18 15:33 / eli-h
Boron	ND	mg/L		0.05		E200.7	05/30/18 03:47 / eli-h
Cadmium	ND	mg/L		0.001		E200.8	05/30/18 15:33 / eli-h
Calcium	5	mg/L		1		E200.7	05/30/18 03:47 / eli-h
Chromium	ND	mg/L		0.005		E200.8	05/30/18 15:33 / eli-h
Cobalt	ND	mg/L		0.005		E200.8	05/30/18 15:33 / eli-h
Copper	0.005	mg/L		0.005		E200.8	05/30/18 15:33 / eli-h
Iron	1.32	mg/L		0.02		E200.7	05/30/18 14:04 / eli-h
Lead	ND	mg/L		0.001		E200.8	05/30/18 15:33 / eli-h
Lithium	ND	mg/L		0.1		E200.7	05/30/18 03:47 / eli-h
Magnesium	2	mg/L		1		E200.7	05/30/18 03:47 / eli-h
Manganese	0.010	mg/L		0.001		E200.8	05/30/18 15:33 / eli-h
Molybdenum	ND	mg/L		0.001		E200.8	05/30/18 15:33 / eli-h
Nickel	ND	mg/L		0.005		E200.8	05/30/18 15:33 / eli-h
Potassium	1	mg/L		1		E200.8	05/30/18 15:33 / eli-h
Selenium	ND	mg/L		0.001		E200.8	05/30/18 15:33 / eli-h
Silicon	8.5	mg/L	D	0.2		E200.7	06/01/18 12:38 / eli-h
Silver	ND	mg/L		0.001		E200.8	05/30/18 15:33 / eli-h
Sodium	7	mg/L		1		E200.7	05/30/18 14:04 / eli-h
Strontium	0.01	mg/L		0.01		E200.8	05/30/18 15:33 / eli-h
Thallium	ND	mg/L		0.0005		E200.8	05/30/18 15:33 / eli-h
Tin	ND	mg/L		0.01		E200.8	05/30/18 15:33 / eli-h
Titanium	0.058	mg/L		0.005		E200.8	05/30/18 15:33 / eli-h
Uranium	ND	mg/L		0.0003		E200.8	05/30/18 15:33 / eli-h
Vanadium	ND	mg/L		0.01		E200.8	05/30/18 15:33 / eli-h
Zinc	0.02	mg/L		0.01		E200.8	05/30/18 15:33 / eli-h
<b>METALS, TOTAL</b>							
Selenium	0.013	mg/L	D	0.005		A3114 C	06/07/18 16:32 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.005		A3114 C	06/12/18 13:18 / eli-h
Selenium-VI	0.013	mg/L		0.001		A3114 C	06/12/18 14:18 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18052371-002  
**Client Sample ID:** R2-5-24

**Report Date:** 06/13/18  
**Collection Date:** 05/24/18 09:00  
**Date Received:** 05/25/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	15	mg/L	D	4		A5310 C	06/04/18 22:41 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.7	05/30/18 14:26 / eli-h
Antimony	ND	mg/L		0.001		E200.8	05/30/18 15:35 / eli-h
Arsenic	0.052	mg/L		0.001		E200.8	05/30/18 15:35 / eli-h
Barium	0.12	mg/L		0.05		E200.8	05/30/18 15:35 / eli-h
Beryllium	ND	mg/L		0.001		E200.8	05/30/18 15:35 / eli-h
Boron	ND	mg/L		0.05		E200.7	05/30/18 04:10 / eli-h
Cadmium	ND	mg/L		0.001		E200.8	05/30/18 15:35 / eli-h
Calcium	28	mg/L		1		E200.7	05/30/18 04:10 / eli-h
Chromium	ND	mg/L		0.005		E200.8	05/30/18 15:35 / eli-h
Cobalt	ND	mg/L		0.005		E200.8	05/30/18 15:35 / eli-h
Copper	ND	mg/L		0.005		E200.8	05/30/18 15:35 / eli-h
Iron	ND	mg/L		0.02		E200.8	05/30/18 15:35 / eli-h
Lead	ND	mg/L		0.001		E200.8	05/30/18 15:35 / eli-h
Lithium	ND	mg/L		0.1		E200.7	05/30/18 04:10 / eli-h
Magnesium	18	mg/L		1		E200.7	05/30/18 04:10 / eli-h
Manganese	0.004	mg/L		0.001		E200.8	05/30/18 15:35 / eli-h
Molybdenum	0.007	mg/L		0.001		E200.8	05/30/18 15:35 / eli-h
Nickel	ND	mg/L		0.005		E200.8	05/30/18 15:35 / eli-h
Potassium	2	mg/L		1		E200.8	05/30/18 15:35 / eli-h
Selenium	0.005	mg/L		0.001		E200.8	05/30/18 15:35 / eli-h
Silicon	3.6	mg/L		0.1		E200.7	05/30/18 04:10 / eli-h
Silver	ND	mg/L		0.001		E200.8	05/30/18 15:35 / eli-h
Sodium	9	mg/L		1		E200.7	05/30/18 14:26 / eli-h
Strontium	0.14	mg/L		0.01		E200.8	05/30/18 15:35 / eli-h
Thallium	ND	mg/L		0.0005		E200.8	05/30/18 15:35 / eli-h
Tin	ND	mg/L		0.01		E200.8	05/30/18 15:35 / eli-h
Titanium	ND	mg/L		0.005		E200.8	05/30/18 15:35 / eli-h
Uranium	0.0039	mg/L		0.0003		E200.8	05/30/18 15:35 / eli-h
Vanadium	ND	mg/L		0.01		E200.8	05/30/18 15:35 / eli-h
Zinc	ND	mg/L		0.01		E200.8	05/30/18 15:35 / eli-h
<b>METALS, TOTAL</b>							
Selenium	0.005	mg/L	D	0.002		A3114 C	06/07/18 16:34 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.002	mg/L	D	0.002		A3114 C	06/12/18 13:19 / eli-h
Selenium-VI	0.003	mg/L		0.001		A3114 C	06/12/18 14:18 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.





### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18052371-003  
**Client Sample ID:** R3-5-24

**Report Date:** 06/13/18  
**Collection Date:** 05/24/18 09:00  
**Date Received:** 05/25/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	24	mg/L	D	20		A5310 C	06/01/18 22:51 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	1.21	mg/L		0.03		E200.7	05/30/18 14:30 / eli-h
Antimony	ND	mg/L		0.001		E200.8	05/30/18 15:37 / eli-h
Arsenic	0.011	mg/L		0.001		E200.8	05/30/18 15:37 / eli-h
Barium	ND	mg/L		0.05		E200.8	05/30/18 15:37 / eli-h
Beryllium	ND	mg/L		0.001		E200.8	05/30/18 15:37 / eli-h
Boron	0.05	mg/L		0.05		E200.7	05/30/18 04:14 / eli-h
Cadmium	ND	mg/L		0.001		E200.8	05/30/18 15:37 / eli-h
Calcium	8	mg/L		1		E200.7	05/30/18 04:14 / eli-h
Chromium	ND	mg/L		0.005		E200.8	05/30/18 15:37 / eli-h
Cobalt	ND	mg/L		0.005		E200.8	05/30/18 15:37 / eli-h
Copper	0.008	mg/L		0.005		E200.8	05/30/18 15:37 / eli-h
Iron	0.51	mg/L		0.02		E200.7	05/30/18 14:30 / eli-h
Lead	ND	mg/L		0.001		E200.8	05/30/18 15:37 / eli-h
Lithium	ND	mg/L		0.1		E200.7	05/30/18 04:14 / eli-h
Magnesium	3	mg/L		1		E200.7	05/30/18 04:14 / eli-h
Manganese	0.012	mg/L		0.001		E200.8	05/30/18 15:37 / eli-h
Molybdenum	ND	mg/L		0.001		E200.8	05/30/18 15:37 / eli-h
Nickel	ND	mg/L		0.005		E200.8	05/30/18 15:37 / eli-h
Potassium	1	mg/L		1		E200.8	05/30/18 15:37 / eli-h
Selenium	0.001	mg/L		0.001		E200.8	05/30/18 15:37 / eli-h
Silicon	5.7	mg/L		0.1		E200.7	05/30/18 04:14 / eli-h
Silver	ND	mg/L		0.001		E200.8	05/30/18 15:37 / eli-h
Sodium	11	mg/L		1		E200.7	05/30/18 14:30 / eli-h
Strontium	0.02	mg/L		0.01		E200.8	05/30/18 15:37 / eli-h
Thallium	ND	mg/L		0.0005		E200.8	05/30/18 15:37 / eli-h
Tin	ND	mg/L		0.01		E200.8	05/30/18 15:37 / eli-h
Titanium	0.041	mg/L		0.005		E200.8	05/30/18 15:37 / eli-h
Uranium	ND	mg/L		0.0003		E200.8	05/30/18 15:37 / eli-h
Vanadium	ND	mg/L		0.01		E200.8	05/30/18 15:37 / eli-h
Zinc	0.04	mg/L		0.01		E200.8	05/30/18 15:37 / eli-h
<b>METALS, TOTAL</b>							
Selenium	0.009	mg/L	D	0.005		A3114 C	06/07/18 16:39 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.005		A3114 C	06/12/18 13:21 / eli-h
Selenium-VI	0.009	mg/L		0.001		A3114 C	06/12/18 14:18 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18052371-004  
**Client Sample ID:** R4-5-24

**Report Date:** 06/13/18  
**Collection Date:** 05/24/18 09:00  
**DateReceived:** 05/25/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	43	mg/L	D	20		A5310 C	06/01/18 23:06 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.7	05/30/18 14:34 / eli-h
Antimony	ND	mg/L		0.001		E200.8	05/30/18 15:39 / eli-h
Arsenic	0.012	mg/L		0.001		E200.8	05/30/18 15:39 / eli-h
Barium	0.11	mg/L		0.05		E200.8	05/30/18 15:39 / eli-h
Beryllium	ND	mg/L		0.001		E200.8	05/30/18 15:39 / eli-h
Boron	ND	mg/L		0.05		E200.7	05/30/18 04:18 / eli-h
Cadmium	ND	mg/L		0.001		E200.8	05/30/18 15:39 / eli-h
Calcium	29	mg/L		1		E200.7	05/30/18 04:18 / eli-h
Chromium	ND	mg/L		0.005		E200.8	05/30/18 15:39 / eli-h
Cobalt	ND	mg/L		0.005		E200.8	05/30/18 15:39 / eli-h
Copper	ND	mg/L		0.005		E200.8	05/30/18 15:39 / eli-h
Iron	ND	mg/L		0.02		E200.8	05/30/18 15:39 / eli-h
Lead	ND	mg/L		0.001		E200.8	05/30/18 15:39 / eli-h
Lithium	ND	mg/L		0.1		E200.7	05/30/18 04:18 / eli-h
Magnesium	20	mg/L		1		E200.7	05/30/18 04:18 / eli-h
Manganese	0.010	mg/L		0.001		E200.8	05/30/18 15:39 / eli-h
Molybdenum	0.008	mg/L		0.001		E200.8	05/30/18 15:39 / eli-h
Nickel	ND	mg/L		0.005		E200.8	05/30/18 15:39 / eli-h
Potassium	2	mg/L		1		E200.8	05/30/18 15:39 / eli-h
Selenium	0.001	mg/L		0.001		E200.8	05/30/18 15:39 / eli-h
Silicon	2.6	mg/L		0.1		E200.7	05/30/18 04:18 / eli-h
Silver	ND	mg/L		0.001		E200.8	05/30/18 15:39 / eli-h
Sodium	9	mg/L		1		E200.7	05/30/18 14:34 / eli-h
Strontium	0.16	mg/L		0.01		E200.8	05/30/18 15:39 / eli-h
Thallium	ND	mg/L		0.0005		E200.8	05/30/18 15:39 / eli-h
Tin	ND	mg/L		0.01		E200.8	05/30/18 15:39 / eli-h
Titanium	ND	mg/L		0.005		E200.8	05/30/18 15:39 / eli-h
Uranium	0.0035	mg/L		0.0003		E200.8	05/30/18 15:39 / eli-h
Vanadium	ND	mg/L		0.01		E200.8	05/30/18 15:39 / eli-h
Zinc	ND	mg/L		0.01		E200.8	05/30/18 15:39 / eli-h
<b>METALS, TOTAL</b>							
Selenium	0.005	mg/L	D	0.002		A3114 C	06/07/18 16:40 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.003	mg/L	D	0.002		A3114 C	06/12/18 13:22 / eli-h
Selenium-VI	0.002	mg/L		0.001		A3114 C	06/12/18 14:18 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18052371-005  
**Client Sample ID:** R5-5-24

**Report Date:** 06/13/18  
**Collection Date:** 05/24/18 09:00  
**Date Received:** 05/25/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	25	mg/L	D	20		A5310 C	06/01/18 23:21 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	1.27	mg/L		0.03		E200.7	05/30/18 14:38 / eli-h
Antimony	ND	mg/L		0.001		E200.8	05/30/18 15:41 / eli-h
Arsenic	0.003	mg/L		0.001		E200.8	05/30/18 15:41 / eli-h
Barium	ND	mg/L		0.05		E200.8	05/30/18 15:41 / eli-h
Beryllium	ND	mg/L		0.001		E200.8	05/30/18 15:41 / eli-h
Boron	0.05	mg/L		0.05		E200.7	05/30/18 04:21 / eli-h
Cadmium	0.001	mg/L		0.001		E200.8	05/30/18 15:41 / eli-h
Calcium	4	mg/L		1		E200.7	05/30/18 04:21 / eli-h
Chromium	ND	mg/L		0.005		E200.8	05/30/18 15:41 / eli-h
Cobalt	ND	mg/L		0.005		E200.8	05/30/18 15:41 / eli-h
Copper	0.011	mg/L		0.005		E200.8	05/30/18 15:41 / eli-h
Iron	0.61	mg/L		0.02		E200.7	05/30/18 14:38 / eli-h
Lead	ND	mg/L		0.001		E200.8	05/30/18 15:41 / eli-h
Lithium	ND	mg/L		0.1		E200.7	05/30/18 04:21 / eli-h
Magnesium	2	mg/L		1		E200.7	05/30/18 04:21 / eli-h
Manganese	0.010	mg/L		0.001		E200.8	05/30/18 15:41 / eli-h
Molybdenum	0.037	mg/L		0.001		E200.8	05/30/18 15:41 / eli-h
Nickel	ND	mg/L		0.005		E200.8	05/30/18 15:41 / eli-h
Potassium	4	mg/L		1		E200.8	05/30/18 15:41 / eli-h
Selenium	0.001	mg/L		0.001		E200.8	05/30/18 15:41 / eli-h
Silicon	5.8	mg/L		0.1		E200.7	05/30/18 04:21 / eli-h
Silver	ND	mg/L		0.001		E200.8	05/30/18 15:41 / eli-h
Sodium	5	mg/L		1		E200.7	05/30/18 14:38 / eli-h
Strontium	0.01	mg/L		0.01		E200.8	05/30/18 15:41 / eli-h
Thallium	ND	mg/L		0.0005		E200.8	05/30/18 15:41 / eli-h
Tin	ND	mg/L		0.01		E200.8	05/30/18 15:41 / eli-h
Titanium	0.030	mg/L		0.005		E200.8	05/30/18 15:41 / eli-h
Uranium	ND	mg/L		0.0003		E200.8	05/30/18 15:41 / eli-h
Vanadium	ND	mg/L		0.01		E200.8	05/30/18 15:41 / eli-h
Zinc	0.07	mg/L		0.01		E200.8	05/30/18 15:41 / eli-h
<b>METALS, TOTAL</b>							
Selenium	0.004	mg/L	D	0.002		A3114 C	06/07/18 16:48 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.002		A3114 C	06/12/18 13:24 / eli-h
Selenium-VI	0.004	mg/L		0.001		A3114 C	06/12/18 14:18 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18052371-006  
**Client Sample ID:** R6-5-24

**Report Date:** 06/13/18  
**Collection Date:** 05/24/18 09:00  
**DateReceived:** 05/25/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	60	mg/L	D	20		A5310 C	06/01/18 23:36 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.7	05/30/18 14:42 / eli-h
Antimony	ND	mg/L		0.001		E200.8	05/30/18 15:43 / eli-h
Arsenic	0.063	mg/L		0.001		E200.8	05/30/18 15:43 / eli-h
Barium	ND	mg/L		0.05		E200.8	05/30/18 15:43 / eli-h
Beryllium	ND	mg/L		0.001		E200.8	05/30/18 15:43 / eli-h
Boron	ND	mg/L		0.05		E200.7	05/30/18 04:25 / eli-h
Cadmium	ND	mg/L		0.001		E200.8	05/30/18 15:43 / eli-h
Calcium	19	mg/L		1		E200.7	05/30/18 04:25 / eli-h
Chromium	ND	mg/L		0.005		E200.8	05/30/18 15:43 / eli-h
Cobalt	ND	mg/L		0.005		E200.8	05/30/18 15:43 / eli-h
Copper	ND	mg/L		0.005		E200.8	05/30/18 15:43 / eli-h
Iron	ND	mg/L		0.02		E200.8	05/30/18 15:43 / eli-h
Lead	ND	mg/L		0.001		E200.8	05/30/18 15:43 / eli-h
Lithium	ND	mg/L		0.1		E200.7	05/30/18 04:25 / eli-h
Magnesium	12	mg/L		1		E200.7	05/30/18 04:25 / eli-h
Manganese	0.005	mg/L		0.001		E200.8	05/30/18 15:43 / eli-h
Molybdenum	0.005	mg/L		0.001		E200.8	05/30/18 15:43 / eli-h
Nickel	ND	mg/L		0.005		E200.8	05/30/18 15:43 / eli-h
Potassium	ND	mg/L		1		E200.8	05/30/18 15:43 / eli-h
Selenium	0.009	mg/L		0.001		E200.8	05/30/18 15:43 / eli-h
Silicon	4.1	mg/L		0.1		E200.7	05/30/18 04:25 / eli-h
Silver	ND	mg/L		0.001		E200.8	05/30/18 15:43 / eli-h
Sodium	10	mg/L		1		E200.7	05/30/18 14:42 / eli-h
Strontium	0.09	mg/L		0.01		E200.8	05/30/18 15:43 / eli-h
Thallium	ND	mg/L		0.0005		E200.8	05/30/18 15:43 / eli-h
Tin	ND	mg/L		0.01		E200.8	05/30/18 15:43 / eli-h
Titanium	ND	mg/L		0.005		E200.8	05/30/18 15:43 / eli-h
Uranium	0.0029	mg/L		0.0003		E200.8	05/30/18 15:43 / eli-h
Vanadium	ND	mg/L		0.01		E200.8	05/30/18 15:43 / eli-h
Zinc	ND	mg/L		0.01		E200.8	05/30/18 15:43 / eli-h
<b>METALS, TOTAL</b>							
Selenium	0.007	mg/L	D	0.002		A3114 C	06/07/18 16:49 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.002		A3114 C	06/12/18 13:26 / eli-h
Selenium-VI	0.007	mg/L		0.001		A3114 C	06/12/18 14:18 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18052371-007  
**Client Sample ID:** F1-5-24

**Report Date:** 06/13/18  
**Collection Date:** 05/24/18 09:00  
**Date Received:** 05/25/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	7.2	mg/L		0.5		A5310 C	06/04/18 22:57 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.11	mg/L		0.03		E200.7	05/30/18 14:45 / eli-h
Antimony	ND	mg/L		0.001		E200.8	05/30/18 15:45 / eli-h
Arsenic	ND	mg/L		0.001		E200.8	05/30/18 15:45 / eli-h
Barium	0.08	mg/L		0.05		E200.8	05/30/18 15:45 / eli-h
Beryllium	ND	mg/L		0.001		E200.8	05/30/18 15:45 / eli-h
Boron	0.13	mg/L		0.05		E200.7	05/30/18 04:29 / eli-h
Cadmium	ND	mg/L		0.001		E200.8	05/30/18 15:45 / eli-h
Calcium	16	mg/L		1		E200.7	05/30/18 04:29 / eli-h
Chromium	ND	mg/L		0.005		E200.8	05/30/18 15:45 / eli-h
Cobalt	ND	mg/L		0.005		E200.8	05/30/18 15:45 / eli-h
Copper	ND	mg/L		0.005		E200.8	05/30/18 15:45 / eli-h
Iron	0.03	mg/L		0.02		E200.8	05/30/18 15:45 / eli-h
Lead	ND	mg/L		0.001		E200.8	05/30/18 15:45 / eli-h
Lithium	ND	mg/L		0.1		E200.7	05/30/18 04:29 / eli-h
Magnesium	4	mg/L		1		E200.7	05/30/18 04:29 / eli-h
Manganese	0.094	mg/L		0.001		E200.8	05/30/18 15:45 / eli-h
Molybdenum	0.318	mg/L		0.001		E200.8	05/30/18 15:45 / eli-h
Nickel	0.007	mg/L		0.005		E200.8	05/30/18 15:45 / eli-h
Potassium	ND	mg/L		1		E200.8	05/30/18 15:45 / eli-h
Selenium	0.208	mg/L		0.001		E200.8	05/30/18 15:45 / eli-h
Silicon	1.3	mg/L		0.1		E200.7	05/30/18 04:29 / eli-h
Silver	ND	mg/L		0.001		E200.8	05/30/18 15:45 / eli-h
Sodium	21	mg/L		1		E200.7	05/30/18 14:45 / eli-h
Strontium	0.04	mg/L		0.01		E200.8	05/30/18 15:45 / eli-h
Thallium	ND	mg/L		0.0005		E200.8	05/30/18 15:45 / eli-h
Tin	ND	mg/L		0.01		E200.8	05/30/18 15:45 / eli-h
Titanium	ND	mg/L		0.005		E200.8	05/30/18 15:45 / eli-h
Uranium	0.0024	mg/L		0.0003		E200.8	05/30/18 15:45 / eli-h
Vanadium	ND	mg/L		0.01		E200.8	05/30/18 15:45 / eli-h
Zinc	0.42	mg/L		0.01		E200.8	05/30/18 15:45 / eli-h
<b>METALS, TOTAL</b>							
Selenium	0.191	mg/L	D	0.002		A3114 C	06/07/18 16:51 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.003	mg/L	D	0.002		A3114 C	06/12/18 13:27 / eli-h
Selenium-VI	0.188	mg/L		0.001		A3114 C	06/12/18 14:18 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18052371-008  
**Client Sample ID:** F2-5-24

**Report Date:** 06/13/18  
**Collection Date:** 05/24/18 09:00  
**DateReceived:** 05/25/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	4.0	mg/L		0.5		A5310 C	06/04/18 23:18 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.67	mg/L		0.03		E200.7	05/30/18 14:49 / eli-h
Antimony	ND	mg/L		0.001		E200.8	05/30/18 16:02 / eli-h
Arsenic	0.001	mg/L		0.001		E200.8	05/30/18 16:02 / eli-h
Barium	ND	mg/L		0.05		E200.8	05/30/18 16:02 / eli-h
Beryllium	ND	mg/L		0.001		E200.8	05/30/18 16:02 / eli-h
Boron	ND	mg/L		0.05		E200.7	05/30/18 04:33 / eli-h
Cadmium	ND	mg/L		0.001		E200.8	05/30/18 16:02 / eli-h
Calcium	3	mg/L		1		E200.7	05/30/18 04:33 / eli-h
Chromium	ND	mg/L		0.005		E200.8	05/30/18 16:02 / eli-h
Cobalt	ND	mg/L		0.005		E200.8	05/30/18 16:02 / eli-h
Copper	ND	mg/L		0.005		E200.8	05/30/18 16:02 / eli-h
Iron	0.50	mg/L		0.02		E200.7	05/30/18 14:49 / eli-h
Lead	ND	mg/L		0.001		E200.8	05/30/18 16:02 / eli-h
Lithium	ND	mg/L		0.1		E200.7	05/30/18 04:33 / eli-h
Magnesium	1	mg/L		1		E200.7	05/30/18 04:33 / eli-h
Manganese	0.002	mg/L		0.001		E200.8	05/30/18 16:02 / eli-h
Molybdenum	ND	mg/L		0.001		E200.8	05/30/18 16:02 / eli-h
Nickel	ND	mg/L		0.005		E200.8	05/30/18 16:02 / eli-h
Potassium	ND	mg/L		1		E200.8	05/30/18 16:02 / eli-h
Selenium	0.194	mg/L		0.001		E200.8	05/30/18 16:02 / eli-h
Silicon	2.1	mg/L		0.1		E200.7	05/30/18 04:33 / eli-h
Silver	ND	mg/L		0.001		E200.8	05/30/18 16:02 / eli-h
Sodium	20	mg/L		1		E200.7	05/30/18 14:49 / eli-h
Strontium	0.01	mg/L		0.01		E200.8	05/30/18 16:02 / eli-h
Thallium	ND	mg/L		0.0005		E200.8	05/30/18 16:02 / eli-h
Tin	ND	mg/L		0.01		E200.8	05/30/18 16:02 / eli-h
Titanium	0.023	mg/L		0.005		E200.8	05/30/18 16:02 / eli-h
Uranium	ND	mg/L		0.0003		E200.8	05/30/18 16:02 / eli-h
Vanadium	ND	mg/L		0.01		E200.8	05/30/18 16:02 / eli-h
Zinc	ND	mg/L		0.01		E200.8	05/30/18 16:02 / eli-h
<b>METALS, TOTAL</b>							
Selenium	0.176	mg/L	D	0.002		A3114 C	06/08/18 14:44 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.021	mg/L	D	0.002		A3114 C	06/12/18 13:29 / eli-h
Selenium-VI	0.155	mg/L		0.001		A3114 C	06/12/18 14:18 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18052371-009  
**Client Sample ID:** F3-5-24

**Report Date:** 06/13/18  
**Collection Date:** 05/24/18 09:00  
**Date Received:** 05/25/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	3.6	mg/L		0.5		A5310 C	06/04/18 23:39 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.05	mg/L		0.03		E200.8	05/30/18 16:04 / eli-h
Antimony	ND	mg/L		0.001		E200.8	05/30/18 16:04 / eli-h
Arsenic	0.002	mg/L		0.001		E200.8	05/30/18 16:04 / eli-h
Barium	ND	mg/L		0.05		E200.8	05/30/18 16:04 / eli-h
Beryllium	ND	mg/L		0.001		E200.8	05/30/18 16:04 / eli-h
Boron	ND	mg/L		0.05		E200.7	05/30/18 04:37 / eli-h
Cadmium	ND	mg/L		0.001		E200.8	05/30/18 16:04 / eli-h
Calcium	7	mg/L		1		E200.7	05/30/18 04:37 / eli-h
Chromium	ND	mg/L		0.005		E200.8	05/30/18 16:04 / eli-h
Cobalt	ND	mg/L		0.005		E200.8	05/30/18 16:04 / eli-h
Copper	ND	mg/L		0.005		E200.8	05/30/18 16:04 / eli-h
Iron	0.03	mg/L		0.02		E200.8	05/30/18 16:04 / eli-h
Lead	ND	mg/L		0.001		E200.8	05/30/18 16:04 / eli-h
Lithium	ND	mg/L		0.1		E200.7	05/30/18 04:37 / eli-h
Magnesium	2	mg/L		1		E200.7	05/30/18 04:37 / eli-h
Manganese	0.002	mg/L		0.001		E200.8	05/30/18 16:04 / eli-h
Molybdenum	0.001	mg/L		0.001		E200.8	05/30/18 16:04 / eli-h
Nickel	ND	mg/L		0.005		E200.8	05/30/18 16:04 / eli-h
Potassium	ND	mg/L		1		E200.8	05/30/18 16:04 / eli-h
Selenium	0.200	mg/L		0.001		E200.8	05/30/18 16:04 / eli-h
Silicon	2.1	mg/L		0.1		E200.7	05/30/18 04:37 / eli-h
Silver	ND	mg/L		0.001		E200.8	05/30/18 16:04 / eli-h
Sodium	20	mg/L		1		E200.7	05/30/18 15:01 / eli-h
Strontium	0.03	mg/L		0.01		E200.8	05/30/18 16:04 / eli-h
Thallium	ND	mg/L		0.0005		E200.8	05/30/18 16:04 / eli-h
Tin	ND	mg/L		0.01		E200.8	05/30/18 16:04 / eli-h
Titanium	ND	mg/L		0.005		E200.8	05/30/18 16:04 / eli-h
Uranium	ND	mg/L		0.0003		E200.8	05/30/18 16:04 / eli-h
Vanadium	ND	mg/L		0.01		E200.8	05/30/18 16:04 / eli-h
Zinc	ND	mg/L		0.01		E200.8	05/30/18 16:04 / eli-h
<b>METALS, TOTAL</b>							
Selenium	0.177	mg/L	D	0.002		A3114 C	06/08/18 14:45 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.002		A3114 C	06/12/18 13:30 / eli-h
Selenium-VI	0.176	mg/L		0.001		A3114 C	06/12/18 14:18 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 06/06/18  
**Work Order:** B18052371

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: A5310 C</b>							Analytical Run: TOC3-C_180601A		
<b>Lab ID: CCV-9806</b>	Continuing Calibration Verification Standard								
Organic Carbon, Dissolved (DOC)	5.04	mg/L	0.50	101	90	110			06/01/18 21:30
<b>Method: A5310 C</b>							Batch: R235964		
<b>Lab ID: LCS-10002</b>	Laboratory Control Sample								
Organic Carbon, Dissolved (DOC)	4.98	mg/L	0.50	98	90	110			Run: TOC3-C_180601A 06/01/18 20:55
<b>Lab ID: MBLK</b>	Method Blank								
Organic Carbon, Dissolved (DOC)	0.1	mg/L	0.04						Run: TOC3-C_180601A 06/01/18 21:11
<b>Lab ID: B18052371-001CMS</b>	Sample Matrix Spike								
Organic Carbon, Dissolved (DOC)	221	mg/L	20	96	85	115			Run: TOC3-C_180601A 06/01/18 22:01
<b>Lab ID: B18052371-001CMSD</b>	Sample Matrix Spike Duplicate								
Organic Carbon, Dissolved (DOC)	231	mg/L	20	101	85	115	4.4	20	Run: TOC3-C_180601A 06/01/18 22:21
<b>Method: A5310 C</b>							Analytical Run: TOC3-C_180604A		
<b>Lab ID: CCV-9806</b>	Continuing Calibration Verification Standard								
Organic Carbon, Dissolved (DOC)	5.06	mg/L	0.50	101	90	110			06/04/18 22:26
<b>Method: A5310 C</b>							Batch: R236016		
<b>Lab ID: LCS-10002</b>	Laboratory Control Sample								
Organic Carbon, Dissolved (DOC)	5.00	mg/L	0.50	97	90	110			Run: TOC3-C_180604A 06/04/18 21:52
<b>Lab ID: MBLK</b>	Method Blank								
Organic Carbon, Dissolved (DOC)	0.1	mg/L	0.04						Run: TOC3-C_180604A 06/04/18 22:07
<b>Lab ID: B18052371-009CMS</b>	Sample Matrix Spike								
Organic Carbon, Dissolved (DOC)	44.6	mg/L	4.0	102	85	115			Run: TOC3-C_180604A 06/05/18 00:15
<b>Lab ID: B18052371-009CMSD</b>	Sample Matrix Spike Duplicate								
Organic Carbon, Dissolved (DOC)	44.0	mg/L	4.0	100	85	115	1.4	20	Run: TOC3-C_180604A 06/05/18 00:31

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.





## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 06/12/18  
**Work Order:** B18052371

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A3114 C									ritical Run: SELENIUM PSA MILLENIUM_180607B
<b>Lab ID:</b> ICV-41769	Initial Calibration Verification Standard								
Selenium	0.0363	mg/L	0.0010	91	90	110			06/07/18 15:16
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								
Selenium	0.0183	mg/L	0.0010	92	90	110			06/07/18 15:49
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard								
Selenium	0.0369	mg/L	0.0010	92	90	110			06/07/18 16:28
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								
Selenium	0.0184	mg/L	0.0010	92	90	110			06/07/18 16:29
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								
Selenium	0.0180	mg/L	0.0010	90	90	110			06/07/18 16:37
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								
Selenium	0.0182	mg/L	0.0010	91	90	110			06/07/18 16:43
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								
Selenium	0.0181	mg/L	0.0010	91	90	110			06/07/18 16:59
<b>Method:</b> A3114 C									Batch: 41769
<b>Lab ID:</b> MB-41769	Method Blank								
Selenium	0.0005	mg/L	0.0005						Run: SELENIUM PSA MILLENIUM_ 06/07/18 15:21
<b>Lab ID:</b> LCS-41769	Laboratory Control Sample								
Selenium	0.0363	mg/L	0.0010	91	90	110			Run: SELENIUM PSA MILLENIUM_ 06/07/18 15:24
<b>Lab ID:</b> H18060115-001AMS	Sample Matrix Spike								
Selenium	0.0380	mg/L	0.0010	93	70	130			Run: SELENIUM PSA MILLENIUM_ 06/07/18 15:45
<b>Lab ID:</b> H18060115-001AMSD	Sample Matrix Spike Duplicate								
Selenium	0.0375	mg/L	0.0010	91	70	130	1.4	20	Run: SELENIUM PSA MILLENIUM_ 06/07/18 15:47

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 06/12/18  
**Work Order:** B18052371

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method:</b> A3114 C							tical Run: SELENIUM PSA MILLENIUM_180608A			
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard									
Selenium	0.0367	mg/L	0.0010	92	90	110			06/08/18 14:31	
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard									
Selenium	0.0181	mg/L	0.0010	90	90	110			06/08/18 14:33	
<b>Method:</b> A3114 C							Batch: 41769			
<b>Lab ID:</b> MB-41769	Method Blank									
Selenium	ND	mg/L	0.0005				Run: SELENIUM PSA MILLENIUM_		06/08/18 14:36	
<b>Lab ID:</b> LCS-41769	Laboratory Control Sample									
Selenium	0.0374	mg/L	0.0010	94	90	110	Run: SELENIUM PSA MILLENIUM_		06/08/18 14:37	
<b>Method:</b> A3114 C							tical Run: SELENIUM PSA MILLENIUM_180612A			
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard									
Selenium-IV	0.0203	mg/L	0.0010	101	90	110			06/12/18 13:03	
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard									
Selenium-IV	0.0203	mg/L	0.0010	101	90	110			06/12/18 13:05	
<b>Method:</b> A3114 C							Batch: 41827			
<b>Lab ID:</b> MB-41827	Method Blank									
Selenium-IV	0.0010	mg/L	0.0006				Run: SELENIUM PSA MILLENIUM_		06/12/18 13:13	
<b>Lab ID:</b> LFB-41827	Laboratory Fortified Blank									
Selenium-IV	0.0197	mg/L	0.0010	99	85	115	Run: SELENIUM PSA MILLENIUM_		06/12/18 13:14	
<b>Lab ID:</b> LCS-41827	Laboratory Control Sample									
Selenium-IV	0.0214	mg/L	0.0010	107	90	110	Run: SELENIUM PSA MILLENIUM_		06/12/18 13:16	
<b>Lab ID:</b> B18052371-009BMS	Sample Matrix Spike									
Selenium-IV	0.0393	mg/L	0.0020	95	70	130	Run: SELENIUM PSA MILLENIUM_		06/12/18 13:32	
<b>Lab ID:</b> B18052371-009BMSD	Sample Matrix Spike Duplicate									
Selenium-IV	0.0381	mg/L	0.0020	92	70	130	3.1	20	06/12/18 13:33	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 06/12/18  
**Work Order:** B18052371

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>							Analytical Run: ICP2-HE_180529B		
<b>Lab ID: ICV</b>	Initial Calibration Verification Standard							05/29/18 12:10	
Boron	0.806	mg/L	0.10	101	95	105			
Calcium	40.4	mg/L	1.0	101	95	105			
Lithium	0.772	mg/L	0.10	97	95	105			
Magnesium	39.7	mg/L	1.0	99	95	105			
Silicon	7.95	mg/L	1.0	99	95	105			
<b>Lab ID: CCV-1</b>	Continuing Calibration Verification Standard							05/29/18 12:13	
Boron	2.47	mg/L	0.10	99	95	105			
Calcium	25.5	mg/L	1.0	102	95	105			
Lithium	1.25	mg/L	0.10	100	95	105			
Magnesium	25.0	mg/L	1.0	100	95	105			
Silicon	4.95	mg/L	1.0	99	95	105			
<b>Lab ID: ICSA</b>	Interference Check Sample A							05/29/18 12:25	
Boron	0.00310	mg/L	0.10		0	0			
Calcium	476	mg/L	1.0	95	80	120			
Lithium	0.000560	mg/L	0.10		0	0			
Magnesium	525	mg/L	1.0	105	80	120			
Silicon	0.0164	mg/L	1.0		0	0			
<b>Lab ID: ICSAB</b>	Interference Check Sample AB							05/29/18 12:29	
Boron	0.955	mg/L	0.10	95	80	120			
Calcium	474	mg/L	1.0	95	80	120			
Lithium	0.941	mg/L	0.10	94	80	120			
Magnesium	522	mg/L	1.0	104	80	120			
Silicon	10.0	mg/L	1.0	100	80	120			
<b>Lab ID: CCV</b>	Continuing Calibration Verification Standard							05/30/18 03:13	
Boron	2.51	mg/L	0.10	101	90	110			
Calcium	24.8	mg/L	1.0	99	90	110			
Lithium	1.31	mg/L	0.10	104	90	110			
Magnesium	24.0	mg/L	1.0	96	90	110			
Silicon	5.09	mg/L	1.0	102	90	110			
<b>Lab ID: CCV</b>	Continuing Calibration Verification Standard							05/30/18 03:59	
Boron	2.48	mg/L	0.10	99	90	110			
Calcium	24.9	mg/L	1.0	100	90	110			
Lithium	1.22	mg/L	0.10	98	90	110			
Magnesium	24.2	mg/L	1.0	97	90	110			
Silicon	5.12	mg/L	1.0	102	90	110			
<b>Method: E200.7</b>							Batch: R135111		
<b>Lab ID: MB</b>	Method Blank							Run: ICP2-HE_180529B	
Boron	ND	mg/L	0.006						05/29/18 12:36

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 06/12/18  
**Work Order:** B18052371

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>							Batch: R135111		
<b>Lab ID: MB</b>	Method Blank			Run: ICP2-HE_180529B			05/29/18 12:36		
Calcium	ND	mg/L	0.07						
Lithium	ND	mg/L	0.002						
Magnesium	ND	mg/L	0.01						
Silicon	ND	mg/L	0.02						
<b>Lab ID: LFB</b>	Laboratory Fortified Blank			Run: ICP2-HE_180529B			05/29/18 12:40		
Boron	0.961	mg/L	0.10	96	85	115			
Calcium	49.0	mg/L	1.0	98	85	115			
Lithium	0.988	mg/L	0.10	99	85	115			
Magnesium	48.4	mg/L	1.0	97	85	115			
Silicon	10.3	mg/L	1.0	103	85	115			
<b>Lab ID: B18052371-001AMS2</b>	Sample Matrix Spike			Run: ICP2-HE_180529B			05/30/18 03:55		
Boron	0.914	mg/L	0.050	88	70	130			
Calcium	59.9	mg/L	1.0	110	70	130			
Lithium	1.13	mg/L	0.10	112	70	130			
Magnesium	55.8	mg/L	1.0	108	70	130			
Silicon	25.4	mg/L	0.10	181	70	130			S
<b>Lab ID: B18052371-001AMSD2</b>	Sample Matrix Spike Duplicate			Run: ICP2-HE_180529B			05/30/18 04:06		
Boron	0.929	mg/L	0.050	89	70	130	1.6	20	
Calcium	59.3	mg/L	1.0	109	70	130	0.9	20	
Lithium	1.08	mg/L	0.10	108	70	130	4.2	20	
Magnesium	55.2	mg/L	1.0	107	70	130	1.1	20	
Silicon	25.1	mg/L	0.10	178	70	130	1.0	20	S

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 06/12/18  
**Work Order:** B18052371

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.7</b>							Analytical Run: ICP2-HE_180530A			
<b>Lab ID: ICV</b>	Initial Calibration Verification Standard								05/30/18 12:33	
Aluminum	4.05	mg/L	0.10	101	95	105				
Iron	3.98	mg/L	0.020	100	95	105				
Sodium	40.9	mg/L	1.0	102	95	105				
<b>Lab ID: CCV-1</b>	Continuing Calibration Verification Standard								05/30/18 12:37	
Aluminum	2.53	mg/L	0.10	101	95	105				
Iron	2.48	mg/L	0.020	99	95	105				
Sodium	25.4	mg/L	1.0	101	95	105				
<b>Lab ID: ICSA</b>	Interference Check Sample A								05/30/18 12:48	
Aluminum	529	mg/L	0.10	106	80	120				
Iron	183	mg/L	0.020	91	80	120				
Sodium	0.0159	mg/L	1.0		0	0				
<b>Lab ID: ICSAB</b>	Interference Check Sample AB								05/30/18 12:52	
Aluminum	529	mg/L	0.10	106	80	120				
Iron	181	mg/L	0.020	91	80	120				
Sodium	20.6	mg/L	1.0	103	80	120				
<b>Lab ID: CCV</b>	Continuing Calibration Verification Standard								05/30/18 13:23	
Aluminum	2.56	mg/L	0.10	103	90	110				
Iron	2.48	mg/L	0.020	99	90	110				
Sodium	26.7	mg/L	1.0	107	90	110				
<b>Lab ID: CCV</b>	Continuing Calibration Verification Standard								05/30/18 14:08	
Aluminum	2.55	mg/L	0.10	102	90	110				
Iron	2.50	mg/L	0.020	100	90	110				
Sodium	24.8	mg/L	1.0	99	90	110				
<b>Lab ID: CCV</b>	Continuing Calibration Verification Standard								05/30/18 14:53	
Aluminum	2.55	mg/L	0.10	102	90	110				
Iron	2.52	mg/L	0.020	101	90	110				
Sodium	25.9	mg/L	1.0	104	90	110				
<b>Method: E200.7</b>							Batch: R135141			
<b>Lab ID: MB</b>	Method Blank								Run: ICP2-HE_180530A	05/30/18 13:00
Aluminum	ND	mg/L	0.007							
Iron	ND	mg/L	0.01							
Sodium	ND	mg/L	0.02							
<b>Lab ID: LFB</b>	Laboratory Fortified Blank								Run: ICP2-HE_180530A	05/30/18 13:04
Aluminum	5.13	mg/L	0.10	103	85	115				
Iron	4.96	mg/L	0.020	99	85	115				
Sodium	51.6	mg/L	1.0	103	85	115				

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 06/12/18  
**Work Order:** B18052371

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E200.7									Batch: R135141
<b>Lab ID:</b> B18052371-001AMS2	Sample Matrix Spike								Run: ICP2-HE_180530A 05/30/18 14:19
Aluminum	12.3	mg/L	0.078	104	70	130			
Iron	11.3	mg/L	0.022	99	70	130			
Sodium	111	mg/L	1.0	104	70	130			
<b>Lab ID:</b> B18052371-001AMSD2	Sample Matrix Spike Duplicate								Run: ICP2-HE_180530A 05/30/18 14:23
Aluminum	12.5	mg/L	0.078	106	70	130	1.5	20	
Iron	11.6	mg/L	0.022	102	70	130	2.7	20	
Sodium	114	mg/L	1.0	107	70	130	2.5	20	
<b>Lab ID:</b> H18050677-002BMS2	Sample Matrix Spike								Run: ICP2-HE_180530A 05/30/18 15:16
Aluminum	25.9	mg/L	0.20	104	70	130			
Iron	31.3	mg/L	0.055	100	70	130			
Sodium	334	mg/L	1.0	99	70	130			
<b>Lab ID:</b> H18050677-002BMDS2	Sample Matrix Spike Duplicate								Run: ICP2-HE_180530A 05/30/18 15:19
Aluminum	26.0	mg/L	0.20	104	70	130	0.4	20	
Iron	31.7	mg/L	0.055	101	70	130	1.4	20	
Sodium	342	mg/L	1.0	103	70	130	2.3	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 06/12/18  
**Work Order:** B18052371

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E200.7									Analytical Run: ICP2-HE_180601B
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard								06/01/18 10:26
Silicon	8.06	mg/L	1.0	101	95	105			
<b>Lab ID:</b> CCV-1	Continuing Calibration Verification Standard								06/01/18 10:29
Silicon	5.05	mg/L	1.0	101	95	105			
<b>Lab ID:</b> ICSA	Interference Check Sample A								06/01/18 10:41
Silicon	0.0150	mg/L	1.0		0	0			
<b>Lab ID:</b> ICSAB	Interference Check Sample AB								06/01/18 10:45
Silicon	10.3	mg/L	1.0	103	80	120			
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								06/01/18 12:00
Silicon	5.12	mg/L	1.0	102	90	110			
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								06/01/18 12:45
Silicon	5.16	mg/L	1.0	103	90	110			
<b>Method:</b> E200.7									Batch: R135247
<b>Lab ID:</b> MB	Method Blank								Run: ICP2-HE_180601B
Silicon	ND	mg/L	0.02						06/01/18 10:52
<b>Lab ID:</b> LFB	Laboratory Fortified Blank								Run: ICP2-HE_180601B
Silicon	9.98	mg/L	1.0	100	85	115			06/01/18 10:56
<b>Lab ID:</b> H18050750-001BMS2	Sample Matrix Spike								Run: ICP2-HE_180601B
Silicon	24.0	mg/L	0.10	107	70	130			06/01/18 12:30
<b>Lab ID:</b> H18050750-001BMDS2	Sample Matrix Spike Duplicate								Run: ICP2-HE_180601B
Silicon	24.1	mg/L	0.10	108	70	130	0.3	20	06/01/18 12:34
<b>Lab ID:</b> B18052371-001AMS2	Sample Matrix Spike								Run: ICP2-HE_180601B
Silicon	120	mg/L	0.18	111	70	130			06/01/18 12:53
<b>Lab ID:</b> B18052371-001AMSD2	Sample Matrix Spike Duplicate								Run: ICP2-HE_180601B
Silicon	121	mg/L	0.18	112	70	130	1.0	20	06/01/18 12:56
<b>Lab ID:</b> H18050738-002CMS2	Sample Matrix Spike								Run: ICP2-HE_180601B
Silicon	20.5	mg/L	0.10	108	70	130			06/01/18 13:50
<b>Lab ID:</b> H18050738-002CMSD2	Sample Matrix Spike Duplicate								Run: ICP2-HE_180601B
Silicon	20.6	mg/L	0.10	109	70	130	0.4	20	06/01/18 13:53

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 06/12/18  
**Work Order:** B18052371

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>							Analytical Run: ICPMS205-H_180530B		
<b>Lab ID: ICV</b>	Initial Calibration Verification Standard								05/30/18 12:40
Aluminum	0.290	mg/L	0.10	97	90	110			
Antimony	0.0557	mg/L	0.050	93	90	110			
Arsenic	0.0586	mg/L	0.0050	98	90	110			
Barium	0.0579	mg/L	0.10	97	90	110			
Beryllium	0.0298	mg/L	0.0010	100	90	110			
Cadmium	0.0293	mg/L	0.0010	98	90	110			
Chromium	0.0591	mg/L	0.010	99	90	110			
Cobalt	0.0591	mg/L	0.010	99	90	110			
Copper	0.0594	mg/L	0.010	99	90	110			
Iron	0.298	mg/L	0.020	99	90	110			
Lead	0.0579	mg/L	0.010	97	90	110			
Manganese	0.297	mg/L	0.010	99	90	110			
Molybdenum	0.0583	mg/L	0.0050	97	90	110			
Nickel	0.0597	mg/L	0.010	99	90	110			
Potassium	3.01	mg/L	0.50	100	90	110			
Selenium	0.0594	mg/L	0.0050	99	90	110			
Silver	0.0289	mg/L	0.0050	96	90	110			
Strontium	0.0587	mg/L	0.10	98	90	110			
Thallium	0.0562	mg/L	0.10	94	90	110			
Tin	0.0588	mg/L	0.10	98	90	110			
Titanium	0.0593	mg/L	0.010	99	90	110			
Uranium	0.0541	mg/L	0.0010	90	90	110			
Vanadium	0.0585	mg/L	0.10	98	90	110			
Zinc	0.0588	mg/L	0.010	98	90	110			
<b>Lab ID: ICSA</b>	Interference Check Sample A								05/30/18 12:49
Aluminum	42.3	mg/L	0.10	106	70	130			
Antimony	0.000275	mg/L	0.050						
Arsenic	7.76E-05	mg/L	0.0050						
Barium	6.79E-05	mg/L	0.10						
Beryllium	1.08E-05	mg/L	0.0010						
Cadmium	0.000198	mg/L	0.0010						
Chromium	0.00122	mg/L	0.010						
Cobalt	-3.33E-09	mg/L	0.010						
Copper	0.000124	mg/L	0.010						
Iron	104	mg/L	0.020	104	70	130			
Lead	4.99E-05	mg/L	0.010						
Manganese	0.000147	mg/L	0.010						
Molybdenum	0.872	mg/L	0.0050	109	70	130			
Nickel	4.51E-06	mg/L	0.010						
Potassium	41.0	mg/L	0.50	102	70	130			
Selenium	2.92E-05	mg/L	0.0050						
Silver	4.42E-05	mg/L	0.0050						

**Qualifiers:**

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ND - Not detected at the reporting limit.





# QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 06/12/18  
**Work Order:** B18052371

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>							Analytical Run: ICPMS205-H_180530B		
<b>Lab ID: ICSA</b>	Interference Check Sample A							05/30/18 12:49	
Strontium	0.00114	mg/L	0.10						
Thallium	4.26E-05	mg/L	0.10						
Tin	7.84E-05	mg/L	0.10						
Titanium	0.829	mg/L	0.010	104	70	130			
Uranium	4.09E-06	mg/L	0.0010						
Vanadium	2.66E-05	mg/L	0.10						
Zinc	0.000291	mg/L	0.010						
<b>Lab ID: ICSAB</b>	Interference Check Sample AB							05/30/18 12:51	
Aluminum	41.6	mg/L	0.10	104	70	130			
Antimony	0.000152	mg/L	0.050		0	0			
Arsenic	0.0103	mg/L	0.0050	103	70	130			
Barium	4.18E-05	mg/L	0.10		0	0			
Beryllium	2.47E-06	mg/L	0.0010		0	0			
Cadmium	0.0102	mg/L	0.0010	102	70	130			
Chromium	0.0212	mg/L	0.010	106	70	130			
Cobalt	0.0201	mg/L	0.010	100	70	130			
Copper	0.0199	mg/L	0.010	99	70	130			
Iron	102	mg/L	0.020	102	70	130			
Lead	5.21E-05	mg/L	0.010		0	0			
Manganese	0.0202	mg/L	0.010	101	70	130			
Molybdenum	0.850	mg/L	0.0050	106	70	130			
Nickel	0.0201	mg/L	0.010	100	70	130			
Potassium	40.5	mg/L	0.50	101	70	130			
Selenium	0.0100	mg/L	0.0050	100	70	130			
Silver	0.0197	mg/L	0.0050	99	70	130			
Strontium	0.00114	mg/L	0.10		0	0			
Thallium	3.73E-05	mg/L	0.10		0	0			
Tin	4.57E-05	mg/L	0.10		0	0			
Titanium	0.810	mg/L	0.010	101	70	130			
Uranium	2.24E-06	mg/L	0.0010		0	0			
Vanadium	0.0199	mg/L	0.10	100	70	130			
Zinc	0.0102	mg/L	0.010	102	70	130			

<b>Method: E200.8</b>							Batch: R135146			
<b>Lab ID: LRB</b>	Method Blank							Run: ICPMS205-H_180530B		05/30/18 13:00
Aluminum	ND	mg/L	0.003							
Antimony	ND	mg/L	9E-05							
Arsenic	ND	mg/L	4E-05							
Barium	ND	mg/L	2E-05							
Beryllium	ND	mg/L	0.0001							
Cadmium	ND	mg/L	3E-05							
Chromium	ND	mg/L	0.0002							

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 06/12/18  
**Work Order:** B18052371

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>							Batch: R135146		
<b>Lab ID: LRB</b>	Method Blank			Run: ICPMS205-H_180530B			05/30/18 13:00		
Cobalt	ND	mg/L	9E-05						
Copper	ND	mg/L	0.0001						
Iron	ND	mg/L	0.002						
Lead	ND	mg/L	3E-05						
Manganese	ND	mg/L	0.0003						
Molybdenum	ND	mg/L	2E-05						
Nickel	ND	mg/L	0.0002						
Potassium	ND	mg/L	0.010						
Selenium	ND	mg/L	2E-05						
Silver	ND	mg/L	2E-05						
Strontium	ND	mg/L	0.0001						
Thallium	ND	mg/L	1E-05						
Tin	ND	mg/L	3E-05						
Titanium	ND	mg/L	0.0003						
Uranium	ND	mg/L	1E-05						
Vanadium	ND	mg/L	7E-05						
Zinc	ND	mg/L	0.0003						
<b>Lab ID: LFB</b>	Laboratory Fortified Blank			Run: ICPMS205-H_180530B			05/30/18 13:02		
Aluminum	0.0486	mg/L	0.10	97	85	115			
Antimony	0.0491	mg/L	0.050	98	85	115			
Arsenic	0.0484	mg/L	0.0050	97	85	115			
Barium	0.0478	mg/L	0.10	96	85	115			
Beryllium	0.0472	mg/L	0.0010	94	85	115			
Cadmium	0.0487	mg/L	0.0010	97	85	115			
Chromium	0.0484	mg/L	0.010	97	85	115			
Cobalt	0.0488	mg/L	0.010	98	85	115			
Copper	0.0499	mg/L	0.010	100	85	115			
Iron	0.150	mg/L	0.020	100	85	115			
Lead	0.0464	mg/L	0.010	93	85	115			
Manganese	0.0484	mg/L	0.010	97	85	115			
Molybdenum	0.0480	mg/L	0.0050	96	85	115			
Nickel	0.0488	mg/L	0.010	98	85	115			
Potassium	0.988	mg/L	0.50	99	85	115			
Selenium	0.0491	mg/L	0.0050	98	85	115			
Silver	0.0194	mg/L	0.0050	97	85	115			
Strontium	0.0486	mg/L	0.10	97	85	115			
Thallium	0.0452	mg/L	0.10	90	85	115			
Tin	0.0488	mg/L	0.10	98	85	115			
Titanium	0.0486	mg/L	0.010	97	85	115			
Uranium	0.0445	mg/L	0.0010	89	85	115			
Vanadium	0.0479	mg/L	0.10	96	85	115			
Zinc	0.0488	mg/L	0.010	98	85	115			

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 06/12/18  
**Work Order:** B18052371

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>							Batch: R135146		
<b>Lab ID:</b>	<b>H18050624-007BMS</b>	Sample Matrix Spike			Run: ICPMS205-H_180530B		05/30/18 15:22		
Aluminum	0.0731	mg/L	0.030	97	70	130			
Antimony	0.0486	mg/L	0.0010	97	70	130			
Arsenic	0.0488	mg/L	0.0010	97	70	130			
Barium	0.220	mg/L	0.050	88	70	130			
Beryllium	0.0458	mg/L	0.0010	92	70	130			
Cadmium	0.0474	mg/L	0.0010	95	70	130			
Chromium	0.0475	mg/L	0.0050	95	70	130			
Cobalt	0.0476	mg/L	0.0050	95	70	130			
Copper	0.0477	mg/L	0.0050	95	70	130			
Iron	0.165	mg/L	0.020	97	70	130			
Lead	0.0475	mg/L	0.0010	95	70	130			
Manganese	0.0485	mg/L	0.0010	96	70	130			
Molybdenum	0.0462	mg/L	0.0010	92	70	130			
Nickel	0.0478	mg/L	0.0050	96	70	130			
Potassium	1.90	mg/L	1.0	104	70	130			
Selenium	0.0505	mg/L	0.0010	101	70	130			
Silver	0.0188	mg/L	0.0010	94	70	130			
Strontium	0.117	mg/L	0.010	97	70	130			
Thallium	0.0466	mg/L	0.00050	92	70	130			
Tin	0.0475	mg/L	0.050	95	70	130			
Titanium	0.0477	mg/L	0.0050	95	70	130			
Uranium	0.0467	mg/L	0.00030	93	70	130			
Vanadium	0.0469	mg/L	0.010	94	70	130			
Zinc	0.0554	mg/L	0.010	107	70	130			
<b>Lab ID:</b>	<b>H18050624-007BMSD</b>	Sample Matrix Spike Duplicate			Run: ICPMS205-H_180530B		05/30/18 15:23		
Aluminum	0.0723	mg/L	0.030	96	70	130	1.2	20	
Antimony	0.0482	mg/L	0.0010	97	70	130	0.7	20	
Arsenic	0.0489	mg/L	0.0010	98	70	130	0.1	20	
Barium	0.217	mg/L	0.050	83	70	130	1.1	20	
Beryllium	0.0481	mg/L	0.0010	96	70	130	5.0	20	
Cadmium	0.0472	mg/L	0.0010	94	70	130	0.4	20	
Chromium	0.0477	mg/L	0.0050	95	70	130	0.3	20	
Cobalt	0.0476	mg/L	0.0050	95	70	130	0.0	20	
Copper	0.0483	mg/L	0.0050	96	70	130	1.2	20	
Iron	0.166	mg/L	0.020	98	70	130	0.5	20	
Lead	0.0488	mg/L	0.0010	97	70	130	2.6	20	
Manganese	0.0485	mg/L	0.0010	96	70	130	0.1	20	
Molybdenum	0.0463	mg/L	0.0010	92	70	130	0.1	20	
Nickel	0.0476	mg/L	0.0050	95	70	130	0.5	20	
Potassium	1.86	mg/L	1.0	100	70	130	2.1	20	
Selenium	0.0511	mg/L	0.0010	102	70	130	1.0	20	
Silver	0.0187	mg/L	0.0010	93	70	130	0.4	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 06/12/18  
**Work Order:** B18052371

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>							Batch: R135146		
<b>Lab ID:</b>	<b>H18050624-007BMSD</b>	Sample Matrix Spike Duplicate			Run: ICPMS205-H_180530B			05/30/18 15:23	
Strontium	0.117	mg/L	0.010	96	70	130	0.5	20	
Thallium	0.0481	mg/L	0.00050	95	70	130	3.1	20	
Tin	0.0474	mg/L	0.050	95	70	130		20	
Titanium	0.0483	mg/L	0.0050	96	70	130	1.2	20	
Uranium	0.0482	mg/L	0.00030	96	70	130	3.3	20	
Vanadium	0.0472	mg/L	0.010	94	70	130	0.6	20	
Zinc	0.0492	mg/L	0.010	95	70	130	12	20	
<b>Lab ID:</b>	<b>B18052371-007AMS</b>	Sample Matrix Spike			Run: ICPMS205-H_180530B			05/30/18 15:47	
Aluminum	0.127	mg/L	0.030	91	70	130			
Antimony	0.0486	mg/L	0.0010	97	70	130			
Arsenic	0.0482	mg/L	0.0010	95	70	130			
Barium	0.126	mg/L	0.050	97	70	130			
Beryllium	0.0473	mg/L	0.0010	95	70	130			
Cadmium	0.0474	mg/L	0.0010	94	70	130			
Chromium	0.0468	mg/L	0.0050	93	70	130			
Cobalt	0.0472	mg/L	0.0050	93	70	130			
Copper	0.0522	mg/L	0.0050	94	70	130			
Iron	0.172	mg/L	0.020	97	70	130			
Lead	0.0478	mg/L	0.0010	95	70	130			
Manganese	0.140	mg/L	0.0010	91	70	130			
Molybdenum	0.363	mg/L	0.0010		70	130			A
Nickel	0.0542	mg/L	0.0050	94	70	130			
Potassium	1.37	mg/L	1.0	95	70	130			
Selenium	0.254	mg/L	0.0010		70	130			A
Silver	0.0187	mg/L	0.0010	94	70	130			
Strontium	0.0931	mg/L	0.010	96	70	130			
Thallium	0.0465	mg/L	0.00050	93	70	130			
Tin	0.0481	mg/L	0.050	96	70	130			
Titanium	0.0485	mg/L	0.0050	94	70	130			
Uranium	0.0492	mg/L	0.00030	94	70	130			
Vanadium	0.0464	mg/L	0.010	92	70	130			
Zinc	0.460	mg/L	0.010		70	130			A
<b>Lab ID:</b>	<b>B18052371-007AMSD</b>	Sample Matrix Spike Duplicate			Run: ICPMS205-H_180530B			05/30/18 15:49	
Aluminum	0.127	mg/L	0.030	91	70	130	0.0	20	
Antimony	0.0493	mg/L	0.0010	98	70	130	1.5	20	
Arsenic	0.0483	mg/L	0.0010	95	70	130	0.1	20	
Barium	0.128	mg/L	0.050	102	70	130	2.1	20	
Beryllium	0.0481	mg/L	0.0010	96	70	130	1.7	20	
Cadmium	0.0485	mg/L	0.0010	96	70	130	2.1	20	
Chromium	0.0468	mg/L	0.0050	93	70	130	0.0	20	
Cobalt	0.0475	mg/L	0.0050	94	70	130	0.5	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.



# QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 06/12/18  
**Work Order:** B18052371

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>							Batch: R135146		
<b>Lab ID: B18052371-007AMSD</b>	Sample Matrix Spike Duplicate				Run: ICPMS205-H_180530B			05/30/18 15:49	
Copper	0.0527	mg/L	0.0050	96	70	130	1.0	20	
Iron	0.171	mg/L	0.020	96	70	130	0.8	20	
Lead	0.0472	mg/L	0.0010	94	70	130	1.3	20	
Manganese	0.141	mg/L	0.0010	93	70	130	0.6	20	
Molybdenum	0.370	mg/L	0.0010		70	130	2.0	20	A
Nickel	0.0548	mg/L	0.0050	96	70	130	1.0	20	
Potassium	1.37	mg/L	1.0	95	70	130	0.3	20	
Selenium	0.253	mg/L	0.0010		70	130	0.6	20	A
Silver	0.0189	mg/L	0.0010	95	70	130	1.1	20	
Strontium	0.0932	mg/L	0.010	97	70	130	0.1	20	
Thallium	0.0457	mg/L	0.00050	91	70	130	1.7	20	
Tin	0.0489	mg/L	0.050	97	70	130		20	
Titanium	0.0483	mg/L	0.0050	94	70	130	0.4	20	
Uranium	0.0486	mg/L	0.00030	92	70	130	1.2	20	
Vanadium	0.0467	mg/L	0.010	93	70	130	0.6	20	
Zinc	0.456	mg/L	0.010		70	130	0.8	20	A
<b>Lab ID: B18052371-002AMS</b>	Sample Matrix Spike				Run: ICPMS205-H_180530B			05/30/18 15:51	
Aluminum	0.0636	mg/L	0.030	96	70	130			
Antimony	0.0486	mg/L	0.0010	96	70	130			
Arsenic	0.0992	mg/L	0.0010	94	70	130			
Barium	0.164	mg/L	0.050	95	70	130			
Beryllium	0.0478	mg/L	0.0010	96	70	130			
Cadmium	0.0471	mg/L	0.0010	94	70	130			
Chromium	0.0470	mg/L	0.0050	93	70	130			
Cobalt	0.0468	mg/L	0.0050	93	70	130			
Copper	0.0480	mg/L	0.0050	93	70	130			
Iron	0.159	mg/L	0.020	95	70	130			
Lead	0.0460	mg/L	0.0010	92	70	130			
Manganese	0.0512	mg/L	0.0010	94	70	130			
Molybdenum	0.0535	mg/L	0.0010	94	70	130			
Nickel	0.0487	mg/L	0.0050	94	70	130			
Potassium	2.49	mg/L	1.0	94	70	130			
Selenium	0.0530	mg/L	0.0010	95	70	130			
Silver	0.0187	mg/L	0.0010	94	70	130			
Strontium	0.189	mg/L	0.010	93	70	130			
Thallium	0.0452	mg/L	0.00050	90	70	130			
Tin	0.0490	mg/L	0.050	96	70	130			
Titanium	0.0482	mg/L	0.0050	95	70	130			
Uranium	0.0489	mg/L	0.00030	90	70	130			
Vanadium	0.0464	mg/L	0.010	92	70	130			
Zinc	0.0519	mg/L	0.010	94	70	130			

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.



## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 06/12/18  
**Work Order:** B18052371

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>							Batch: R135146		
<b>Lab ID:</b>	<b>B18052371-002AMSD</b>	Sample Matrix Spike Duplicate			Run: ICPMS205-H_180530B			05/30/18 15:52	
Aluminum	0.0622	mg/L	0.030	94	70	130	2.2	20	
Antimony	0.0492	mg/L	0.0010	98	70	130	1.3	20	
Arsenic	0.0993	mg/L	0.0010	94	70	130	0.1	20	
Barium	0.168	mg/L	0.050	102	70	130	2.2	20	
Beryllium	0.0479	mg/L	0.0010	96	70	130	0.3	20	
Cadmium	0.0478	mg/L	0.0010	96	70	130	1.5	20	
Chromium	0.0471	mg/L	0.0050	93	70	130	0.2	20	
Cobalt	0.0466	mg/L	0.0050	93	70	130	0.3	20	
Copper	0.0479	mg/L	0.0050	93	70	130	0.3	20	
Iron	0.160	mg/L	0.020	96	70	130	0.8	20	
Lead	0.0462	mg/L	0.0010	92	70	130	0.4	20	
Manganese	0.0510	mg/L	0.0010	93	70	130	0.3	20	
Molybdenum	0.0544	mg/L	0.0010	95	70	130	1.6	20	
Nickel	0.0484	mg/L	0.0050	94	70	130	0.4	20	
Potassium	2.55	mg/L	1.0	101	70	130	2.4	20	
Selenium	0.0526	mg/L	0.0010	94	70	130	0.7	20	
Silver	0.0189	mg/L	0.0010	94	70	130	0.8	20	
Strontium	0.189	mg/L	0.010	93	70	130	0.1	20	
Thallium	0.0446	mg/L	0.00050	89	70	130	1.3	20	
Tin	0.0494	mg/L	0.050	96	70	130		20	
Titanium	0.0464	mg/L	0.0050	92	70	130	3.7	20	
Uranium	0.0490	mg/L	0.00030	90	70	130	0.2	20	
Vanadium	0.0465	mg/L	0.010	93	70	130	0.3	20	
Zinc	0.0515	mg/L	0.010	93	70	130	0.8	20	
<b>Lab ID:</b>	<b>H18050677-006BMS</b>	Sample Matrix Spike			Run: ICPMS205-H_180530B			05/30/18 16:18	
Aluminum	0.244	mg/L	0.030	98	70	130			
Antimony	0.244	mg/L	0.0010	97	70	130			
Arsenic	0.242	mg/L	0.0010	97	70	130			
Barium	0.246	mg/L	0.050	94	70	130			
Beryllium	0.232	mg/L	0.0010	93	70	130			
Cadmium	0.235	mg/L	0.0010	94	70	130			
Chromium	0.240	mg/L	0.0050	96	70	130			
Cobalt	0.241	mg/L	0.0050	96	70	130			
Copper	0.245	mg/L	0.0050	95	70	130			
Iron	0.744	mg/L	0.020	99	70	130			
Lead	0.240	mg/L	0.0010	96	70	130			
Manganese	0.240	mg/L	0.0014	96	70	130			
Molybdenum	0.239	mg/L	0.0010	95	70	130			
Nickel	0.239	mg/L	0.0050	96	70	130			
Potassium	19.6	mg/L	1.0	106	70	130			
Selenium	0.241	mg/L	0.0010	96	70	130			
Silver	0.0936	mg/L	0.0010	94	70	130			

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 06/12/18  
**Work Order:** B18052371

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>									
Batch: R135146									
<b>Lab ID:</b>	<b>H18050677-006BMS</b>	Sample Matrix Spike			Run: ICPMS205-H_180530B			05/30/18 16:18	
Strontium	7.33	mg/L	0.010		70	130			AE
Thallium	0.234	mg/L	0.00050	94	70	130			
Tin	0.240	mg/L	0.050	96	70	130			
Titanium	0.243	mg/L	0.0050	97	70	130			
Uranium	0.240	mg/L	0.00030	94	70	130			
Vanadium	0.240	mg/L	0.010	96	70	130			
Zinc	0.239	mg/L	0.010	96	70	130			
<b>Lab ID:</b>	<b>H18050677-006BMSD</b>	Sample Matrix Spike Duplicate			Run: ICPMS205-H_180530B			05/30/18 16:19	
Aluminum	0.241	mg/L	0.030	96	70	130	1.5	20	
Antimony	0.241	mg/L	0.0010	96	70	130	1.1	20	
Arsenic	0.238	mg/L	0.0010	95	70	130	1.8	20	
Barium	0.242	mg/L	0.050	93	70	130	1.8	20	
Beryllium	0.232	mg/L	0.0010	93	70	130	0.0	20	
Cadmium	0.234	mg/L	0.0010	94	70	130	0.4	20	
Chromium	0.237	mg/L	0.0050	95	70	130	1.0	20	
Cobalt	0.236	mg/L	0.0050	94	70	130	1.9	20	
Copper	0.244	mg/L	0.0050	95	70	130	0.3	20	
Iron	0.732	mg/L	0.020	98	70	130	1.6	20	
Lead	0.238	mg/L	0.0010	95	70	130	1.0	20	
Manganese	0.239	mg/L	0.0014	96	70	130	0.6	20	
Molybdenum	0.239	mg/L	0.0010	95	70	130	0.1	20	
Nickel	0.238	mg/L	0.0050	95	70	130	0.4	20	
Potassium	19.3	mg/L	1.0	100	70	130	1.6	20	
Selenium	0.240	mg/L	0.0010	96	70	130	0.6	20	
Silver	0.0922	mg/L	0.0010	92	70	130	1.5	20	
Strontium	7.30	mg/L	0.010		70	130	0.5	20	AE
Thallium	0.232	mg/L	0.00050	93	70	130	0.9	20	
Tin	0.240	mg/L	0.050	96	70	130	0.1	20	
Titanium	0.239	mg/L	0.0050	96	70	130	1.6	20	
Uranium	0.239	mg/L	0.00030	93	70	130	0.8	20	
Vanadium	0.237	mg/L	0.010	95	70	130	1.3	20	
Zinc	0.241	mg/L	0.010	97	70	130	1.1	20	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

E - Estimated value. Result exceeds the instrument upper quantitation limit.



# Work Order Receipt Checklist

Enviromin Inc

B18052371

Login completed by: Tabitha Edwards

Date Received: 5/25/2018

Reviewed by: BL2000\raschim

Received by: qej

Reviewed Date: 5/29/2018

Carrier name: Return-UPS Ground

- Shipping container/cooler in good condition? Yes  No  Not Present
- Custody seals intact on all shipping container(s)/cooler(s)? Yes  No  Not Present
- Custody seals intact on all sample bottles? Yes  No  Not Present
- Chain of custody present? Yes  No
- Chain of custody signed when relinquished and received? Yes  No
- Chain of custody agrees with sample labels? Yes  No
- Samples in proper container/bottle? Yes  No
- Sample containers intact? Yes  No
- Sufficient sample volume for indicated test? Yes  No
- All samples received within holding time?  
(Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.) Yes  No
- Temp Blank received in all shipping container(s)/cooler(s)? Yes  No  Not Applicable
- Container/Temp Blank temperature: 3.6°C On Ice
- Water - VOA vials have zero headspace? Yes  No  No VOA vials submitted
- Water - pH acceptable upon receipt? Yes  No  Not Applicable

## Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

## Contact and Corrective Action Comments:

Cancel Gold and Tellurium per Shari Endy, Energy Laboratories Project Manager, on 05/31/18.





# Chain of Custody & Analytical Request Record

www.energylab.com

### Account Information (Billing information)

Company Name: Environin Inc  
 Contact: Kylie Bodle/Terry Bier  
 Phone: 400-581-8261  
 Mailing Address: 524 Professional Drive  
 City, State, Zip: Bozeman, MT 59718  
 Email: terrybier@environin.com  
 Receive Invoice:  Hard Copy  E-mail  
 Purchase Order: 4093 Bottle Order

### Report Information (if different than Account Information)

Company Name: \_\_\_\_\_  
 Contact: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_  
 City, State, Zip: \_\_\_\_\_  
 Email: \_\_\_\_\_  
 Receive Report:  Hard Copy  E-mail  
 Special Report/Formats:  LEVEL IV  NELAC  EDD/EDT (contact laboratory)  Other: pdf

### Comments

\_\_\_\_\_

### Project Information

Project Name, PWSID, Permit, etc: NWP Column Study  
 Sampler Name: \_\_\_\_\_ Sampler Phone: \_\_\_\_\_  
 Sample Origin State: \_\_\_\_\_ EPA/State Compliance:  Yes  No  
 \*MINING CLIENTS, please indicate sample type.  
 \*If ore has been processed or refined, call before sending.  
 Byproduct 11 (e)2 material  Unprocessed ore (NOT ground or refined)\*

**Matrix Codes**

A - Air  
 W - Water  
 S - Solids  
 V - Vegetation  
 B - Bioassay  
 O - Other  
 DW - Drinking Water

### Analysis Requested

DOC									
Dis. Metals									
Pesticides									
Se species									

All turnaround times are standard unless marked as RUSH.  
 Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling - See Instructions Page

Sample Identification (Name, Location, Interval, etc.)	Collection		Matrix (See Codes Above)	Number of Containers	Rush TAT
	Date	Time			
1 R1-5-24	5/24/18	9:00	W	3	318052371-001
2 R2-5-24					002
3 R3-5-24					003
4 R4-5-24					004
5 R5-5-24					005
6 R6-5-24					006
7 F1-5-24					007
8 F2-5-24					008
9 F3-5-24					009
10					

**Custody Record MUST be signed**

Requisitioned by (print): Kylie Bodle Signature: [Signature]  
 Date/Time: 5/24/18 17:00 Date/Time: \_\_\_\_\_  
 Received by Laboratory (print): James Signature: [Signature]  
 Date/Time: 5/21/18 07:10 Date/Time: \_\_\_\_\_

Shipped By: WPS Cooler ID(s): \_\_\_\_\_ Receipt Temp: \_\_\_\_\_ °C  
 Intact:  Y  N Temp Blank:  Y  N On Ice:  Y  N  
 Custody Seals:  Y  N  C  B Payment Type:  Cash  Check  
 Amount: \$ \_\_\_\_\_ Receipt Number (cash/check only): \_\_\_\_\_

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.



# ANALYTICAL SUMMARY REPORT

July 05, 2018

Enviromin Inc  
524 Professional Dr  
Bozeman, MT 59718

Work Order: B18061934      Quote ID: B4093 - Enviromin Lab

Project Name: NWP Column Study

Energy Laboratories Inc Billings MT received the following 9 samples for Enviromin Inc on 6/20/2018 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B18061934-001	R1-6-19	06/19/18 10:00	06/20/18	Aqueous	Carbon, Dissolved Organic Selenium By CVAA, Total Selenium IV, Total Selenium-VI, Total
B18061934-002	R2-6-19	06/19/18 10:00	06/20/18	Aqueous	Same As Above
B18061934-003	R3-6-19	06/19/18 10:00	06/20/18	Aqueous	Same As Above
B18061934-004	R4-6-19	06/19/18 10:00	06/20/18	Aqueous	Same As Above
B18061934-005	R5-6-19	06/19/18 10:00	06/20/18	Aqueous	Same As Above
B18061934-006	R6-6-19	06/19/18 10:00	06/20/18	Aqueous	Same As Above
B18061934-007	F1-6-19	06/19/18 10:00	06/20/18	Aqueous	Same As Above
B18061934-008	F2-6-19	06/19/18 10:00	06/20/18	Aqueous	Same As Above
B18061934-009	F3-6-19	06/19/18 10:00	06/20/18	Aqueous	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:



**CLIENT:** Enviromin Inc  
**Project:** NWP Column Study  
**Work Order:** B18061934

**Report Date:** 07/05/18

## CASE NARRATIVE

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Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 East Lyndale Ave, Helena, MT, EPA Number MT00945.

Tests associated with analyst identified as ELI-CA were subcontracted to Energy Laboratories, PO Box 247, Casper, WY, EPA Number WY00002.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18061934-001  
**Client Sample ID:** R1-6-19

**Report Date:** 07/05/18  
**Collection Date:** 06/19/18 10:00  
**DateReceived:** 06/20/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	33	mg/L	D	2		A5310 C	06/25/18 23:11 / eli-ca
<b>METALS, TOTAL</b>							
Selenium	0.09	mg/L	D	0.01		A3114 C	06/25/18 14:34 / eli-h
- The reporting limit reflects a 10 times dilution. The sample was diluted due to sample matrix and limited sample volume.							
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.01		A3114 C	06/27/18 14:10 / eli-h
Selenium-VI	0.09	mg/L	D	0.01		A3114 C	06/28/18 11:40 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18061934-002  
**Client Sample ID:** R2-6-19

**Report Date:** 07/05/18  
**Collection Date:** 06/19/18 10:00  
**Date Received:** 06/20/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	14	mg/L	D	2		A5310 C	06/25/18 23:31 / eli-ca
<b>METALS, TOTAL</b>							
Selenium	ND	mg/L	D	0.01		A3114 C	06/25/18 14:35 / eli-h
- The reporting limit reflects a 10 times dilution. The sample was diluted due to sample matrix and limited sample volume.							
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.01		A3114 C	06/27/18 14:12 / eli-h
Selenium-VI	ND	mg/L	D	0.01		A3114 C	06/28/18 11:40 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18061934-003  
**Client Sample ID:** R3-6-19

**Report Date:** 07/05/18  
**Collection Date:** 06/19/18 10:00  
**DateReceived:** 06/20/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	62	mg/L	D	2		A5310 C	06/25/18 23:48 / eli-ca
<b>METALS, TOTAL</b>							
Selenium	ND	mg/L	D	0.01		A3114 C	06/25/18 14:37 / eli-h
- The reporting limit reflects a 10 times dilution. The sample was diluted due to sample matrix and limited sample volume.							
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.01		A3114 C	06/27/18 14:13 / eli-h
Selenium-VI	ND	mg/L	D	0.01		A3114 C	06/28/18 11:40 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18061934-004  
**Client Sample ID:** R4-6-19

**Report Date:** 07/05/18  
**Collection Date:** 06/19/18 10:00  
**Date Received:** 06/20/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	20	mg/L	D	4		A5310 C	06/26/18 00:04 / eli-ca
<b>METALS, TOTAL</b>							
Selenium	ND	mg/L	D	0.01		A3114 C	06/25/18 14:38 / eli-h
- The reporting limit reflects a 10 times dilution. The sample was diluted due to sample matrix and limited sample volume.							
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.01		A3114 C	06/27/18 14:15 / eli-h
Selenium-VI	ND	mg/L	D	0.01		A3114 C	06/28/18 11:40 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18061934-005  
**Client Sample ID:** R5-6-19

**Report Date:** 07/05/18  
**Collection Date:** 06/19/18 10:00  
**DateReceived:** 06/20/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	26	mg/L	D	2		A5310 C	06/26/18 00:19 / eli-ca
<b>METALS, TOTAL</b>							
Selenium	ND	mg/L	D	0.01		A3114 C	06/25/18 14:40 / eli-h
- The reporting limit reflects a 10 times dilution. The sample was diluted due to sample matrix and limited sample volume.							
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.01		A3114 C	06/27/18 14:16 / eli-h
Selenium-VI	ND	mg/L	D	0.01		A3114 C	06/28/18 11:40 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.





### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18061934-006  
**Client Sample ID:** R6-6-19

**Report Date:** 07/05/18  
**Collection Date:** 06/19/18 10:00  
**DateReceived:** 06/20/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	17	mg/L	D	4		A5310 C	06/26/18 00:35 / eli-ca
<b>METALS, TOTAL</b>							
Selenium	0.02	mg/L	D	0.01		A3114 C	06/25/18 14:42 / eli-h
- The reporting limit reflects a 10 times dilution. The sample was diluted due to sample matrix and limited sample volume.							
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.01		A3114 C	06/27/18 14:18 / eli-h
Selenium-VI	0.02	mg/L	D	0.01		A3114 C	06/28/18 11:40 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18061934-007  
**Client Sample ID:** F1-6-19

**Report Date:** 07/05/18  
**Collection Date:** 06/19/18 10:00  
**Date Received:** 06/20/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	5.7	mg/L		0.5		A5310 C	06/26/18 00:51 / eli-ca
<b>METALS, TOTAL</b>							
Selenium	0.19	mg/L	D	0.01		A3114 C	06/25/18 14:43 / eli-h
- The reporting limit reflects a 10 times dilution. The sample was diluted due to sample matrix and limited sample volume.							
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.01		A3114 C	06/27/18 14:20 / eli-h
Selenium-VI	0.19	mg/L	D	0.01		A3114 C	06/28/18 11:40 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18061934-008  
**Client Sample ID:** F2-6-19

**Report Date:** 07/05/18  
**Collection Date:** 06/19/18 10:00  
**DateReceived:** 06/20/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	22	mg/L	D	2		A5310 C	06/26/18 23:45 / eli-ca
<b>METALS, TOTAL</b>							
Selenium	0.19	mg/L	D	0.01		A3114 C	06/25/18 14:45 / eli-h
- The reporting limit reflects a 10 times dilution. The sample was diluted due to sample matrix and limited sample volume.							
<b>METALS, SPECIATED</b>							
Selenium-IV	0.19	mg/L	D	0.01		A3114 C	06/27/18 14:21 / eli-h
Selenium-VI	ND	mg/L	D	0.01		A3114 C	06/28/18 11:40 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18061934-009  
**Client Sample ID:** F3-6-19

**Report Date:** 07/05/18  
**Collection Date:** 06/19/18 10:00  
**DateReceived:** 06/20/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	7.7	mg/L		0.5		A5310 C	06/26/18 01:30 / eli-ca
<b>METALS, TOTAL</b>							
Selenium	0.17	mg/L	D	0.01		A3114 C	06/25/18 14:46 / eli-h
- The reporting limit reflects a 10 times dilution. The sample was diluted due to sample matrix and limited sample volume.							
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.01		A3114 C	06/27/18 14:23 / eli-h
Selenium-VI	0.17	mg/L	D	0.01		A3114 C	06/28/18 11:40 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 07/03/18  
**Work Order:** B18061934

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: A3114 C</b> <span style="float: right;">tical Run: SELENIUM PSA MILLENIUM_180625A</span>										
<b>Lab ID: ICV</b>		Initial Calibration Verification Standard								
Selenium		0.0365	mg/L	0.0010	91	90	110			06/25/18 14:20
<b>Lab ID: CCV</b> <span style="float: right;">Continuing Calibration Verification Standard</span>										
Selenium		0.0194	mg/L	0.0010	97	90	110			06/25/18 14:21
<b>Method: A3114 C</b> <span style="float: right;">Batch: 42003</span>										
<b>Lab ID: MB-42003</b>		Method Blank								
Selenium		ND	mg/L	0.0005						Run: SELENIUM PSA MILLENIUM_ 06/25/18 14:24
<b>Lab ID: LFB-42003</b>		Laboratory Fortified Blank								
Selenium		0.0365	mg/L	0.0010	91	85	115			Run: SELENIUM PSA MILLENIUM_ 06/25/18 14:26
<b>Lab ID: LCS-42003</b>		Laboratory Control Sample								
Selenium		0.0360	mg/L	0.0010	90	90	110			Run: SELENIUM PSA MILLENIUM_ 06/25/18 14:28
<b>Lab ID: H18060480-001AMS</b>		Sample Matrix Spike								
Selenium		0.0365	mg/L	0.0010	91	70	130			Run: SELENIUM PSA MILLENIUM_ 06/25/18 14:31
<b>Lab ID: H18060480-001AMSD</b>		Sample Matrix Spike Duplicate								
Selenium		0.0373	mg/L	0.0010	93	70	130	2.1	20	Run: SELENIUM PSA MILLENIUM_ 06/25/18 14:32
<b>Method: A3114 C</b> <span style="float: right;">tical Run: SELENIUM PSA MILLENIUM_180627A</span>										
<b>Lab ID: ICV</b>		Initial Calibration Verification Standard								
Selenium-IV		0.0193	mg/L	0.0010	96	90	110			06/27/18 14:01
<b>Lab ID: CCV</b>		Continuing Calibration Verification Standard								
Selenium-IV		0.0194	mg/L	0.0010	97	90	110			06/27/18 14:02
<b>Method: A3114 C</b> <span style="float: right;">Batch: 42033</span>										
<b>Lab ID: MB-42033</b>		Method Blank								
Selenium-IV		ND	mg/L	0.0006						Run: SELENIUM PSA MILLENIUM_ 06/27/18 14:05
<b>Lab ID: LFB-42033</b>		Laboratory Fortified Blank								
Selenium-IV		0.0191	mg/L	0.0010	96	85	115			Run: SELENIUM PSA MILLENIUM_ 06/27/18 14:07
<b>Lab ID: LCS-42033</b>		Laboratory Control Sample								
Selenium-IV		0.0197	mg/L	0.0010	98	90	110			Run: SELENIUM PSA MILLENIUM_ 06/27/18 14:09
<b>Lab ID: H18060627-001BMS</b>		Sample Matrix Spike								
Selenium-IV		0.0181	mg/L	0.0010	91	70	130			Run: SELENIUM PSA MILLENIUM_ 06/27/18 14:26
<b>Lab ID: H18060627-001BMSD</b>		Sample Matrix Spike Duplicate								
Selenium-IV		0.0183	mg/L	0.0010	92	70	130	1.2	20	Run: SELENIUM PSA MILLENIUM_ 06/27/18 14:27

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 06/27/18  
**Work Order:** B18061934

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: A5310 C</b>							Analytical Run: TOC3-C_180625A		
<b>Lab ID: CCV-9806</b> Organic Carbon, Dissolved (DOC)	Continuing Calibration Verification Standard								06/25/18 22:55
	4.91	mg/L	0.50	98	90	110			
<b>Method: A5310 C</b>							Batch: R236767		
<b>Lab ID: LCS-10002</b> Organic Carbon, Dissolved (DOC)	Laboratory Control Sample								06/25/18 22:21
	4.99	mg/L	0.50	97	90	110			
<b>Lab ID: MBLK</b> Organic Carbon, Dissolved (DOC)	Method Blank								06/25/18 22:36
	0.2	mg/L	0.04						
<b>Lab ID: C18060833-001DMS</b> Organic Carbon, Dissolved (DOC)	Sample Matrix Spike								06/26/18 02:02
	8.12	mg/L	0.50	112	85	115			
<b>Lab ID: C18060833-001DMSD</b> Organic Carbon, Dissolved (DOC)	Sample Matrix Spike Duplicate								06/26/18 02:18
	7.97	mg/L	0.50	109	85	115	1.8	20	
<b>Method: A5310 C</b>							Analytical Run: TOC3-C_180626A		
<b>Lab ID: CCV-9806</b> Organic Carbon, Dissolved (DOC)	Continuing Calibration Verification Standard								06/26/18 23:25
	5.16	mg/L	0.50	103	90	110			
<b>Method: A5310 C</b>							Batch: R236807		
<b>Lab ID: LCS-10002</b> Organic Carbon, Dissolved (DOC)	Laboratory Control Sample								06/26/18 22:50
	5.28	mg/L	0.50	103	90	110			
<b>Lab ID: MBLK</b> Organic Carbon, Dissolved (DOC)	Method Blank								06/26/18 23:05
	0.1	mg/L	0.04						
<b>Lab ID: C18060844-001EMS</b> Organic Carbon, Dissolved (DOC)	Sample Matrix Spike								06/27/18 00:25
	5.99	mg/L	0.50	107	85	115			
<b>Lab ID: C18060844-001EMSD</b> Organic Carbon, Dissolved (DOC)	Sample Matrix Spike Duplicate								06/27/18 00:41
	5.90	mg/L	0.50	105	85	115	1.6	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# Work Order Receipt Checklist

Enviromin Inc

B18061934

Login completed by: Tabitha Edwards

Date Received: 6/20/2018

Reviewed by: BL2000\raschim

Received by: gda

Reviewed Date: 6/21/2018

Carrier name: Return-UPS Ground

- Shipping container/cooler in good condition? Yes  No  Not Present
- Custody seals intact on all shipping container(s)/cooler(s)? Yes  No  Not Present
- Custody seals intact on all sample bottles? Yes  No  Not Present
- Chain of custody present? Yes  No
- Chain of custody signed when relinquished and received? Yes  No
- Chain of custody agrees with sample labels? Yes  No
- Samples in proper container/bottle? Yes  No
- Sample containers intact? Yes  No
- Sufficient sample volume for indicated test? Yes  No
- All samples received within holding time?  
(Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.) Yes  No
- Temp Blank received in all shipping container(s)/cooler(s)? Yes  No  Not Applicable
- Container/Temp Blank temperature: 2.0°C On Ice
- Water - VOA vials have zero headspace? Yes  No  No VOA vials submitted
- Water - pH acceptable upon receipt? Yes  No  Not Applicable

## Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

## Contact and Corrective Action Comments:

None



Trust our People. Trust our Data.

# Chain of Custody & Analytical Request Record

www.energylab.com

Page \_\_\_\_\_ of \_\_\_\_\_

### Account Information (Billing Information)

Company Name Environment Inc  
 Contact Terry Biere  
 Phone 406-438-2333  
 Mailing Address 524 Pufferwood Drive  
 City, State, Zip Bozeman, MT 59718  
 Email terrybiere@environmentinc.com  
 Receive Invoice  Hard Copy  Email  Hard Copy  Email  
 Purchase Order 4093 Bottle Order

### Report Information (if different than Account Information)

Company Name \_\_\_\_\_  
 Contact \_\_\_\_\_  
 Phone \_\_\_\_\_  
 Mailing Address \_\_\_\_\_  
 City, State, Zip \_\_\_\_\_  
 Email \_\_\_\_\_  
 Receive Report  Hard Copy  Email  
 Special Report/Formats:  LEVEL IV  NELAC  EDD/EDT (contact laboratory)  Other \_\_\_\_\_

### Comments

\_\_\_\_\_

### Project Information

Project Name, PWSID, Permit, etc. AT&T Column Study  
 Sampler Name \_\_\_\_\_  
 Sample Origin State \_\_\_\_\_ EPA/State Compliance  Yes  No  
 \*MINING CLIENTS, please indicate sample type.  
 \*If one has been processed or refined, call before sending.  
 Byproduct 11 (e)2 material  Unprocessed ore (NOT ground or refined)\*

**Matrix Codes**

A - Air  
 W - Water  
 S - Solids  
 V - Vegetation  
 B - Bioassay  
 O - Other  
 DW - Drinking Water

### Analysis Requested

See Attached									
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All turnaround times are standard unless marked as RUSH.  
 Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling - See Instructions Page

Sample Identification (Name, Location, Interval, etc.)	Collection		Matrix (See Codes Above)	Number of Containers	RUSH	TAT	Signature
	Date	Time					
1 R1-6-19	6/19	10AM	W	2			BIRDEN 1934-001
2 R2-6-19							002
3 R3-6-19							003
4 R4-6-19							004
5 R5-6-19							005
6 R6-6-19							006
7 F1-6-19							007
8 F2-6-19							008
9 F3-6-19							009
10							

Received by (print) Terrence Temple Signature \_\_\_\_\_ Date/Time \_\_\_\_\_  
 Received by Laboratory (print) Terrence Temple Signature \_\_\_\_\_ Date/Time 6-20-18 9:10  
 Payment Type  Cash  Check Amount \$ \_\_\_\_\_  
 Receipt Number (cash/check only) \_\_\_\_\_  
 Shipped By \_\_\_\_\_ Cooler ID(s) \_\_\_\_\_ Custody Seals Y N C B Inactive Y N Receipt Temp °C \_\_\_\_\_  
 Custody Record MUST be signed by Terry Biere Relinquished by (print) \_\_\_\_\_ Signature \_\_\_\_\_  
 Relinquished by (print) \_\_\_\_\_ Signature \_\_\_\_\_

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.





# ANALYTICAL SUMMARY REPORT

July 24, 2018

Enviromin Inc  
524 Professional Dr  
Bozeman, MT 59718

Work Order: B18070902                      Quote ID: B4093 - Enviromin Lab

Project Name: NWP Column Study

Energy Laboratories Inc Billings MT received the following 9 samples for Enviromin Inc on 7/11/2018 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B18070902-001	R1	07/10/18 9:00	07/11/18	Aqueous	Metals by ICP/ICPMS, Dissolved Carbon, Dissolved Organic Selenium By CVAA, Total Selenium IV, Total Selenium-VI, Total
B18070902-002	R2	07/10/18 9:00	07/11/18	Aqueous	Same As Above
B18070902-003	R3	07/10/18 9:00	07/11/18	Aqueous	Same As Above
B18070902-004	R4	07/10/18 9:01	07/11/18	Aqueous	Same As Above
B18070902-005	R5	07/10/18 9:00	07/11/18	Aqueous	Same As Above
B18070902-006	R6	07/10/18 9:00	07/11/18	Aqueous	Same As Above
B18070902-007	F1	07/10/18 9:00	07/11/18	Aqueous	Same As Above
B18070902-008	F2	07/10/18 9:00	07/11/18	Aqueous	Same As Above
B18070902-009	F3	07/10/18 9:00	07/11/18	Aqueous	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:



**CLIENT:** Enviromin Inc  
**Project:** NWP Column Study  
**Work Order:** B18070902

**Report Date:** 07/24/18

## CASE NARRATIVE

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Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 East Lyndale Ave, Helena, MT, EPA Number MT00945.

Tests associated with analyst identified as ELI-CA were subcontracted to Energy Laboratories, PO Box 247, Casper, WY, EPA Number WY00002.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18070902-001  
**Client Sample ID:** R1

**Report Date:** 07/24/18  
**Collection Date:** 07/10/18 09:00  
**Date Received:** 07/11/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	34	mg/L	D	4		A5310 C	07/17/18 02:04 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.51	mg/L		0.03		E200.8	07/16/18 21:39 / rlh
Antimony	ND	mg/L		0.001		E200.8	07/16/18 21:39 / rlh
Arsenic	0.004	mg/L		0.001		E200.8	07/13/18 21:33 / rlh
Barium	ND	mg/L		0.05		E200.7	07/13/18 17:55 / rjh
Beryllium	ND	mg/L		0.001		E200.7	07/17/18 02:58 / rjh
Boron	ND	mg/L		0.05		E200.7	07/13/18 17:55 / rjh
Cadmium	ND	mg/L		0.001		E200.8	07/13/18 21:33 / rlh
Calcium	7	mg/L		1		E200.7	07/13/18 17:55 / rjh
Chromium	0.009	mg/L		0.005		E200.8	07/13/18 21:33 / rlh
Cobalt	ND	mg/L		0.005		E200.8	07/13/18 21:33 / rlh
Copper	ND	mg/L		0.005		E200.8	07/13/18 21:33 / rlh
Iron	0.50	mg/L		0.02		E200.7	07/13/18 17:55 / rjh
Lead	ND	mg/L		0.001		E200.8	07/16/18 21:39 / rlh
Lithium	ND	mg/L		0.1		E200.7	07/13/18 17:55 / rjh
Magnesium	2	mg/L		1		E200.7	07/13/18 17:55 / rjh
Manganese	0.003	mg/L		0.001		E200.8	07/13/18 21:33 / rlh
Molybdenum	0.003	mg/L		0.001		E200.8	07/13/18 21:33 / rlh
Nickel	ND	mg/L		0.005		E200.8	07/13/18 21:33 / rlh
Potassium	1	mg/L		1		E200.7	07/17/18 21:38 / rjh
Selenium	0.117	mg/L		0.001		E200.8	07/16/18 21:39 / rlh
Silicon	5.3	mg/L		0.1		E200.7	07/13/18 17:55 / rjh
Silver	ND	mg/L		0.001		E200.8	07/16/18 21:39 / rlh
Sodium	16	mg/L		1		E200.7	07/13/18 17:55 / rjh
Strontium	0.02	mg/L		0.01		E200.7	07/13/18 17:55 / rjh
Thallium	ND	mg/L		0.0005		E200.8	07/16/18 21:39 / rlh
Tin	ND	mg/L		0.01		E200.8	07/13/18 21:33 / rlh
Titanium	0.020	mg/L		0.005		E200.8	07/13/18 21:33 / rlh
Uranium	0.0004	mg/L		0.0003		E200.8	07/16/18 21:39 / rlh
Vanadium	ND	mg/L		0.01		E200.8	07/13/18 21:33 / rlh
Zinc	0.01	mg/L		0.01		E200.7	07/13/18 17:55 / rjh
<b>METALS, TOTAL</b>							
Selenium	0.110	mg/L	D	0.003		A3114 C	07/17/18 16:52 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	07/17/18 15:07 / eli-h
Selenium-VI	0.107	mg/L		0.001		A3114 C	07/18/18 13:11 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18070902-002  
**Client Sample ID:** R2

**Report Date:** 07/24/18  
**Collection Date:** 07/10/18 09:00  
**Date Received:** 07/11/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	15	mg/L	D	2		A5310 C	07/17/18 02:19 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	07/16/18 21:43 / rlh
Antimony	ND	mg/L		0.001		E200.8	07/16/18 21:43 / rlh
Arsenic	0.057	mg/L		0.001		E200.8	07/13/18 21:38 / rlh
Barium	0.10	mg/L		0.05		E200.8	07/13/18 21:38 / rlh
Beryllium	ND	mg/L		0.001		E200.7	07/17/18 03:02 / rjh
Boron	ND	mg/L		0.05		E200.7	07/17/18 21:42 / rjh
Cadmium	ND	mg/L		0.001		E200.8	07/13/18 21:38 / rlh
Calcium	40	mg/L		1		E200.7	07/17/18 03:02 / rjh
Chromium	ND	mg/L		0.005		E200.8	07/13/18 21:38 / rlh
Cobalt	ND	mg/L		0.005		E200.8	07/13/18 21:38 / rlh
Copper	ND	mg/L		0.005		E200.8	07/13/18 21:38 / rlh
Iron	ND	mg/L		0.02		E200.8	07/13/18 21:38 / rlh
Lead	ND	mg/L		0.001		E200.8	07/13/18 21:38 / rlh
Lithium	ND	mg/L		0.1		E200.7	07/17/18 21:42 / rjh
Magnesium	30	mg/L		1		E200.7	07/17/18 03:02 / rjh
Manganese	0.003	mg/L		0.001		E200.8	07/13/18 21:38 / rlh
Molybdenum	0.007	mg/L		0.001		E200.8	07/13/18 21:38 / rlh
Nickel	ND	mg/L		0.005		E200.8	07/13/18 21:38 / rlh
Potassium	2	mg/L		1		E200.7	07/17/18 21:42 / rjh
Selenium	0.012	mg/L		0.001		E200.8	07/16/18 21:43 / rlh
Silicon	5.0	mg/L		0.1		E200.7	07/17/18 03:02 / rjh
Silver	ND	mg/L		0.001		E200.8	07/16/18 21:43 / rlh
Sodium	7	mg/L		1		E200.7	07/17/18 03:02 / rjh
Strontium	0.20	mg/L		0.01		E200.8	07/13/18 21:38 / rlh
Thallium	ND	mg/L		0.0005		E200.8	07/13/18 21:38 / rlh
Tin	ND	mg/L		0.01		E200.8	07/13/18 21:38 / rlh
Titanium	ND	mg/L		0.005		E200.8	07/13/18 21:38 / rlh
Uranium	0.0066	mg/L		0.0003		E200.8	07/13/18 21:38 / rlh
Vanadium	ND	mg/L		0.01		E200.8	07/13/18 21:38 / rlh
Zinc	ND	mg/L		0.01		E200.8	07/13/18 21:38 / rlh
<b>METALS, TOTAL</b>							
Selenium	0.010	mg/L	D	0.003		A3114 C	07/17/18 16:54 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	07/17/18 15:11 / eli-h
Selenium-VI	0.010	mg/L		0.001		A3114 C	07/18/18 13:11 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18070902-003  
**Client Sample ID:** R3

**Report Date:** 07/24/18  
**Collection Date:** 07/10/18 09:00  
**Date Received:** 07/11/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	37	mg/L	D	4		A5310 C	07/17/18 02:34 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.61	mg/L		0.03		E200.7	07/13/18 00:50 / rjh
Antimony	ND	mg/L		0.001		E200.8	07/16/18 21:47 / rlh
Arsenic	0.010	mg/L		0.001		E200.8	07/13/18 21:42 / rlh
Barium	ND	mg/L		0.05		E200.7	07/13/18 00:50 / rjh
Beryllium	ND	mg/L		0.001		E200.7	07/13/18 00:50 / rjh
Boron	0.05	mg/L		0.05		E200.7	07/13/18 00:50 / rjh
Cadmium	ND	mg/L		0.001		E200.8	07/13/18 21:42 / rlh
Calcium	7	mg/L		1		E200.7	07/13/18 00:50 / rjh
Chromium	ND	mg/L		0.005		E200.8	07/13/18 21:42 / rlh
Cobalt	ND	mg/L		0.005		E200.8	07/13/18 21:42 / rlh
Copper	ND	mg/L		0.005		E200.7	07/13/18 00:50 / rjh
Iron	0.61	mg/L		0.02		E200.7	07/13/18 00:50 / rjh
Lead	ND	mg/L		0.001		E200.8	07/13/18 21:42 / rlh
Lithium	ND	mg/L		0.1		E200.7	07/17/18 21:53 / rjh
Magnesium	2	mg/L		1		E200.7	07/13/18 00:50 / rjh
Manganese	0.019	mg/L		0.001		E200.8	07/13/18 21:42 / rlh
Molybdenum	ND	mg/L		0.001		E200.8	07/13/18 21:42 / rlh
Nickel	0.006	mg/L		0.005		E200.7	07/13/18 00:50 / rjh
Potassium	ND	mg/L		1		E200.7	07/13/18 00:50 / rjh
Selenium	0.004	mg/L		0.001		E200.8	07/16/18 21:47 / rlh
Silicon	7.6	mg/L		0.1		E200.7	07/13/18 00:50 / rjh
Silver	ND	mg/L		0.001		E200.8	07/16/18 21:47 / rlh
Sodium	11	mg/L		1		E200.7	07/13/18 00:50 / rjh
Strontium	0.02	mg/L		0.01		E200.7	07/13/18 00:50 / rjh
Thallium	ND	mg/L		0.0005		E200.8	07/13/18 21:42 / rlh
Tin	ND	mg/L		0.01		E200.8	07/13/18 21:42 / rlh
Titanium	0.032	mg/L		0.005		E200.8	07/13/18 21:42 / rlh
Uranium	ND	mg/L		0.0003		E200.8	07/13/18 21:42 / rlh
Vanadium	ND	mg/L		0.01		E200.8	07/13/18 21:42 / rlh
Zinc	0.02	mg/L		0.01		E200.7	07/13/18 00:50 / rjh
<b>METALS, TOTAL</b>							
Selenium	ND	mg/L	D	0.003		A3114 C	07/17/18 16:55 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	07/17/18 15:13 / eli-h
Selenium-VI	ND	mg/L		0.001		A3114 C	07/18/18 13:11 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18070902-004  
**Client Sample ID:** R4

**Report Date:** 07/24/18  
**Collection Date:** 07/10/18 09:01  
**Date Received:** 07/11/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	18	mg/L	D	2		A5310 C	07/17/18 02:49 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	07/16/18 22:04 / rlh
Antimony	ND	mg/L		0.001		E200.8	07/16/18 22:04 / rlh
Arsenic	0.025	mg/L		0.001		E200.8	07/13/18 21:54 / rlh
Barium	0.09	mg/L		0.05		E200.7	07/13/18 00:53 / rjh
Beryllium	ND	mg/L		0.001		E200.7	07/13/18 00:53 / rjh
Boron	ND	mg/L		0.05		E200.7	07/13/18 00:53 / rjh
Cadmium	ND	mg/L		0.001		E200.8	07/13/18 21:54 / rlh
Calcium	23	mg/L		1		E200.7	07/13/18 00:53 / rjh
Chromium	ND	mg/L		0.005		E200.8	07/13/18 21:54 / rlh
Cobalt	ND	mg/L		0.005		E200.8	07/13/18 21:54 / rlh
Copper	ND	mg/L		0.005		E200.7	07/13/18 00:53 / rjh
Iron	ND	mg/L		0.02		E200.7	07/13/18 00:53 / rjh
Lead	ND	mg/L		0.001		E200.8	07/13/18 21:54 / rlh
Lithium	ND	mg/L		0.1		E200.7	07/17/18 21:57 / rjh
Magnesium	43	mg/L		1		E200.7	07/13/18 00:53 / rjh
Manganese	ND	mg/L		0.001		E200.8	07/13/18 21:54 / rlh
Molybdenum	0.006	mg/L		0.001		E200.8	07/13/18 21:54 / rlh
Nickel	ND	mg/L		0.005		E200.7	07/13/18 00:53 / rjh
Potassium	2	mg/L		1		E200.7	07/13/18 00:53 / rjh
Selenium	0.001	mg/L		0.001		E200.8	07/16/18 22:04 / rlh
Silicon	6.7	mg/L		0.1		E200.7	07/13/18 00:53 / rjh
Silver	ND	mg/L		0.001		E200.8	07/16/18 22:04 / rlh
Sodium	8	mg/L		1		E200.7	07/13/18 00:53 / rjh
Strontium	0.23	mg/L		0.01		E200.7	07/13/18 00:53 / rjh
Thallium	ND	mg/L		0.0005		E200.8	07/13/18 21:54 / rlh
Tin	ND	mg/L		0.01		E200.8	07/13/18 21:54 / rlh
Titanium	ND	mg/L		0.005		E200.8	07/13/18 21:54 / rlh
Uranium	0.0054	mg/L		0.0003		E200.8	07/13/18 21:54 / rlh
Vanadium	ND	mg/L		0.01		E200.8	07/13/18 21:54 / rlh
Zinc	ND	mg/L		0.01		E200.7	07/13/18 00:53 / rjh
<b>METALS, TOTAL</b>							
Selenium	ND	mg/L	D	0.003		A3114 C	07/17/18 16:57 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	07/17/18 15:14 / eli-h
Selenium-VI	ND	mg/L		0.001		A3114 C	07/18/18 13:11 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18070902-005  
**Client Sample ID:** R5

**Report Date:** 07/24/18  
**Collection Date:** 07/10/18 09:00  
**Date Received:** 07/11/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	24	mg/L	D	2		A5310 C	07/17/18 03:34 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	1.46	mg/L		0.03		E200.7	07/13/18 00:57 / rjh
Antimony	ND	mg/L		0.001		E200.8	07/16/18 22:08 / rlh
Arsenic	0.006	mg/L		0.001		E200.8	07/13/18 21:46 / rlh
Barium	ND	mg/L		0.05		E200.7	07/13/18 00:57 / rjh
Beryllium	ND	mg/L		0.001		E200.7	07/13/18 00:57 / rjh
Boron	ND	mg/L		0.05		E200.7	07/13/18 00:57 / rjh
Cadmium	ND	mg/L		0.001		E200.8	07/13/18 21:46 / rlh
Calcium	4	mg/L		1		E200.7	07/13/18 00:57 / rjh
Chromium	0.019	mg/L		0.005		E200.8	07/13/18 21:46 / rlh
Cobalt	ND	mg/L		0.005		E200.8	07/13/18 21:46 / rlh
Copper	0.006	mg/L		0.005		E200.7	07/13/18 00:57 / rjh
Iron	0.58	mg/L		0.02		E200.7	07/13/18 00:57 / rjh
Lead	ND	mg/L		0.001		E200.8	07/13/18 21:46 / rlh
Lithium	ND	mg/L		0.1		E200.7	07/13/18 18:30 / rjh
Magnesium	1	mg/L		1		E200.7	07/13/18 00:57 / rjh
Manganese	0.003	mg/L		0.001		E200.8	07/13/18 21:46 / rlh
Molybdenum	0.002	mg/L		0.001		E200.8	07/13/18 21:46 / rlh
Nickel	ND	mg/L		0.005		E200.7	07/13/18 00:57 / rjh
Potassium	2	mg/L		1		E200.7	07/13/18 00:57 / rjh
Selenium	0.002	mg/L		0.001		E200.8	07/16/18 22:08 / rlh
Silicon	10.1	mg/L		0.1		E200.7	07/13/18 00:57 / rjh
Silver	ND	mg/L		0.001		E200.8	07/16/18 22:08 / rlh
Sodium	6	mg/L		1		E200.7	07/13/18 00:57 / rjh
Strontium	0.01	mg/L		0.01		E200.7	07/13/18 00:57 / rjh
Thallium	ND	mg/L		0.0005		E200.8	07/13/18 21:46 / rlh
Tin	ND	mg/L		0.01		E200.8	07/13/18 21:46 / rlh
Titanium	0.023	mg/L		0.005		E200.8	07/13/18 21:46 / rlh
Uranium	ND	mg/L		0.0003		E200.8	07/13/18 21:46 / rlh
Vanadium	ND	mg/L		0.01		E200.8	07/13/18 21:46 / rlh
Zinc	0.02	mg/L		0.01		E200.7	07/13/18 00:57 / rjh
<b>METALS, TOTAL</b>							
Selenium	ND	mg/L	D	0.003		A3114 C	07/17/18 16:58 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	07/17/18 15:16 / eli-h
Selenium-VI	0.002	mg/L		0.001		A3114 C	07/18/18 13:11 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18070902-006  
**Client Sample ID:** R6

**Report Date:** 07/24/18  
**Collection Date:** 07/10/18 09:00  
**Date Received:** 07/11/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	18	mg/L	D	2		A5310 C	07/17/18 03:54 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	07/16/18 23:50 / rlh
Antimony	ND	mg/L		0.001		E200.8	07/16/18 23:50 / rlh
Arsenic	0.060	mg/L		0.001		E200.8	07/13/18 21:50 / rlh
Barium	0.07	mg/L		0.05		E200.7	07/13/18 01:36 / rjh
Beryllium	ND	mg/L		0.001		E200.7	07/13/18 01:36 / rjh
Boron	ND	mg/L		0.05		E200.7	07/13/18 01:36 / rjh
Cadmium	ND	mg/L		0.001		E200.8	07/13/18 21:50 / rlh
Calcium	24	mg/L		1		E200.7	07/13/18 01:36 / rjh
Chromium	ND	mg/L		0.005		E200.8	07/13/18 21:50 / rlh
Cobalt	ND	mg/L		0.005		E200.8	07/13/18 21:50 / rlh
Copper	ND	mg/L		0.005		E200.7	07/13/18 01:36 / rjh
Iron	ND	mg/L		0.02		E200.7	07/13/18 01:36 / rjh
Lead	ND	mg/L		0.001		E200.8	07/13/18 21:50 / rlh
Lithium	ND	mg/L		0.1		E200.7	07/13/18 18:33 / rjh
Magnesium	24	mg/L		1		E200.7	07/13/18 01:36 / rjh
Manganese	0.007	mg/L		0.001		E200.8	07/13/18 21:50 / rlh
Molybdenum	0.008	mg/L		0.001		E200.8	07/13/18 21:50 / rlh
Nickel	ND	mg/L		0.005		E200.7	07/13/18 01:36 / rjh
Potassium	1	mg/L		1		E200.7	07/13/18 01:36 / rjh
Selenium	0.030	mg/L		0.001		E200.8	07/16/18 23:50 / rlh
Silicon	5.6	mg/L		0.1		E200.7	07/13/18 01:36 / rjh
Silver	ND	mg/L		0.001		E200.8	07/16/18 23:50 / rlh
Sodium	9	mg/L		1		E200.7	07/13/18 01:36 / rjh
Strontium	0.12	mg/L		0.01		E200.7	07/13/18 01:36 / rjh
Thallium	ND	mg/L		0.0005		E200.8	07/13/18 21:50 / rlh
Tin	ND	mg/L		0.01		E200.8	07/13/18 21:50 / rlh
Titanium	ND	mg/L		0.005		E200.8	07/13/18 21:50 / rlh
Uranium	0.0031	mg/L		0.0003		E200.8	07/13/18 21:50 / rlh
Vanadium	ND	mg/L		0.01		E200.8	07/13/18 21:50 / rlh
Zinc	ND	mg/L		0.01		E200.7	07/13/18 01:36 / rjh
<b>METALS, TOTAL</b>							
Selenium	0.029	mg/L	D	0.003		A3114 C	07/17/18 17:00 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	07/17/18 15:18 / eli-h
Selenium-VI	0.029	mg/L		0.001		A3114 C	07/18/18 13:11 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.





### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18070902-007  
**Client Sample ID:** F1

**Report Date:** 07/24/18  
**Collection Date:** 07/10/18 09:00  
**Date Received:** 07/11/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	12	mg/L	D	2		A5310 C	07/17/18 04:09 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.05	mg/L		0.03		E200.7	07/13/18 01:39 / rjh
Antimony	ND	mg/L		0.001		E200.8	07/16/18 23:54 / rlh
Arsenic	ND	mg/L		0.001		E200.8	07/13/18 22:19 / rlh
Barium	0.09	mg/L		0.05		E200.7	07/13/18 01:39 / rjh
Beryllium	ND	mg/L		0.001		E200.7	07/13/18 01:39 / rjh
Boron	ND	mg/L		0.05		E200.7	07/13/18 01:39 / rjh
Cadmium	ND	mg/L		0.001		E200.8	07/13/18 22:19 / rlh
Calcium	15	mg/L		1		E200.7	07/13/18 01:39 / rjh
Chromium	ND	mg/L		0.005		E200.8	07/13/18 22:19 / rlh
Cobalt	ND	mg/L		0.005		E200.8	07/13/18 22:19 / rlh
Copper	ND	mg/L		0.005		E200.7	07/13/18 01:39 / rjh
Iron	0.06	mg/L		0.02		E200.7	07/13/18 01:39 / rjh
Lead	ND	mg/L		0.001		E200.8	07/13/18 22:19 / rlh
Lithium	ND	mg/L		0.1		E200.7	07/13/18 18:37 / rjh
Magnesium	3	mg/L		1		E200.7	07/13/18 01:39 / rjh
Manganese	ND	mg/L		0.001		E200.8	07/13/18 22:19 / rlh
Molybdenum	0.004	mg/L		0.001		E200.8	07/13/18 22:19 / rlh
Nickel	ND	mg/L		0.005		E200.7	07/13/18 01:39 / rjh
Potassium	1	mg/L		1		E200.7	07/13/18 01:39 / rjh
Selenium	0.198	mg/L		0.001		E200.8	07/16/18 23:54 / rlh
Silicon	0.9	mg/L		0.1		E200.7	07/13/18 01:39 / rjh
Silver	ND	mg/L		0.001		E200.8	07/16/18 23:54 / rlh
Sodium	20	mg/L		1		E200.7	07/13/18 01:39 / rjh
Strontium	0.04	mg/L		0.01		E200.7	07/13/18 01:39 / rjh
Thallium	ND	mg/L		0.0005		E200.8	07/13/18 22:19 / rlh
Tin	ND	mg/L		0.01		E200.8	07/13/18 22:19 / rlh
Titanium	ND	mg/L		0.005		E200.8	07/16/18 23:54 / rlh
Uranium	0.0025	mg/L		0.0003		E200.8	07/13/18 22:19 / rlh
Vanadium	ND	mg/L		0.01		E200.8	07/13/18 22:19 / rlh
Zinc	ND	mg/L		0.01		E200.7	07/13/18 01:39 / rjh
<b>METALS, TOTAL</b>							
Selenium	0.199	mg/L	D	0.003		A3114 C	07/17/18 17:01 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.006	mg/L	D	0.003		A3114 C	07/17/18 15:19 / eli-h
Selenium-VI	0.194	mg/L		0.001		A3114 C	07/18/18 13:11 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18070902-008  
**Client Sample ID:** F2

**Report Date:** 07/24/18  
**Collection Date:** 07/10/18 09:00  
**Date Received:** 07/11/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	22	mg/L	D	2		A5310 C	07/17/18 04:29 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.22	mg/L		0.03		E200.7	07/13/18 01:43 / rjh
Antimony	ND	mg/L		0.001		E200.8	07/16/18 23:59 / rlh
Arsenic	0.002	mg/L		0.001		E200.8	07/13/18 22:23 / rlh
Barium	ND	mg/L		0.05		E200.7	07/13/18 01:43 / rjh
Beryllium	ND	mg/L		0.001		E200.7	07/13/18 01:43 / rjh
Boron	ND	mg/L		0.05		E200.7	07/13/18 01:43 / rjh
Cadmium	ND	mg/L		0.001		E200.8	07/13/18 22:23 / rlh
Calcium	2	mg/L		1		E200.7	07/13/18 01:43 / rjh
Chromium	0.007	mg/L		0.005		E200.8	07/13/18 22:23 / rlh
Cobalt	ND	mg/L		0.005		E200.8	07/13/18 22:23 / rlh
Copper	ND	mg/L		0.005		E200.7	07/13/18 01:43 / rjh
Iron	0.23	mg/L		0.02		E200.7	07/13/18 01:43 / rjh
Lead	ND	mg/L		0.001		E200.8	07/13/18 22:23 / rlh
Lithium	ND	mg/L		0.1		E200.7	07/13/18 18:41 / rjh
Magnesium	ND	mg/L		1		E200.7	07/13/18 01:43 / rjh
Manganese	0.001	mg/L		0.001		E200.8	07/13/18 22:23 / rlh
Molybdenum	0.001	mg/L		0.001		E200.8	07/13/18 22:23 / rlh
Nickel	ND	mg/L		0.005		E200.7	07/13/18 01:43 / rjh
Potassium	ND	mg/L		1		E200.7	07/13/18 01:43 / rjh
Selenium	0.156	mg/L		0.001		E200.8	07/16/18 23:59 / rlh
Silicon	1.1	mg/L		0.1		E200.7	07/13/18 01:43 / rjh
Silver	ND	mg/L		0.001		E200.8	07/16/18 23:59 / rlh
Sodium	20	mg/L		1		E200.7	07/13/18 01:43 / rjh
Strontium	ND	mg/L		0.01		E200.7	07/13/18 01:43 / rjh
Thallium	ND	mg/L		0.0005		E200.8	07/13/18 22:23 / rlh
Tin	ND	mg/L		0.01		E200.8	07/13/18 22:23 / rlh
Titanium	ND	mg/L		0.005		E200.8	07/16/18 23:59 / rlh
Uranium	0.0005	mg/L		0.0003		E200.8	07/13/18 22:23 / rlh
Vanadium	ND	mg/L		0.01		E200.8	07/13/18 22:23 / rlh
Zinc	ND	mg/L		0.01		E200.7	07/13/18 01:43 / rjh
<b>METALS, TOTAL</b>							
Selenium	0.190	mg/L	D	0.003		A3114 C	07/17/18 17:03 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.195	mg/L	D	0.003		A3114 C	07/17/18 15:21 / eli-h
Selenium-VI	ND	mg/L		0.001		A3114 C	07/18/18 13:11 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18070902-009  
**Client Sample ID:** F3

**Report Date:** 07/24/18  
**Collection Date:** 07/10/18 09:00  
**Date Received:** 07/11/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	22	mg/L	D	2		A5310 C	07/17/18 04:49 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.11	mg/L		0.03		E200.7	07/13/18 01:54 / rjh
Antimony	ND	mg/L		0.001		E200.8	07/17/18 00:03 / rlh
Arsenic	ND	mg/L		0.001		E200.8	07/13/18 22:28 / rlh
Barium	0.05	mg/L		0.05		E200.7	07/13/18 01:54 / rjh
Beryllium	ND	mg/L		0.001		E200.7	07/13/18 01:54 / rjh
Boron	ND	mg/L		0.05		E200.7	07/13/18 01:54 / rjh
Cadmium	ND	mg/L		0.001		E200.8	07/13/18 22:28 / rlh
Calcium	6	mg/L		1		E200.7	07/13/18 01:54 / rjh
Chromium	0.010	mg/L		0.005		E200.8	07/13/18 22:28 / rlh
Cobalt	ND	mg/L		0.005		E200.8	07/13/18 22:28 / rlh
Copper	ND	mg/L		0.005		E200.7	07/13/18 01:54 / rjh
Iron	0.07	mg/L		0.02		E200.7	07/13/18 01:54 / rjh
Lead	ND	mg/L		0.001		E200.8	07/13/18 22:28 / rlh
Lithium	ND	mg/L		0.1		E200.7	07/13/18 18:45 / rjh
Magnesium	2	mg/L		1		E200.7	07/13/18 01:54 / rjh
Manganese	ND	mg/L		0.001		E200.8	07/13/18 22:28 / rlh
Molybdenum	ND	mg/L		0.001		E200.8	07/13/18 22:28 / rlh
Nickel	ND	mg/L		0.005		E200.7	07/13/18 01:54 / rjh
Potassium	ND	mg/L		1		E200.7	07/13/18 01:54 / rjh
Selenium	0.190	mg/L		0.001		E200.8	07/17/18 00:03 / rlh
Silicon	2.1	mg/L		0.1		E200.7	07/13/18 01:54 / rjh
Silver	ND	mg/L		0.001		E200.8	07/17/18 00:03 / rlh
Sodium	19	mg/L		1		E200.7	07/13/18 01:54 / rjh
Strontium	0.03	mg/L		0.01		E200.7	07/13/18 01:54 / rjh
Thallium	ND	mg/L		0.0005		E200.8	07/13/18 22:28 / rlh
Tin	ND	mg/L		0.01		E200.8	07/13/18 22:28 / rlh
Titanium	ND	mg/L		0.005		E200.8	07/17/18 00:03 / rlh
Uranium	ND	mg/L		0.0003		E200.8	07/13/18 22:28 / rlh
Vanadium	ND	mg/L		0.01		E200.8	07/13/18 22:28 / rlh
Zinc	ND	mg/L		0.01		E200.7	07/13/18 01:54 / rjh
<b>METALS, TOTAL</b>							
Selenium	0.186	mg/L	D	0.003		A3114 C	07/17/18 17:05 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	07/17/18 15:22 / eli-h
Selenium-VI	0.186	mg/L		0.001		A3114 C	07/18/18 13:11 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 07/18/18  
**Work Order:** B18070902

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: A5310 C</b>							Analytical Run: TOC3-C_180716A		
<b>Lab ID: CCV-10292</b>	Continuing Calibration Verification Standard								
Organic Carbon, Dissolved (DOC)	4.82	mg/L	0.50	96	90	110			07/16/18 23:37
<b>Method: A5310 C</b>							Batch: R237462		
<b>Lab ID: LCS-10002</b>	Laboratory Control Sample								
Organic Carbon, Dissolved (DOC)	4.89	mg/L	0.50	95	90	110			Run: TOC3-C_180716A 07/16/18 23:07
<b>Lab ID: MBLK</b>	Method Blank								
Organic Carbon, Dissolved (DOC)	0.1	mg/L	0.04						Run: TOC3-C_180716A 07/16/18 23:22
<b>Lab ID: C18070470-002BMS</b>	Sample Matrix Spike								
Organic Carbon, Dissolved (DOC)	8.13	mg/L	0.50	102	85	115			Run: TOC3-C_180716A 07/17/18 00:07
<b>Lab ID: C18070470-002BMSD</b>	Sample Matrix Spike Duplicate								
Organic Carbon, Dissolved (DOC)	8.19	mg/L	0.50	103	85	115	0.8	20	Run: TOC3-C_180716A 07/17/18 00:23

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 07/19/18  
**Work Order:** B18070902

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A3114 C									ritical Run: SELENIUM PSA MILLENIUM_180717A
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard								
Selenium-IV	0.0208	mg/L	0.0010	104	90	110			07/17/18 14:57
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								
Selenium-IV	0.0202	mg/L	0.0010	101	90	110			07/17/18 14:59
<b>Method:</b> A3114 C									Batch: 42297
<b>Lab ID:</b> MB-42297	Method Blank								
Selenium-IV	ND	mg/L	0.0006						Run: SELENIUM PSA MILLENIUM_ 07/17/18 15:02
<b>Lab ID:</b> LFB-42297	Laboratory Fortified Blank								
Selenium-IV	0.0200	mg/L	0.0010	100	85	115			Run: SELENIUM PSA MILLENIUM_ 07/17/18 15:03
<b>Lab ID:</b> LCS-42297	Laboratory Control Sample								
Selenium-IV	0.0201	mg/L	0.0010	101	90	110			Run: SELENIUM PSA MILLENIUM_ 07/17/18 15:05
<b>Lab ID:</b> B18070902-001CMS	Sample Matrix Spike								
Selenium-IV	0.0600	mg/L	0.0030	96	70	130			Run: SELENIUM PSA MILLENIUM_ 07/17/18 15:08
<b>Lab ID:</b> B18070902-001CMSD	Sample Matrix Spike Duplicate								
Selenium-IV	0.0611	mg/L	0.0030	97	70	130	1.9	20	Run: SELENIUM PSA MILLENIUM_ 07/17/18 15:10
<b>Method:</b> A3114 C									ritical Run: SELENIUM PSA MILLENIUM_180717B
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard								
Selenium	0.0373	mg/L	0.0010	93	90	110			07/17/18 16:39
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								
Selenium	0.0205	mg/L	0.0010	103	90	110			07/17/18 16:41
<b>Method:</b> A3114 C									Batch: 42296
<b>Lab ID:</b> MB-42296	Method Blank								
Selenium	ND	mg/L	0.0005						Run: SELENIUM PSA MILLENIUM_ 07/17/18 16:44
<b>Lab ID:</b> LCS-42296	Laboratory Control Sample								
Selenium	0.0369	mg/L	0.0010	92	90	110			Run: SELENIUM PSA MILLENIUM_ 07/17/18 16:50
<b>Lab ID:</b> H18070338-001CMS	Sample Matrix Spike								
Selenium	0.0286	mg/L	0.0010	71	70	130			Run: SELENIUM PSA MILLENIUM_ 07/17/18 17:08
<b>Lab ID:</b> H18070338-001CMSD	Sample Matrix Spike Duplicate								
Selenium	0.0294	mg/L	0.0010	74	70	130	3.0	20	Run: SELENIUM PSA MILLENIUM_ 07/17/18 17:09

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 07/24/18  
**Work Order:** B18070902

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>								Analytical Run: ICP203-B_180713A		
<b>Lab ID:</b>	<b>ICV</b>	10 Continuing Calibration Verification Standard								07/13/18 11:52
Barium		2.42	mg/L	0.10	97	95	105			
Boron		2.44	mg/L	0.10	98	95	105			
Calcium		24.3	mg/L	1.0	97	95	105			
Iron		2.43	mg/L	0.020	97	95	105			
Lithium		1.23	mg/L	0.10	99	95	105			
Magnesium		24.6	mg/L	1.0	98	95	105			
Silicon		4.94	mg/L	0.10	99	95	105			
Sodium		24.8	mg/L	1.0	99	95	105			
Strontium		2.42	mg/L	0.10	97	95	105			
Zinc		2.44	mg/L	0.010	98	95	105			
<b>Method: E200.7</b>								Batch: R303771		
<b>Lab ID:</b>	<b>LFB-6500DIS180710A</b>	10 Laboratory Fortified Blank						Run: ICP203-B_180713A		07/13/18 12:07
Barium		0.976	mg/L	0.10	98	85	115			
Boron		1.02	mg/L	0.10	102	85	115			
Calcium		50.7	mg/L	1.0	101	85	115			
Iron		5.02	mg/L	0.11	100	85	115			
Lithium		1.00	mg/L	0.10	100	85	115			
Magnesium		50.3	mg/L	1.0	101	85	115			
Silicon		9.53	mg/L	0.10	95	85	115			
Sodium		50.2	mg/L	1.0	100	85	115			
Strontium		0.988	mg/L	0.10	99	85	115			
Zinc		0.954	mg/L	0.010	95	85	115			
<b>Lab ID:</b>	<b>MB-6500DIS180710A</b>	10 Method Blank						Run: ICP203-B_180713A		07/13/18 13:18
Barium		ND	mg/L	0.0010						
Boron		ND	mg/L	0.01						
Calcium		ND	mg/L	0.07						
Iron		ND	mg/L	0.02						
Lithium		ND	mg/L	0.02						
Magnesium		ND	mg/L	0.02						
Silicon		ND	mg/L	0.07						
Sodium		ND	mg/L	0.1						
Strontium		ND	mg/L	0.001						
Zinc		ND	mg/L	0.002						
<b>Lab ID:</b>	<b>B18070902-001AMS2</b>	10 Sample Matrix Spike						Run: ICP203-B_180713A		07/13/18 18:03
Barium		1.13	mg/L	0.050	109	70	130			
Boron		1.16	mg/L	0.050	114	70	130			
Calcium		63.6	mg/L	1.0	112	70	130			
Iron		6.24	mg/L	0.020	115	70	130			
Lithium		1.20	mg/L	0.10	120	70	130			
Magnesium		58.1	mg/L	1.0	113	70	130			
Silicon		19.3	mg/L	0.10	141	70	130			S
Sodium		72.2	mg/L	1.0	113	70	130			

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 07/24/18  
**Work Order:** B18070902

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b> <span style="float: right;">Batch: R303771</span>										
<b>Lab ID:</b> B18070902-001AMS2	10	Sample Matrix Spike				Run: ICP203-B_180713A			07/13/18 18:03	
Strontium		1.14	mg/L	0.010	111	70	130			
Zinc		0.953	mg/L	0.010	94	70	130			
<b>Lab ID:</b> B18070902-001AMSD	10	Sample Matrix Spike Duplicate				Run: ICP203-B_180713A			07/13/18 18:07	
Barium		1.14	mg/L	0.050	111	70	130	1.0	20	
Boron		1.17	mg/L	0.050	115	70	130	1.0	20	
Calcium		64.2	mg/L	1.0	114	70	130	1.0	20	
Iron		6.34	mg/L	0.020	117	70	130	1.5	20	
Lithium		1.20	mg/L	0.10	121	70	130	0.4	20	
Magnesium		58.6	mg/L	1.0	114	70	130	0.7	20	
Silicon		19.4	mg/L	0.10	141	70	130	0.1	20	S
Sodium		72.7	mg/L	1.0	114	70	130	0.7	20	
Strontium		1.15	mg/L	0.010	112	70	130	0.9	20	
Zinc		0.970	mg/L	0.010	96	70	130	1.7	20	
<b>Lab ID:</b> B18070902-009AMS2	10	Sample Matrix Spike				Run: ICP203-B_180713A			07/13/18 18:49	
Barium		1.24	mg/L	0.050	119	70	130			
Boron		1.23	mg/L	0.050	123	70	130			
Calcium		64.2	mg/L	1.0	117	70	130			
Iron		6.28	mg/L	0.020	124	70	130			
Lithium		1.44	mg/L	0.10	144	70	130			S
Magnesium		63.5	mg/L	1.0	123	70	130			
Silicon		11.1	mg/L	0.10	90	70	130			
Sodium		83.8	mg/L	1.0	127	70	130			
Strontium		1.23	mg/L	0.010	120	70	130			
Zinc		0.974	mg/L	0.010	96	70	130			
<b>Lab ID:</b> B18070902-009AMSD	10	Sample Matrix Spike Duplicate				Run: ICP203-B_180713A			07/13/18 18:53	
Barium		1.28	mg/L	0.050	122	70	130	2.4	20	
Boron		1.27	mg/L	0.050	127	70	130	3.2	20	
Calcium		66.2	mg/L	1.0	121	70	130	3.2	20	
Iron		6.48	mg/L	0.020	128	70	130	3.1	20	
Lithium		1.44	mg/L	0.10	144	70	130	0.2	20	S
Magnesium		65.0	mg/L	1.0	126	70	130	2.3	20	
Silicon		10.8	mg/L	0.10	86	70	130	3.3	20	
Sodium		84.6	mg/L	1.0	129	70	130	0.9	20	
Strontium		1.26	mg/L	0.010	124	70	130	2.6	20	
Zinc		0.955	mg/L	0.010	95	70	130	1.9	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 07/24/18  
**Work Order:** B18070902

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.7</b>								Analytical Run: ICP203-B_180713B			
<b>Lab ID: ICV</b>	3	Continuing Calibration Verification Standard								07/17/18 09:58	
Boron		2.48	mg/L	0.10	99	95	105				
Lithium		1.26	mg/L	0.10	101	95	105				
Potassium		25.3	mg/L	1.0	101	95	105				
<b>Method: E200.7</b>								Batch: R303930			
<b>Lab ID: MB-6500DIS180717A</b>	3	Method Blank						Run: ICP203-B_180713B		07/17/18 11:24	
Boron		ND	mg/L	0.01							
Lithium		ND	mg/L	0.02							
Potassium		ND	mg/L	0.1							
<b>Lab ID: LFB-6500DIS180717A</b>	3	Laboratory Fortified Blank						Run: ICP203-B_180713B		07/17/18 11:28	
Boron		0.958	mg/L	0.10	96	85	115				
Lithium		0.982	mg/L	0.10	98	85	115				
Potassium		49.1	mg/L	1.0	98	85	115				
<b>Lab ID: B18070902-002AMS2</b>	3	Sample Matrix Spike						Run: ICP203-B_180713B		07/17/18 21:45	
Boron		1.01	mg/L	0.050	98	70	130				
Lithium		1.12	mg/L	0.10	110	70	130				
Potassium		56.6	mg/L	1.0	109	70	130				
<b>Lab ID: B18070902-002AMSD</b>	3	Sample Matrix Spike Duplicate						Run: ICP203-B_180713B		07/17/18 21:49	
Boron		1.03	mg/L	0.050	100	70	130	1.3	20		
Lithium		1.15	mg/L	0.10	113	70	130	3.3	20		
Potassium		58.3	mg/L	1.0	113	70	130	3.0	20		

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.





# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 07/24/18  
**Work Order:** B18070902

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>								Analytical Run: ICP204-B_180712A		
<b>Lab ID: ICV</b>	14 Continuing Calibration Verification Standard								07/12/18 11:25	
Aluminum		2.50	mg/L	0.10	100	95	105			
Barium		2.47	mg/L	0.10	99	95	105			
Beryllium		1.22	mg/L	0.010	98	95	105			
Boron		2.45	mg/L	0.10	98	95	105			
Calcium		25.1	mg/L	1.0	100	95	105			
Copper		2.46	mg/L	0.010	98	95	105			
Iron		2.52	mg/L	0.020	101	95	105			
Magnesium		25.2	mg/L	1.0	101	95	105			
Nickel		2.42	mg/L	0.050	97	95	105			
Potassium		25.1	mg/L	1.0	100	95	105			
Silicon		4.94	mg/L	0.10	99	95	105			
Sodium		25.0	mg/L	1.0	100	95	105			
Strontium		2.48	mg/L	0.10	99	95	105			
Zinc		2.42	mg/L	0.010	97	95	105			

<b>Method: E200.7</b>								Batch: R303696			
<b>Lab ID: MB-7400DIS180712A</b>	14 Method Blank								Run: ICP204-B_180712A		07/12/18 12:37
Aluminum		ND	mg/L	0.03							
Barium		ND	mg/L	0.0010							
Beryllium		ND	mg/L	0.0005							
Boron		ND	mg/L	0.01							
Calcium		0.2	mg/L	0.07							
Copper		ND	mg/L	0.004							
Iron		ND	mg/L	0.02							
Magnesium		ND	mg/L	0.02							
Nickel		ND	mg/L	0.004							
Potassium		ND	mg/L	0.1							
Silicon		ND	mg/L	0.07							
Sodium		ND	mg/L	0.1							
Strontium		ND	mg/L	0.001							
Zinc		ND	mg/L	0.002							

<b>Lab ID: LFB-7400DIS180712A</b>	14 Laboratory Fortified Blank								Run: ICP204-B_180712A		07/12/18 12:45
Aluminum		5.68	mg/L	0.10	114	85	115				
Barium		1.11	mg/L	0.10	111	85	115				
Beryllium		0.538	mg/L	0.010	108	85	115				
Boron		1.12	mg/L	0.10	112	85	115				
Calcium		57.0	mg/L	1.0	114	85	115				
Copper		1.10	mg/L	0.010	110	85	115				
Iron		5.70	mg/L	0.020	114	85	115				
Magnesium		57.4	mg/L	1.0	115	85	115				
Nickel		0.959	mg/L	0.050	96	85	115				
Potassium		57.7	mg/L	1.0	115	85	115				
Silicon		8.79	mg/L	0.10	88	85	115				

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 07/24/18  
**Work Order:** B18070902

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b> <span style="float: right;">Batch: R303696</span>										
<b>Lab ID:</b> LFB-7400DIS180712A	14	Laboratory Fortified Blank					Run: ICP204-B_180712A			07/12/18 12:45
Sodium		57.6	mg/L	1.0	115	85	115			
Strontium		1.12	mg/L	0.10	112	85	115			
Zinc		0.994	mg/L	0.010	99	85	115			
<b>Lab ID:</b> B18070902-008AMS2	14	Sample Matrix Spike					Run: ICP204-B_180712A			07/13/18 01:47
Aluminum		5.41	mg/L	0.036	104	70	130			
Barium		1.03	mg/L	0.050	101	70	130			
Beryllium		0.479	mg/L	0.0010	96	70	130			
Boron		1.02	mg/L	0.050	102	70	130			
Calcium		51.8	mg/L	1.0	99	70	130			
Copper		1.01	mg/L	0.0050	101	70	130			
Iron		5.28	mg/L	0.020	101	70	130			
Magnesium		50.8	mg/L	1.0	100	70	130			
Nickel		0.942	mg/L	0.0050	94	70	130			
Potassium		53.5	mg/L	1.0	106	70	130			
Silicon		11.3	mg/L	0.10	101	70	130			
Sodium		71.2	mg/L	1.0	103	70	130			
Strontium		1.02	mg/L	0.010	101	70	130			
Zinc		0.990	mg/L	0.010	98	70	130			
<b>Lab ID:</b> B18070902-008AMSD	14	Sample Matrix Spike Duplicate					Run: ICP204-B_180712A			07/13/18 01:51
Aluminum		5.38	mg/L	0.036	103	70	130	0.6	20	
Barium		1.02	mg/L	0.050	100	70	130	1.0	20	
Beryllium		0.478	mg/L	0.0010	96	70	130	0.3	20	
Boron		1.02	mg/L	0.050	102	70	130	0.7	20	
Calcium		51.9	mg/L	1.0	100	70	130	0.0	20	
Copper		0.998	mg/L	0.0050	100	70	130	1.1	20	
Iron		5.27	mg/L	0.020	101	70	130	0.2	20	
Magnesium		50.7	mg/L	1.0	100	70	130	0.2	20	
Nickel		0.943	mg/L	0.0050	94	70	130	0.2	20	
Potassium		52.7	mg/L	1.0	105	70	130	1.5	20	
Silicon		11.2	mg/L	0.10	101	70	130	0.4	20	
Sodium		70.9	mg/L	1.0	102	70	130	0.3	20	
Strontium		1.01	mg/L	0.010	101	70	130	0.7	20	
Zinc		0.991	mg/L	0.010	99	70	130	0.1	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 07/24/18  
**Work Order:** B18070902

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.7</b>								Analytical Run: ICP204-B_180716A			
<b>Lab ID: ICV</b>	5	Continuing Calibration Verification Standard								07/16/18 12:47	
Beryllium		1.22	mg/L	0.010	97	95	105				
Calcium		24.7	mg/L	1.0	99	95	105				
Magnesium		24.9	mg/L	1.0	99	95	105				
Silicon		4.96	mg/L	0.10	99	95	105				
Sodium		24.8	mg/L	1.0	99	95	105				
<b>Method: E200.7</b>								Batch: R303845			
<b>Lab ID: MB-7400DIS180712A</b>	5	Method Blank						Run: ICP204-B_180716A		07/16/18 11:07	
Beryllium		ND	mg/L	0.0005							
Calcium		ND	mg/L	0.07							
Magnesium		ND	mg/L	0.02							
Silicon		ND	mg/L	0.07							
Sodium		ND	mg/L	0.1							
<b>Lab ID: LFB-7400DIS180712A</b>	5	Laboratory Fortified Blank						Run: ICP204-B_180716A		07/16/18 11:15	
Beryllium		0.477	mg/L	0.010	95	85	115				
Calcium		50.0	mg/L	1.0	100	85	115				
Magnesium		49.6	mg/L	1.0	99	85	115				
Silicon		9.92	mg/L	0.10	99	85	115				
Sodium		49.5	mg/L	1.0	99	85	115				
<b>Lab ID: B18070902-002AMS2</b>	5	Sample Matrix Spike						Run: ICP204-B_180716A		07/17/18 03:06	
Beryllium		0.439	mg/L	0.0010	88	70	130				
Calcium		88.2	mg/L	1.0	96	70	130				
Magnesium		79.5	mg/L	1.0	100	70	130				
Silicon		31.0	mg/L	0.10	260	70	130			S	
Sodium		52.6	mg/L	1.0	91	70	130				
<b>Lab ID: B18070902-002AMSD</b>	5	Sample Matrix Spike Duplicate						Run: ICP204-B_180716A		07/17/18 03:17	
Beryllium		0.443	mg/L	0.0010	89	70	130	0.9	20		
Calcium		89.0	mg/L	1.0	98	70	130	0.9	20		
Magnesium		80.1	mg/L	1.0	101	70	130	0.8	20		
Silicon		31.8	mg/L	0.10	268	70	130	2.5	20	S	
Sodium		52.8	mg/L	1.0	91	70	130	0.4	20		

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 07/24/18  
**Work Order:** B18070902

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.8</b>										Analytical Run: ICPMS206-B_180713A	
<b>Lab ID: QCS</b>	18	Initial Calibration Verification Standard							07/13/18 17:23		
Arsenic		0.0500	mg/L	0.0050	100	90	110				
Barium		0.0487	mg/L	0.10	97	90	110				
Cadmium		0.0241	mg/L	0.0010	96	90	110				
Chromium		0.0500	mg/L	0.010	100	90	110				
Cobalt		0.0501	mg/L	0.010	100	90	110				
Copper		0.0515	mg/L	0.010	103	90	110				
Iron		0.262	mg/L	0.020	105	90	110				
Lead		0.0485	mg/L	0.010	97	90	110				
Manganese		0.251	mg/L	0.010	100	90	110				
Molybdenum		0.0481	mg/L	0.0050	96	90	110				
Nickel		0.0502	mg/L	0.010	100	90	110				
Strontium		0.0501	mg/L	0.10	100	90	110				
Thallium		0.0486	mg/L	0.10	97	90	110				
Tin		0.0481	mg/L	0.10	96	90	110				
Titanium		0.0478	mg/L	0.010	96	90	110				
Uranium		0.0194	mg/L	0.0010	97	90	110				
Vanadium		0.0487	mg/L	0.10	97	90	110				
Zinc		0.0490	mg/L	0.010	98	90	110				

<b>Method: E200.8</b>										Batch: R303841	
<b>Lab ID: LRB</b>	18	Method Blank							Run: ICPMS206-B_180713A 07/13/18 17:40		
Arsenic		ND	mg/L	0.0002							
Barium		ND	mg/L	0.00004							
Cadmium		ND	mg/L	0.00003							
Chromium		ND	mg/L	0.0002							
Cobalt		ND	mg/L	0.00004							
Copper		ND	mg/L	0.0003							
Iron		ND	mg/L	0.001							
Lead		ND	mg/L	0.00005							
Manganese		0.0001	mg/L	0.00010							
Molybdenum		ND	mg/L	0.00005							
Nickel		ND	mg/L	0.0006							
Strontium		ND	mg/L	0.0001							
Thallium		ND	mg/L	0.00007							
Tin		ND	mg/L	0.001							
Titanium		ND	mg/L	0.0001							
Uranium		ND	mg/L	0.00005							
Vanadium		ND	mg/L	0.001							
Zinc		ND	mg/L	0.003							

<b>Lab ID: LFB</b>	18	Laboratory Fortified Blank							Run: ICPMS206-B_180713A 07/13/18 17:48		
Arsenic		0.0487	mg/L	0.0050	97	85	115				
Barium		0.0442	mg/L	0.10	88	85	115				
Cadmium		0.0434	mg/L	0.0010	87	85	115				

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 07/24/18  
**Work Order:** B18070902

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.8</b>										Batch: R303841	
<b>Lab ID:</b>	<b>LFB</b>	18 Laboratory Fortified Blank			Run: ICPMS206-B_180713A			07/13/18 17:48			
Chromium		0.0488	mg/L	0.010	98	85	115				
Cobalt		0.0432	mg/L	0.010	86	85	115				
Copper		0.0491	mg/L	0.010	98	85	115				
Iron		5.04	mg/L	0.020	101	85	115				
Lead		0.0450	mg/L	0.010	90	85	115				
Manganese		0.0481	mg/L	0.010	96	85	115				
Molybdenum		0.0446	mg/L	0.0050	89	85	115				
Nickel		0.0482	mg/L	0.010	96	85	115				
Strontium		0.0443	mg/L	0.10	89	85	115				
Thallium		0.0499	mg/L	0.10	100	85	115				
Tin		0.0432	mg/L	0.10	86	85	115				
Titanium		0.0463	mg/L	0.010	93	85	115				
Uranium		0.0459	mg/L	0.0010	92	85	115				
Vanadium		0.0494	mg/L	0.10	99	85	115				
Zinc		0.0434	mg/L	0.010	87	85	115				
<b>Lab ID:</b>	<b>B18070902-004AMS</b>	18 Sample Matrix Spike			Run: ICPMS206-B_180713A			07/13/18 21:58			
Arsenic		0.0737	mg/L	0.0010	98	70	130				
Barium		0.133	mg/L	0.050	95	70	130				
Cadmium		0.0488	mg/L	0.0010	98	70	130				
Chromium		0.0472	mg/L	0.0050	94	70	130				
Cobalt		0.0438	mg/L	0.0050	87	70	130				
Copper		0.0489	mg/L	0.0050	98	70	130				
Iron		4.48	mg/L	0.020	90	70	130				
Lead		0.0232	mg/L	0.0010	46	70	130			S	
Manganese		0.0460	mg/L	0.0010	90	70	130				
Molybdenum		0.0565	mg/L	0.0010	102	70	130				
Nickel		0.0502	mg/L	0.0050	96	70	130				
Strontium		0.256	mg/L	0.010		70	130			A	
Thallium		0.0350	mg/L	0.00050	70	70	130				
Tin		0.0520	mg/L	0.010	104	70	130				
Titanium		0.0449	mg/L	0.0050	88	70	130				
Uranium		0.0263	mg/L	0.00030	42	70	130			S	
Vanadium		0.0473	mg/L	0.010	95	70	130				
Zinc		0.0477	mg/L	0.010	95	70	130				
<b>Lab ID:</b>	<b>B18070902-004AMSD</b>	18 Sample Matrix Spike Duplicate			Run: ICPMS206-B_180713A			07/13/18 22:02			
Arsenic		0.0714	mg/L	0.0010	94	70	130	3.1	20		
Barium		0.134	mg/L	0.050	95	70	130	0.2	20		
Cadmium		0.0477	mg/L	0.0010	95	70	130	2.2	20		
Chromium		0.0458	mg/L	0.0050	92	70	130	2.9	20		
Cobalt		0.0440	mg/L	0.0050	88	70	130	0.3	20		
Copper		0.0476	mg/L	0.0050	95	70	130	2.6	20		
Iron		4.44	mg/L	0.020	89	70	130	1.1	20		

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 07/24/18  
**Work Order:** B18070902

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b> <span style="float: right;">Batch: R303841</span>										
<b>Lab ID:</b> B18070902-004AMSD	18	Sample Matrix Spike Duplicate			Run: ICPMS206-B_180713A				07/13/18 22:02	
Lead		0.0439	mg/L	0.0010	88	70	130	62	20	R
Manganese		0.0450	mg/L	0.0010	88	70	130	2.2	20	
Molybdenum		0.0556	mg/L	0.0010	100	70	130	1.6	20	
Nickel		0.0493	mg/L	0.0050	95	70	130	1.8	20	
Strontium		0.247	mg/L	0.010		70	130	3.5	20	A
Thallium		0.0445	mg/L	0.00050	89	70	130	24	20	R
Tin		0.0513	mg/L	0.010	103	70	130	1.4	20	
Titanium		0.0460	mg/L	0.0050	90	70	130	2.3	20	
Uranium		0.0497	mg/L	0.00030	89	70	130	61	20	R
Vanadium		0.0459	mg/L	0.010	92	70	130	3.0	20	
Zinc		0.0465	mg/L	0.010	93	70	130	2.5	20	
<b>Lab ID:</b> B18071035-001BMS	18	Sample Matrix Spike			Run: ICPMS206-B_180713A				07/13/18 22:53	
Arsenic		0.0485	mg/L	0.0010	95	70	130			
Barium		0.0940	mg/L	0.050	102	70	130			
Cadmium		0.0486	mg/L	0.0010	97	70	130			
Chromium		0.0453	mg/L	0.0050	90	70	130			
Cobalt		0.0438	mg/L	0.0050	87	70	130			
Copper		0.0480	mg/L	0.0050	96	70	130			
Iron		4.59	mg/L	0.020	91	70	130			
Lead		0.0471	mg/L	0.0010	94	70	130			
Manganese		0.0774	mg/L	0.0010	87	70	130			
Molybdenum		0.0557	mg/L	0.0010	100	70	130			
Nickel		0.0483	mg/L	0.0050	92	70	130			
Strontium		1.14	mg/L	0.010		70	130			A
Thallium		0.0485	mg/L	0.00050	97	70	130			
Tin		0.0510	mg/L	0.010	102	70	130			
Titanium		0.0468	mg/L	0.0050	90	70	130			
Uranium		0.0493	mg/L	0.00030	95	70	130			
Vanadium		0.0477	mg/L	0.010	95	70	130			
Zinc		0.0475	mg/L	0.010	95	70	130			
<b>Lab ID:</b> B18071035-001BMSD	18	Sample Matrix Spike Duplicate			Run: ICPMS206-B_180713A				07/13/18 22:57	
Arsenic		0.0491	mg/L	0.0010	97	70	130	1.2	20	
Barium		0.0921	mg/L	0.050	98	70	130	2.1	20	
Cadmium		0.0479	mg/L	0.0010	96	70	130	1.6	20	
Chromium		0.0464	mg/L	0.0050	92	70	130	2.3	20	
Cobalt		0.0438	mg/L	0.0050	87	70	130	0.1	20	
Copper		0.0486	mg/L	0.0050	97	70	130	1.2	20	
Iron		4.59	mg/L	0.020	91	70	130	0.1	20	
Lead		0.0467	mg/L	0.0010	93	70	130	0.7	20	
Manganese		0.0782	mg/L	0.0010	89	70	130	1.0	20	
Molybdenum		0.0566	mg/L	0.0010	102	70	130	1.7	20	
Nickel		0.0485	mg/L	0.0050	93	70	130	0.5	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

R - RPD exceeds advisory limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 07/24/18  
**Work Order:** B18070902

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>										
Batch: R303841										
<b>Lab ID:</b>	<b>B18071035-001BMSD</b>			18	Sample Matrix Spike Duplicate		Run: ICPMS206-B_180713A			07/13/18 22:57
Strontium		1.15	mg/L	0.010		70	130	0.3	20	A
Thallium		0.0490	mg/L	0.00050	98	70	130	1.1	20	
Tin		0.0519	mg/L	0.010	104	70	130	1.7	20	
Titanium		0.0461	mg/L	0.0050	89	70	130	1.5	20	
Uranium		0.0486	mg/L	0.00030	94	70	130	1.5	20	
Vanadium		0.0482	mg/L	0.010	96	70	130	1.0	20	
Zinc		0.0471	mg/L	0.010	94	70	130	0.9	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 07/24/18  
**Work Order:** B18070902

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.8</b>								Analytical Run: ICPMS206-B_180716A			
<b>Lab ID: QCS</b>	8	Initial Calibration Verification Standard						07/16/18 12:59			
Aluminum		0.251	mg/L	0.10	100	90	110				
Antimony		0.0507	mg/L	0.050	101	90	110				
Lead		0.0495	mg/L	0.010	99	90	110				
Selenium		0.0510	mg/L	0.0050	102	90	110				
Silver		0.0252	mg/L	0.0050	101	90	110				
Thallium		0.0508	mg/L	0.10	102	90	110				
Titanium		0.0494	mg/L	0.010	99	90	110				
Uranium		0.0196	mg/L	0.0010	98	90	110				
<b>Lab ID: QCS</b>	8	Initial Calibration Verification Standard						07/16/18 23:17			
Aluminum		0.258	mg/L	0.10	103	90	110				
Antimony		0.0516	mg/L	0.050	103	90	110				
Lead		0.0505	mg/L	0.010	101	90	110				
Selenium		0.0502	mg/L	0.0050	100	90	110				
Silver		0.0256	mg/L	0.0050	102	90	110				
Thallium		0.0506	mg/L	0.10	101	90	110				
Titanium		0.0514	mg/L	0.010	103	90	110				
Uranium		0.0199	mg/L	0.0010	99	90	110				
<b>Method: E200.8</b>								Batch: R303858			
<b>Lab ID: LRB</b>	8	Method Blank						Run: ICPMS206-B_180716A		07/16/18 11:13	
Aluminum		ND	mg/L	0.0008							
Antimony		ND	mg/L	0.0004							
Lead		ND	mg/L	0.00005							
Selenium		ND	mg/L	0.0003							
Silver		0.00006	mg/L	0.00002							
Thallium		ND	mg/L	0.00007							
Titanium		ND	mg/L	0.0001							
Uranium		ND	mg/L	0.00005							
<b>Lab ID: LFB</b>	8	Laboratory Fortified Blank						Run: ICPMS206-B_180716A		07/16/18 11:21	
Aluminum		0.0515	mg/L	0.10	103	85	115				
Antimony		0.0486	mg/L	0.050	97	85	115				
Lead		0.0492	mg/L	0.010	98	85	115				
Selenium		0.0496	mg/L	0.0050	99	85	115				
Silver		0.0201	mg/L	0.0050	100	85	115				
Thallium		0.0516	mg/L	0.10	103	85	115				
Titanium		0.0528	mg/L	0.010	106	85	115				
Uranium		0.0504	mg/L	0.0010	101	85	115				
<b>Lab ID: B18070902-005AMS</b>	8	Sample Matrix Spike						Run: ICPMS206-B_180716A		07/16/18 22:12	
Aluminum		1.28	mg/L	0.030		70	130			A	
Antimony		0.0451	mg/L	0.0010	90	70	130				
Lead		0.0464	mg/L	0.0010	91	70	130				
Selenium		0.0500	mg/L	0.0010	97	70	130				

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.





## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 07/24/18  
**Work Order:** B18070902

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b> <span style="float: right;">Batch: R303858</span>										
<b>Lab ID:</b> B18070902-005AMS	8	Sample Matrix Spike					Run: ICPMS206-B_180716A		07/16/18 22:12	
Silver		0.0232	mg/L	0.0010	114	70	130			
Thallium		0.0489	mg/L	0.00050	98	70	130			
Titanium		0.0790	mg/L	0.0050	105	70	130			
Uranium		0.0455	mg/L	0.00030	91	70	130			
<b>Lab ID:</b> B18070902-005AMSD	8	Sample Matrix Spike Duplicate					Run: ICPMS206-B_180716A		07/16/18 22:16	
Aluminum		1.31	mg/L	0.030		70	130	2.7	20	A
Antimony		0.0445	mg/L	0.0010	89	70	130	1.2	20	
Lead		0.0469	mg/L	0.0010	92	70	130	0.9	20	
Selenium		0.0495	mg/L	0.0010	96	70	130	1.0	20	
Silver		0.0214	mg/L	0.0010	105	70	130	7.9	20	
Thallium		0.0493	mg/L	0.00050	98	70	130	0.7	20	
Titanium		0.0808	mg/L	0.0050	109	70	130	2.3	20	
Uranium		0.0459	mg/L	0.00030	91	70	130	0.8	20	
<b>Lab ID:</b> B18071101-002BMS	8	Sample Matrix Spike					Run: ICPMS206-B_180716A		07/17/18 00:24	
Aluminum		1.02	mg/L	0.030		70	130			A
Antimony		0.0465	mg/L	0.0010	93	70	130			
Lead		0.0489	mg/L	0.0010	97	70	130			
Selenium		0.0544	mg/L	0.0010	106	70	130			
Silver		0.0199	mg/L	0.0010	99	70	130			
Thallium		0.0487	mg/L	0.00050	97	70	130			
Titanium		0.0548	mg/L	0.0050	106	70	130			
Uranium		0.0492	mg/L	0.00030	98	70	130			
<b>Lab ID:</b> B18071101-002BMSD	8	Sample Matrix Spike Duplicate					Run: ICPMS206-B_180716A		07/17/18 00:28	
Aluminum		1.04	mg/L	0.030		70	130	1.2	20	A
Antimony		0.0458	mg/L	0.0010	92	70	130	1.5	20	
Lead		0.0474	mg/L	0.0010	94	70	130	3.0	20	
Selenium		0.0512	mg/L	0.0010	99	70	130	5.9	20	
Silver		0.0194	mg/L	0.0010	97	70	130	2.5	20	
Thallium		0.0486	mg/L	0.00050	97	70	130	0.3	20	
Titanium		0.0546	mg/L	0.0050	105	70	130	0.2	20	
Uranium		0.0479	mg/L	0.00030	95	70	130	2.8	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.



# Work Order Receipt Checklist

Enviromin Inc

B18070902

Login completed by: Wendy C. Jones

Date Received: 7/11/2018

Reviewed by: BL2000\raschim

Received by: gda

Reviewed Date: 7/17/2018

Carrier name: Return-UPS Ground

- Shipping container/cooler in good condition? Yes  No  Not Present
- Custody seals intact on all shipping container(s)/cooler(s)? Yes  No  Not Present
- Custody seals intact on all sample bottles? Yes  No  Not Present
- Chain of custody present? Yes  No
- Chain of custody signed when relinquished and received? Yes  No
- Chain of custody agrees with sample labels? Yes  No
- Samples in proper container/bottle? Yes  No
- Sample containers intact? Yes  No
- Sufficient sample volume for indicated test? Yes  No
- All samples received within holding time?  
(Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.) Yes  No
- Temp Blank received in all shipping container(s)/cooler(s)? Yes  No  Not Applicable
- Container/Temp Blank temperature: 2.8°C Blue Ice
- Water - VOA vials have zero headspace? Yes  No  No VOA vials submitted
- Water - pH acceptable upon receipt? Yes  No  Not Applicable

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## Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

---

## Contact and Corrective Action Comments:

None

# Chain of Custody & Analytical Request Record

[www.energylab.com](http://www.energylab.com)

**Comments**

\_\_\_\_\_

**Report Information (if different than Account Information)**

Company/Name \_\_\_\_\_  
 Contact \_\_\_\_\_  
 Phone \_\_\_\_\_  
 Mailing Address \_\_\_\_\_  
 City, State, Zip \_\_\_\_\_  
 Email \_\_\_\_\_  
 Receive Report  Hard Copy  EMail  
 Special Report/Formats:  LEVEL IV  NELAC  EDD/EDT (contact laboratory)  Other \_\_\_\_\_

**Account Information (Billing Information)**

Company/Name Environ Inc  
 Contact Terry Biere  
 Phone 406 438 2333  
 Mailing Address 524 Professional Drive  
 City, State, Zip Bozeman, MT 59718  
 Email terrybiere@environinc.com  
 Receive Invoice  Hard Copy  EMail  EMail  
 Purchase Order 4093  Bottle Order

**Project Information**

Project Name, PWSID, Permit, etc. NP/Columbian Study  
 Sampler Name \_\_\_\_\_  
 EPA/State Compliance  Yes  No  
 Sample Origin State \_\_\_\_\_  
 \*If one has been processed or refined, call before sending.  
 Byproduct 11 (g)2 material  Unprocessed ore (NOT ground or refined)\*

**Analysis Requested**

Matrix Codes	Number of Containers	Matrix (See Codes Above)
A - Air		
W - Water		
S - Solids		
V - Vegetation		
B - Bioassay		
O - Other		
DW - Drinking Water		

Sample Identification (Name, Location, Interval, etc.)	Date	Time	Collection	Intact	Receipt Temp °C	Temp Blank	On Ice	Payment Type	Amount \$
1 R1	7/10	9 AM		Y		Y	N	CC	
2 R2				Y		Y	N	Cash	
3 R3				Y		Y	N	Cash	
4 R4				Y		Y	N	Cash	
5 R5				Y		Y	N	Cash	
6 R6				Y		Y	N	Cash	
7 F1				Y		Y	N	Cash	
8 F2				Y		Y	N	Cash	
9 F3				Y		Y	N	Cash	
10									

All turnaround times are standard unless marked as RUSH.  
 Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling - See Instructions Page

See Attached  
 TAT  
 B18070902-001  
 002  
 003  
 004  
 005  
 006  
 007  
 008  
 009

Relinquished by (print) Terry Biere Signature  
 Date/Time 7/10/08 4:30 PM  
 Relinquished by (print) \_\_\_\_\_ Signature  
 Date/Time \_\_\_\_\_  
 Received by (print) Carolee Bessum Signature  
 Date/Time 7-11-08/9:10  
 Received by Laboratory (print) \_\_\_\_\_  
 Signature \_\_\_\_\_  
 Receipt Number (cash/check only) \_\_\_\_\_

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.



# ANALYTICAL SUMMARY REPORT

August 13, 2018

Enviromin Inc  
524 Professional Dr  
Bozeman, MT 59718

Work Order: B18072584 Quote ID: B4093 - Enviromin Lab

Project Name: NWP Column Study

Energy Laboratories Inc Billings MT received the following 9 samples for Enviromin Inc on 7/27/2018 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B18072584-001	R1	07/26/18 12:00	07/27/18	Aqueous	Carbon, Dissolved Organic Selenium By CVAA, Total Selenium IV, Total Selenium-VI, Total
B18072584-002	R2	07/26/18 12:00	07/27/18	Aqueous	Same As Above
B18072584-003	R3	07/26/18 12:00	07/27/18	Aqueous	Same As Above
B18072584-004	R4	07/26/18 12:00	07/27/18	Aqueous	Same As Above
B18072584-005	R5	07/26/18 12:00	07/27/18	Aqueous	Same As Above
B18072584-006	R6	07/26/18 12:00	07/27/18	Aqueous	Same As Above
B18072584-007	F1	07/26/18 12:00	07/27/18	Aqueous	Same As Above
B18072584-008	F2	07/26/18 12:00	07/27/18	Aqueous	Same As Above
B18072584-009	F3	07/26/18 12:00	07/27/18	Aqueous	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:



**CLIENT:** Enviromin Inc  
**Project:** NWP Column Study  
**Work Order:** B18072584

**Report Date:** 08/13/18

## **CASE NARRATIVE**

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Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 East Lyndale Ave, Helena, MT, EPA Number MT00945.

Tests associated with analyst identified as ELI-CA were subcontracted to Energy Laboratories, PO Box 247, Casper, WY, EPA Number WY00002.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18072584-001  
**Client Sample ID:** R1

**Report Date:** 08/13/18  
**Collection Date:** 07/26/18 12:00  
**DateReceived:** 07/27/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	23	mg/L	D	4		A5310 C	08/05/18 17:02 / eli-ca
<b>METALS, TOTAL</b>							
Selenium	0.007	mg/L	D	0.003		A3114 C	08/08/18 15:17 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.005	mg/L	D	0.003		A3114 C	08/06/18 16:25 / eli-h
Selenium-VI	0.002	mg/L		0.001		A3114 C	08/10/18 10:28 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18072584-002  
**Client Sample ID:** R2

**Report Date:** 08/13/18  
**Collection Date:** 07/26/18 12:00  
**DateReceived:** 07/27/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	15	mg/L	D	2		A5310 C	08/05/18 17:21 / eli-ca
<b>METALS, TOTAL</b>							
Selenium	0.019	mg/L	D	0.003		A3114 C	08/08/18 15:18 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.005	mg/L	D	0.003		A3114 C	08/06/18 16:26 / eli-h
Selenium-VI	0.014	mg/L		0.001		A3114 C	08/10/18 10:28 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18072584-003  
**Client Sample ID:** R3

**Report Date:** 08/13/18  
**Collection Date:** 07/26/18 12:00  
**DateReceived:** 07/27/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	75	mg/L	D	4		A5310 C	08/05/18 17:36 / eli-ca
<b>METALS, TOTAL</b>							
Selenium	0.007	mg/L	D	0.003		A3114 C	08/08/18 15:20 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.005	mg/L	D	0.003		A3114 C	08/06/18 16:28 / eli-h
Selenium-VI	0.002	mg/L		0.001		A3114 C	08/10/18 10:28 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.





### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18072584-004  
**Client Sample ID:** R4

**Report Date:** 08/13/18  
**Collection Date:** 07/26/18 12:00  
**DateReceived:** 07/27/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	22	mg/L	D	2		A5310 C	08/05/18 17:52 / eli-ca
<b>METALS, TOTAL</b>							
Selenium	0.004	mg/L	D	0.003		A3114 C	08/08/18 15:21 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.005	mg/L	D	0.003		A3114 C	08/06/18 16:30 / eli-h
Selenium-VI	ND	mg/L		0.001		A3114 C	08/10/18 10:28 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18072584-005  
**Client Sample ID:** R5

**Report Date:** 08/13/18  
**Collection Date:** 07/26/18 12:00  
**DateReceived:** 07/27/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	24	mg/L	D	2		A5310 C	08/05/18 18:07 / eli-ca
<b>METALS, TOTAL</b>							
Selenium	ND	mg/L	D	0.003		A3114 C	08/08/18 15:23 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.003	mg/L	D	0.003		A3114 C	08/06/18 16:31 / eli-h
Selenium-VI	ND	mg/L		0.001		A3114 C	08/10/18 10:28 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18072584-006  
**Client Sample ID:** R6

**Report Date:** 08/13/18  
**Collection Date:** 07/26/18 12:00  
**DateReceived:** 07/27/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	15	mg/L	D	2		A5310 C	08/05/18 18:22 / eli-ca
<b>METALS, TOTAL</b>							
Selenium	0.017	mg/L	D	0.003		A3114 C	08/08/18 15:24 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 C	08/06/18 16:37 / eli-h
Selenium-VI	0.016	mg/L		0.001		A3114 C	08/10/18 10:28 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18072584-007  
**Client Sample ID:** F1

**Report Date:** 08/13/18  
**Collection Date:** 07/26/18 12:00  
**DateReceived:** 07/27/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	3	mg/L	D	2		A5310 C	08/05/18 18:37 / eli-ca
<b>METALS, TOTAL</b>							
Selenium	0.181	mg/L	D	0.003		A3114 C	08/08/18 15:26 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.006	mg/L	D	0.003		A3114 C	08/06/18 16:51 / eli-h
Selenium-VI	0.175	mg/L		0.001		A3114 C	08/10/18 10:28 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18072584-008  
**Client Sample ID:** F2

**Report Date:** 08/13/18  
**Collection Date:** 07/26/18 12:00  
**DateReceived:** 07/27/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	2	mg/L	D	2		A5310 C	08/05/18 18:51 / eli-ca
<b>METALS, TOTAL</b>							
Selenium	0.185	mg/L	D	0.003		A3114 C	08/08/18 15:28 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	08/06/18 16:56 / eli-h
Selenium-VI	0.182	mg/L		0.001		A3114 C	08/10/18 10:28 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18072584-009  
**Client Sample ID:** F3

**Report Date:** 08/13/18  
**Collection Date:** 07/26/18 12:00  
**DateReceived:** 07/27/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	2	mg/L	D	2		A5310 C	08/05/18 19:10 / eli-ca
<b>METALS, TOTAL</b>							
Selenium	0.185	mg/L	D	0.003		A3114 C	08/08/18 15:32 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.005	mg/L	D	0.003		A3114 C	08/06/18 16:58 / eli-h
Selenium-VI	0.181	mg/L		0.001		A3114 C	08/10/18 10:28 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 08/09/18  
**Work Order:** B18072584

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: A5310 C</b>							Analytical Run: TOC3-C_180805A		
<b>Lab ID: CCV-10292</b>	Continuing Calibration Verification Standard								
Organic Carbon, Dissolved (DOC)	4.73	mg/L	0.50	95	90	110			08/05/18 12:44
<b>Method: A5310 C</b>							Batch: R238180		
<b>Lab ID: LCS-10002</b>	Laboratory Control Sample								
Organic Carbon, Dissolved (DOC)	4.73	mg/L	0.50	91	90	110			Run: TOC3-C_180805A 08/05/18 12:14
<b>Lab ID: MBLK</b>	Method Blank								
Organic Carbon, Dissolved (DOC)	0.2	mg/L	0.04						Run: TOC3-C_180805A 08/05/18 12:29
<b>Lab ID: C18070971-001CMS</b>	Sample Matrix Spike								
Organic Carbon, Dissolved (DOC)	5.59	mg/L	0.50	112	85	115			Run: TOC3-C_180805A 08/05/18 13:14
<b>Lab ID: C18070971-001CMSD</b>	Sample Matrix Spike Duplicate								
Organic Carbon, Dissolved (DOC)	5.57	mg/L	0.50	111	85	115	0.3	10	Run: TOC3-C_180805A 08/05/18 13:30

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 08/10/18  
**Work Order:** B18072584

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A3114 C									tical Run: SELENIUM PSA MILLENIUM_180806A
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard								
Selenium-IV	0.0213	mg/L	0.0010	106	90	110			08/06/18 15:42
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								
Selenium-IV	0.0209	mg/L	0.0010	105	90	110			08/06/18 16:17
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								
Selenium-IV	0.0204	mg/L	0.0010	102	90	110			08/06/18 16:42
<b>Method:</b> A3114 C									Batch: 42573
<b>Lab ID:</b> LCS-42573	Laboratory Control Sample								
Selenium-IV	0.0213	mg/L	0.0010	103	90	110			Run: SELENIUM PSA MILLENIUM_ 08/06/18 15:48
<b>Lab ID:</b> MB-42573	Method Blank								
Selenium-IV	0.0006	mg/L	0.0006						Run: SELENIUM PSA MILLENIUM_ 08/06/18 15:50
<b>Lab ID:</b> LFB-42573	Laboratory Fortified Blank								
Selenium-IV	0.0203	mg/L	0.0010	99	85	115			Run: SELENIUM PSA MILLENIUM_ 08/06/18 15:52
<b>Lab ID:</b> H18070558-003DMS	Sample Matrix Spike								
Selenium-IV	0.0220	mg/L	0.0010	94	70	130			Run: SELENIUM PSA MILLENIUM_ 08/06/18 16:12
<b>Lab ID:</b> H18070558-003DMSD	Sample Matrix Spike Duplicate								
Selenium-IV	0.0219	mg/L	0.0010	93	70	130	0.6	20	Run: SELENIUM PSA MILLENIUM_ 08/06/18 16:14
<b>Method:</b> A3114 C									Batch: 42574
<b>Lab ID:</b> LCS-42574	Laboratory Control Sample								
Selenium-IV	0.0213	mg/L	0.0010	98	90	110			Run: SELENIUM PSA MILLENIUM_ 08/06/18 16:34
<b>Lab ID:</b> LFB-42574	Laboratory Fortified Blank								
Selenium-IV	0.0201	mg/L	0.0010	92	85	115			Run: SELENIUM PSA MILLENIUM_ 08/06/18 16:36
<b>Lab ID:</b> MB-42574	Method Blank								
Selenium-IV	0.002	mg/L	0.0006						Run: SELENIUM PSA MILLENIUM_ 08/06/18 16:39
<b>Lab ID:</b> B18072584-007AMS	Sample Matrix Spike								
Selenium-IV	0.0617	mg/L	0.0030	94	70	130			Run: SELENIUM PSA MILLENIUM_ 08/06/18 16:53
<b>Lab ID:</b> B18072584-007AMSD	Sample Matrix Spike Duplicate								
Selenium-IV	0.0600	mg/L	0.0030	91	70	130	2.8	20	Run: SELENIUM PSA MILLENIUM_ 08/06/18 16:54

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.





## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 08/10/18  
**Work Order:** B18072584

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A3114 C									tical Run: SELENIUM PSA MILLENIUM_180808A
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard								08/08/18 14:58
Selenium	0.0385	mg/L	0.0010	96	90	110			
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								08/08/18 15:00
Selenium	0.0192	mg/L	0.0010	96	90	110			
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								08/08/18 15:31
Selenium	0.0191	mg/L	0.0010	96	90	110			
<b>Method:</b> A3114 C									Batch: 42572
<b>Lab ID:</b> MB-42572	Method Blank								Run: SELENIUM PSA MILLENIUM_ 08/08/18 15:05
Selenium	ND	mg/L	0.0002						
<b>Lab ID:</b> LCS-42572	Laboratory Control Sample								Run: SELENIUM PSA MILLENIUM_ 08/08/18 15:07
Selenium	0.0371	mg/L	0.0010	93	90	110			
<b>Lab ID:</b> LFB-42572	Laboratory Fortified Blank								Run: SELENIUM PSA MILLENIUM_ 08/08/18 15:09
Selenium	0.0367	mg/L	0.0010	92	85	115			
<b>Lab ID:</b> H18070587-001AMS	Sample Matrix Spike								Run: SELENIUM PSA MILLENIUM_ 08/08/18 15:13
Selenium	0.0383	mg/L	0.0010	94	70	130			
<b>Lab ID:</b> H18070587-001AMSD	Sample Matrix Spike Duplicate								Run: SELENIUM PSA MILLENIUM_ 08/08/18 15:15
Selenium	0.0383	mg/L	0.0010	94	70	130	0.0	20	
<b>Lab ID:</b> B18072584-008AMS	Sample Matrix Spike								Run: SELENIUM PSA MILLENIUM_ 08/08/18 15:34
Selenium	0.267	mg/L	0.0030	68	70	130			S
<b>Lab ID:</b> B18072584-008AMSD	Sample Matrix Spike Duplicate								Run: SELENIUM PSA MILLENIUM_ 08/08/18 15:36
Selenium	0.266	mg/L	0.0030	68	70	130	0.2	20	S

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



# Work Order Receipt Checklist

Enviromin Inc

B18072584

Login completed by: Leslie S. Cadreau

Date Received: 7/27/2018

Reviewed by: BL2000\raschim

Received by: gda

Reviewed Date: 7/31/2018

Carrier name: Return-UPS Ground

- Shipping container/cooler in good condition? Yes  No  Not Present
- Custody seals intact on all shipping container(s)/cooler(s)? Yes  No  Not Present
- Custody seals intact on all sample bottles? Yes  No  Not Present
- Chain of custody present? Yes  No
- Chain of custody signed when relinquished and received? Yes  No
- Chain of custody agrees with sample labels? Yes  No
- Samples in proper container/bottle? Yes  No
- Sample containers intact? Yes  No
- Sufficient sample volume for indicated test? Yes  No
- All samples received within holding time?  
(Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.) Yes  No
- Temp Blank received in all shipping container(s)/cooler(s)? Yes  No  Not Applicable
- Container/Temp Blank temperature: 6.0°C On Ice
- Water - VOA vials have zero headspace? Yes  No  No VOA vials submitted
- Water - pH acceptable upon receipt? Yes  No  Not Applicable

## Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

## Contact and Corrective Action Comments:

None

# Chain of Custody & Analytical Request Record

Page \_\_\_\_\_ of \_\_\_\_\_

WWW.ENERGYLAB.COM

## Account Information (Billing Information)

Company Name: Environem  
 Contact: Terry Bitter  
 Phone: 406 438 2333  
 Mailing Address: 584 Professional Drive  
 City, State, Zip: Bozeman, MT 59718  
 Email: terrybitter@environem.com  
 Receive Invoice:  Hard Copy  Email  Hard Copy  Email  
 Purchase Order: 4093  Bottle Order

## Report Information (If different than Account Information)

Company/Name: \_\_\_\_\_  
 Contact: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_  
 City, State, Zip: \_\_\_\_\_  
 Email: \_\_\_\_\_  
 Receive Report:  Hard Copy  Email  
 Special Report/Format:  LEVEL IV  NELAC  EDD/EDT (contact laboratory)  Other

Comments

## Project Information

Project Name, PWSID, Permit, etc.: NWP Column Study  
 Sampler Name: \_\_\_\_\_  
 Sampler Phone: \_\_\_\_\_  
 Sample Origin State: \_\_\_\_\_  
 EPA/State Compliance:  Yes  No  
 MINING CLIENTS, please indicate sample type.  
 Byproduct 11 (e.g. material)  Unprocessed ore (NOT ground or refined)\*

Matrix Codes

A - Air
W - Water
S - Soils
V - Vegetation
B - Biosessy
O - Other
DW - Drinking Water

Analysis Requested

See Attached
--------------

All turnaround times are standard unless marked as RUSH.  
 Energy Laboratories  
 \*MUST be contacted prior to RUSH sample submittal for charges and scheduling - See Instructions Page

Sample ID	Sample Identification (Name, Location, Interval, etc.)	Collection		Matrix (See Codes Above)	Number of Containers	Date	Time	Signature
		Date	Time					
1 R1		7/26/08	12 PM	W	2			
2 R2								
3 R3								
4 R4								
5 R5								
6 R6								
7 F1								
8 F2								
9 F3								
10								

Received by (print): Gabe Bachin  
 Signature: Gabe Bachin  
 Date/Time: 7/26/08 12:00 PM  
 Signature: Terry Bitter  
 Date/Time: 7/26/08 12:00 PM  
 Receipt Temp °C: \_\_\_\_\_  
 Intact:  Y  N  C  B  A  
 Cooler ID(s): \_\_\_\_\_  
 Custody Seals:  Y  N  C  B  A  
 Shipped By: \_\_\_\_\_  
 Signature: \_\_\_\_\_  
 Date/Time: \_\_\_\_\_  
 Receipt Number (customer only): \_\_\_\_\_  
 Amount \$: \_\_\_\_\_  
 Payment Type:  Cash  Check

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.



# ANALYTICAL SUMMARY REPORT

September 17, 2018

Enviromin Inc  
524 Professional Dr  
Bozeman, MT 59718

Work Order: B18083012      Quote ID: B4093 - Enviromin Lab

Project Name: NWP Column Study

Energy Laboratories Inc Billings MT received the following 9 samples for Enviromin Inc on 8/30/2018 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B18083012-001	F1	08/29/18 11:00	08/30/18	Aqueous	Metals by ICP/ICPMS, Dissolved Carbon, Dissolved Organic Selenium By CVAA, Total Selenium IV, Total Selenium-VI, Total
B18083012-002	F2	08/29/18 11:00	08/30/18	Aqueous	Same As Above
B18083012-003	F3	08/29/18 11:00	08/30/18	Aqueous	Same As Above
B18083012-004	R1	08/29/18 11:00	08/30/18	Aqueous	Same As Above
B18083012-005	R2	08/29/18 11:00	08/30/18	Aqueous	Same As Above
B18083012-006	R3	08/29/18 11:00	08/30/18	Aqueous	Same As Above
B18083012-007	R4	08/29/18 11:00	08/30/18	Aqueous	Same As Above
B18083012-008	R5	08/29/18 11:00	08/30/18	Aqueous	Same As Above
B18083012-009	R6	08/29/18 11:00	08/30/18	Aqueous	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:



**CLIENT:** Enviromin Inc  
**Project:** NWP Column Study  
**Work Order:** B18083012

**Report Date:** 09/17/18

## **CASE NARRATIVE**

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Tests associated with analyst identified as ELI-CA were subcontracted to Energy Laboratories, PO Box 247, Casper, WY, EPA Number WY00002.

Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 East Lyndale Ave, Helena, MT, EPA Number MT00945.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18083012-001  
**Client Sample ID:** F1

**Report Date:** 09/17/18  
**Collection Date:** 08/29/18 11:00  
**Date Received:** 08/30/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	4.2	mg/L		0.5		A5310 C	09/07/18 05:45 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.20	mg/L		0.03		E200.8	09/09/18 10:34 / car
Antimony	ND	mg/L		0.001		E200.8	09/09/18 10:34 / car
Arsenic	ND	mg/L		0.001		E200.8	09/09/18 10:34 / car
Barium	0.07	mg/L		0.05		E200.7	09/04/18 17:10 / rjh
Beryllium	ND	mg/L		0.001		E200.7	09/04/18 17:10 / rjh
Boron	ND	mg/L		0.05		E200.7	09/04/18 17:10 / rjh
Cadmium	ND	mg/L		0.001		E200.8	09/09/18 10:34 / car
Calcium	10	mg/L		1		E200.7	09/04/18 17:10 / rjh
Chromium	ND	mg/L		0.005		E200.8	09/09/18 10:34 / car
Cobalt	ND	mg/L		0.005		E200.8	09/09/18 10:34 / car
Copper	ND	mg/L		0.005		E200.7	09/04/18 17:10 / rjh
Iron	0.17	mg/L		0.02		E200.7	09/04/18 17:10 / rjh
Lead	ND	mg/L		0.001		E200.8	09/09/18 10:34 / car
Lithium	ND	mg/L		0.1		E200.7	09/04/18 17:10 / rjh
Magnesium	2	mg/L		1		E200.7	09/04/18 17:10 / rjh
Manganese	0.001	mg/L		0.001		E200.8	09/09/18 10:34 / car
Molybdenum	ND	mg/L		0.001		E200.8	09/09/18 10:34 / car
Nickel	ND	mg/L		0.005		E200.7	09/04/18 17:10 / rjh
Potassium	2	mg/L		1		E200.7	09/04/18 17:10 / rjh
Selenium	0.157	mg/L		0.001		E200.8	09/09/18 10:34 / car
Silicon	1.6	mg/L		0.1		E200.7	09/04/18 17:10 / rjh
Silver	ND	mg/L		0.001		E200.8	09/09/18 10:34 / car
Sodium	36	mg/L		1		E200.7	09/04/18 17:10 / rjh
Strontium	0.04	mg/L		0.01		E200.7	09/04/18 17:10 / rjh
Thallium	ND	mg/L		0.0005		E200.8	09/09/18 10:34 / car
Tin	ND	mg/L		0.01		E200.8	09/09/18 10:34 / car
Titanium	ND	mg/L		0.005		E200.8	09/09/18 10:34 / car
Uranium	0.0015	mg/L		0.0003		E200.8	09/09/18 10:34 / car
Vanadium	ND	mg/L		0.01		E200.8	09/09/18 10:34 / car
Zinc	ND	mg/L		0.01		E200.7	09/04/18 17:10 / rjh
<b>METALS, TOTAL</b>							
Selenium	0.118	mg/L	D	0.003		A3114 C	09/10/18 13:15 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	09/10/18 12:10 / eli-h
Selenium-VI	0.118	mg/L		0.003		A3114 C	09/10/18 17:28 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18083012-002  
**Client Sample ID:** F2

**Report Date:** 09/17/18  
**Collection Date:** 08/29/18 11:00  
**Date Received:** 08/30/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	7.9	mg/L		0.5		A5310 C	09/07/18 06:01 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	2.52	mg/L		0.03		E200.8	09/09/18 11:05 / car
Antimony	ND	mg/L		0.001		E200.8	09/09/18 11:05 / car
Arsenic	0.002	mg/L		0.001		E200.8	09/09/18 11:05 / car
Barium	0.06	mg/L		0.05		E200.7	09/04/18 17:14 / rjh
Beryllium	ND	mg/L		0.001		E200.7	09/04/18 17:14 / rjh
Boron	ND	mg/L		0.05		E200.7	09/04/18 17:14 / rjh
Cadmium	ND	mg/L		0.001		E200.8	09/09/18 11:05 / car
Calcium	3	mg/L		1		E200.7	09/04/18 17:14 / rjh
Chromium	0.005	mg/L		0.005		E200.8	09/09/18 11:05 / car
Cobalt	ND	mg/L		0.005		E200.8	09/09/18 11:05 / car
Copper	ND	mg/L		0.005		E200.7	09/04/18 17:14 / rjh
Iron	1.21	mg/L		0.02		E200.7	09/04/18 17:14 / rjh
Lead	0.002	mg/L		0.001		E200.8	09/09/18 11:05 / car
Lithium	ND	mg/L		0.1		E200.7	09/04/18 17:14 / rjh
Magnesium	1	mg/L		1		E200.7	09/04/18 17:14 / rjh
Manganese	0.008	mg/L		0.001		E200.8	09/09/18 11:05 / car
Molybdenum	ND	mg/L		0.001		E200.8	09/09/18 11:05 / car
Nickel	ND	mg/L		0.005		E200.7	09/04/18 17:14 / rjh
Potassium	1	mg/L		1		E200.7	09/04/18 17:14 / rjh
Selenium	0.068	mg/L		0.001		E200.8	09/09/18 11:05 / car
Silicon	4.8	mg/L		0.1		E200.7	09/04/18 17:14 / rjh
Silver	ND	mg/L		0.001		E200.8	09/09/18 11:05 / car
Sodium	29	mg/L		1		E200.7	09/04/18 17:14 / rjh
Strontium	0.01	mg/L		0.01		E200.7	09/04/18 17:14 / rjh
Thallium	ND	mg/L		0.0005		E200.8	09/09/18 11:05 / car
Tin	ND	mg/L		0.01		E200.8	09/09/18 11:05 / car
Titanium	0.057	mg/L		0.005		E200.8	09/09/18 11:05 / car
Uranium	0.0020	mg/L		0.0003		E200.8	09/09/18 11:05 / car
Vanadium	ND	mg/L		0.01		E200.8	09/09/18 11:05 / car
Zinc	0.02	mg/L		0.01		E200.7	09/04/18 17:14 / rjh
<b>METALS, TOTAL</b>							
Selenium	0.085	mg/L	D	0.003		A3114 C	09/10/18 13:17 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.058	mg/L	D	0.003		A3114 C	09/10/18 12:11 / eli-h
Selenium-VI	0.027	mg/L		0.003		A3114 C	09/10/18 17:28 / eli-h

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18083012-003  
**Client Sample ID:** F3

**Report Date:** 09/17/18  
**Collection Date:** 08/29/18 11:00  
**DateReceived:** 08/30/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	5.3	mg/L		0.5		A5310 C	09/07/18 06:17 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.24	mg/L		0.03		E200.8	09/09/18 11:09 / car
Antimony	ND	mg/L		0.001		E200.8	09/09/18 11:09 / car
Arsenic	ND	mg/L		0.001		E200.8	09/09/18 11:09 / car
Barium	0.06	mg/L		0.05		E200.7	09/04/18 17:17 / rjh
Beryllium	ND	mg/L		0.001		E200.7	09/04/18 17:17 / rjh
Boron	ND	mg/L		0.05		E200.7	09/04/18 17:17 / rjh
Cadmium	ND	mg/L		0.001		E200.8	09/09/18 11:09 / car
Calcium	6	mg/L		1		E200.7	09/04/18 17:17 / rjh
Chromium	ND	mg/L		0.005		E200.8	09/09/18 11:09 / car
Cobalt	ND	mg/L		0.005		E200.8	09/09/18 11:09 / car
Copper	ND	mg/L		0.005		E200.7	09/04/18 17:17 / rjh
Iron	0.38	mg/L		0.02		E200.7	09/04/18 17:17 / rjh
Lead	ND	mg/L		0.001		E200.8	09/09/18 11:09 / car
Lithium	ND	mg/L		0.1		E200.7	09/04/18 17:17 / rjh
Magnesium	2	mg/L		1		E200.7	09/04/18 17:17 / rjh
Manganese	0.002	mg/L		0.001		E200.8	09/09/18 11:09 / car
Molybdenum	ND	mg/L		0.001		E200.8	09/09/18 11:09 / car
Nickel	ND	mg/L		0.005		E200.7	09/04/18 17:17 / rjh
Potassium	ND	mg/L		1		E200.7	09/04/18 17:17 / rjh
Selenium	0.179	mg/L		0.001		E200.8	09/09/18 11:09 / car
Silicon	3.1	mg/L		0.1		E200.7	09/04/18 17:17 / rjh
Silver	ND	mg/L		0.001		E200.8	09/09/18 11:09 / car
Sodium	31	mg/L		1		E200.7	09/04/18 17:17 / rjh
Strontium	0.02	mg/L		0.01		E200.7	09/04/18 17:17 / rjh
Thallium	ND	mg/L		0.0005		E200.8	09/09/18 11:09 / car
Tin	ND	mg/L		0.01		E200.8	09/09/18 11:09 / car
Titanium	0.008	mg/L		0.005		E200.8	09/09/18 11:09 / car
Uranium	ND	mg/L		0.0003		E200.8	09/09/18 11:09 / car
Vanadium	ND	mg/L		0.01		E200.8	09/09/18 11:09 / car
Zinc	ND	mg/L		0.01		E200.7	09/04/18 17:17 / rjh
<b>METALS, TOTAL</b>							
Selenium	0.137	mg/L	D	0.003		A3114 C	09/10/18 13:18 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	09/10/18 12:13 / eli-h
Selenium-VI	0.137	mg/L		0.003		A3114 C	09/10/18 17:28 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.





### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18083012-004  
**Client Sample ID:** R1

**Report Date:** 09/17/18  
**Collection Date:** 08/29/18 11:00  
**DateReceived:** 08/30/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	34	mg/L	D	2		A5310 C	09/07/18 06:34 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	2.68	mg/L		0.03		E200.8	09/09/18 11:13 / car
Antimony	ND	mg/L		0.001		E200.8	09/09/18 11:13 / car
Arsenic	0.019	mg/L		0.001		E200.8	09/09/18 11:13 / car
Barium	ND	mg/L		0.05		E200.7	09/04/18 17:28 / rjh
Beryllium	ND	mg/L		0.001		E200.7	09/04/18 17:28 / rjh
Boron	0.07	mg/L		0.05		E200.7	09/04/18 17:28 / rjh
Cadmium	ND	mg/L		0.001		E200.8	09/09/18 11:13 / car
Calcium	6	mg/L		1		E200.7	09/04/18 17:28 / rjh
Chromium	0.006	mg/L		0.005		E200.8	09/09/18 11:13 / car
Cobalt	ND	mg/L		0.005		E200.8	09/09/18 11:13 / car
Copper	0.008	mg/L		0.005		E200.7	09/04/18 17:28 / rjh
Iron	1.89	mg/L		0.02		E200.7	09/04/18 17:28 / rjh
Lead	0.001	mg/L		0.001		E200.8	09/09/18 11:13 / car
Lithium	ND	mg/L		0.1		E200.7	09/04/18 17:28 / rjh
Magnesium	2	mg/L		1		E200.7	09/04/18 17:28 / rjh
Manganese	0.007	mg/L		0.001		E200.8	09/09/18 11:13 / car
Molybdenum	0.001	mg/L		0.001		E200.8	09/09/18 11:13 / car
Nickel	0.008	mg/L		0.005		E200.7	09/04/18 17:28 / rjh
Potassium	2	mg/L		1		E200.7	09/04/18 17:28 / rjh
Selenium	0.004	mg/L		0.001		E200.8	09/09/18 11:13 / car
Silicon	14.6	mg/L		0.1		E200.7	09/04/18 17:28 / rjh
Silver	0.003	mg/L		0.001		E200.8	09/09/18 11:13 / car
Sodium	12	mg/L		1		E200.7	09/04/18 17:28 / rjh
Strontium	0.02	mg/L		0.01		E200.7	09/04/18 17:28 / rjh
Thallium	ND	mg/L		0.0005		E200.8	09/09/18 11:13 / car
Tin	ND	mg/L		0.01		E200.8	09/09/18 11:13 / car
Titanium	0.068	mg/L		0.005		E200.8	09/09/18 11:13 / car
Uranium	ND	mg/L		0.0003		E200.8	09/09/18 11:13 / car
Vanadium	ND	mg/L		0.01		E200.8	09/09/18 11:13 / car
Zinc	0.02	mg/L		0.01		E200.7	09/04/18 17:28 / rjh
<b>METALS, TOTAL</b>							
Selenium	0.008	mg/L	D	0.003		A3114 C	09/10/18 13:20 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	09/10/18 12:14 / eli-h
Selenium-VI	0.008	mg/L		0.003		A3114 C	09/10/18 17:28 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18083012-005  
**Client Sample ID:** R2

**Report Date:** 09/17/18  
**Collection Date:** 08/29/18 11:00  
**DateReceived:** 08/30/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	11	mg/L	D	2		A5310 C	09/07/18 06:50 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	09/09/18 11:29 / car
Antimony	ND	mg/L		0.001		E200.8	09/09/18 11:29 / car
Arsenic	0.033	mg/L		0.001		E200.8	09/09/18 11:29 / car
Barium	0.10	mg/L		0.05		E200.7	09/04/18 17:32 / rjh
Beryllium	ND	mg/L		0.001		E200.7	09/04/18 17:32 / rjh
Boron	ND	mg/L		0.05		E200.7	09/04/18 17:32 / rjh
Cadmium	ND	mg/L		0.001		E200.8	09/09/18 11:29 / car
Calcium	48	mg/L		1		E200.7	09/04/18 17:32 / rjh
Chromium	ND	mg/L		0.005		E200.8	09/09/18 11:29 / car
Cobalt	ND	mg/L		0.005		E200.8	09/09/18 11:29 / car
Copper	ND	mg/L		0.005		E200.7	09/04/18 17:32 / rjh
Iron	ND	mg/L		0.02		E200.7	09/04/18 17:32 / rjh
Lead	ND	mg/L		0.001		E200.8	09/09/18 11:29 / car
Lithium	ND	mg/L		0.1		E200.7	09/04/18 17:32 / rjh
Magnesium	34	mg/L		1		E200.7	09/04/18 17:32 / rjh
Manganese	0.001	mg/L		0.001		E200.8	09/09/18 11:29 / car
Molybdenum	0.008	mg/L		0.001		E200.8	09/09/18 11:29 / car
Nickel	ND	mg/L		0.005		E200.7	09/04/18 17:32 / rjh
Potassium	2	mg/L		1		E200.7	09/04/18 17:32 / rjh
Selenium	0.016	mg/L		0.001		E200.8	09/09/18 11:29 / car
Silicon	3.7	mg/L		0.1		E200.7	09/04/18 17:32 / rjh
Silver	ND	mg/L		0.001		E200.8	09/09/18 11:29 / car
Sodium	7	mg/L		1		E200.7	09/04/18 17:32 / rjh
Strontium	0.26	mg/L		0.01		E200.7	09/04/18 17:32 / rjh
Thallium	ND	mg/L		0.0005		E200.8	09/09/18 11:29 / car
Tin	ND	mg/L		0.01		E200.8	09/09/18 11:29 / car
Titanium	ND	mg/L		0.005		E200.8	09/09/18 11:29 / car
Uranium	0.0055	mg/L		0.0003		E200.8	09/09/18 11:29 / car
Vanadium	ND	mg/L		0.01		E200.8	09/09/18 11:29 / car
Zinc	ND	mg/L		0.01		E200.7	09/04/18 17:32 / rjh
<b>METALS, TOTAL</b>							
Selenium	0.012	mg/L	D	0.003		A3114 C	09/10/18 13:21 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	09/10/18 12:16 / eli-h
Selenium-VI	0.012	mg/L		0.003		A3114 C	09/10/18 17:28 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18083012-006  
**Client Sample ID:** R3

**Report Date:** 09/17/18  
**Collection Date:** 08/29/18 11:00  
**Date Received:** 08/30/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	60	mg/L	D	2		A5310 C	09/07/18 07:07 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.73	mg/L		0.03		E200.8	09/09/18 11:33 / car
Antimony	ND	mg/L		0.001		E200.8	09/09/18 11:33 / car
Arsenic	0.016	mg/L		0.001		E200.8	09/09/18 11:33 / car
Barium	ND	mg/L		0.05		E200.7	09/04/18 17:36 / rjh
Beryllium	ND	mg/L		0.001		E200.7	09/04/18 17:36 / rjh
Boron	0.08	mg/L		0.05		E200.7	09/04/18 17:36 / rjh
Cadmium	ND	mg/L		0.001		E200.8	09/09/18 11:33 / car
Calcium	10	mg/L		1		E200.7	09/04/18 17:36 / rjh
Chromium	ND	mg/L		0.005		E200.8	09/09/18 11:33 / car
Cobalt	ND	mg/L		0.005		E200.8	09/09/18 11:33 / car
Copper	ND	mg/L		0.005		E200.7	09/04/18 17:36 / rjh
Iron	1.94	mg/L		0.02		E200.7	09/04/18 17:36 / rjh
Lead	ND	mg/L		0.001		E200.8	09/09/18 11:33 / car
Lithium	ND	mg/L		0.1		E200.7	09/04/18 17:36 / rjh
Magnesium	4	mg/L		1		E200.7	09/04/18 17:36 / rjh
Manganese	0.039	mg/L		0.001		E200.8	09/09/18 11:33 / car
Molybdenum	ND	mg/L		0.001		E200.8	09/09/18 11:33 / car
Nickel	0.008	mg/L		0.005		E200.7	09/04/18 17:36 / rjh
Potassium	2	mg/L		1		E200.7	09/04/18 17:36 / rjh
Selenium	ND	mg/L		0.001		E200.8	09/09/18 11:33 / car
Silicon	16.1	mg/L		0.1		E200.7	09/04/18 17:36 / rjh
Silver	ND	mg/L		0.001		E200.8	09/09/18 11:33 / car
Sodium	15	mg/L		1		E200.7	09/04/18 17:36 / rjh
Strontium	0.02	mg/L		0.01		E200.7	09/04/18 17:36 / rjh
Thallium	ND	mg/L		0.0005		E200.8	09/09/18 11:33 / car
Tin	ND	mg/L		0.01		E200.8	09/09/18 11:33 / car
Titanium	0.013	mg/L		0.005		E200.8	09/09/18 11:33 / car
Uranium	ND	mg/L		0.0003		E200.8	09/09/18 11:33 / car
Vanadium	ND	mg/L		0.01		E200.8	09/09/18 11:33 / car
Zinc	0.05	mg/L		0.01		E200.7	09/04/18 17:36 / rjh
<b>METALS, TOTAL</b>							
Selenium	0.005	mg/L	D	0.003		A3114 C	09/10/18 13:23 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	09/10/18 12:21 / eli-h
Selenium-VI	0.005	mg/L		0.003		A3114 C	09/10/18 17:28 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18083012-007  
**Client Sample ID:** R4

**Report Date:** 09/17/18  
**Collection Date:** 08/29/18 11:00  
**DateReceived:** 08/30/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	10	mg/L	D	2		A5310 C	09/07/18 07:22 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	09/09/18 11:36 / car
Antimony	ND	mg/L		0.001		E200.8	09/09/18 11:36 / car
Arsenic	0.016	mg/L		0.001		E200.8	09/09/18 11:36 / car
Barium	0.09	mg/L		0.05		E200.7	09/04/18 17:40 / rjh
Beryllium	ND	mg/L		0.001		E200.7	09/04/18 17:40 / rjh
Boron	ND	mg/L		0.05		E200.7	09/04/18 17:40 / rjh
Cadmium	ND	mg/L		0.001		E200.8	09/09/18 11:36 / car
Calcium	42	mg/L		1		E200.7	09/04/18 17:40 / rjh
Chromium	ND	mg/L		0.005		E200.8	09/09/18 11:36 / car
Cobalt	ND	mg/L		0.005		E200.8	09/09/18 11:36 / car
Copper	ND	mg/L		0.005		E200.7	09/04/18 17:40 / rjh
Iron	ND	mg/L		0.02		E200.7	09/04/18 17:40 / rjh
Lead	ND	mg/L		0.001		E200.8	09/09/18 11:36 / car
Lithium	ND	mg/L		0.1		E200.7	09/04/18 17:40 / rjh
Magnesium	56	mg/L		1		E200.7	09/04/18 17:40 / rjh
Manganese	0.025	mg/L		0.001		E200.8	09/09/18 11:36 / car
Molybdenum	0.004	mg/L		0.001		E200.8	09/09/18 11:36 / car
Nickel	ND	mg/L		0.005		E200.7	09/04/18 17:40 / rjh
Potassium	2	mg/L		1		E200.7	09/04/18 17:40 / rjh
Selenium	ND	mg/L		0.001		E200.8	09/09/18 11:36 / car
Silicon	3.8	mg/L		0.1		E200.7	09/04/18 17:40 / rjh
Silver	ND	mg/L		0.001		E200.8	09/09/18 11:36 / car
Sodium	7	mg/L		1		E200.7	09/04/18 17:40 / rjh
Strontium	0.30	mg/L		0.01		E200.7	09/04/18 17:40 / rjh
Thallium	ND	mg/L		0.0005		E200.8	09/09/18 11:36 / car
Tin	ND	mg/L		0.01		E200.8	09/09/18 11:36 / car
Titanium	ND	mg/L		0.005		E200.8	09/09/18 11:36 / car
Uranium	0.0052	mg/L		0.0003		E200.8	09/09/18 11:36 / car
Vanadium	ND	mg/L		0.01		E200.8	09/09/18 11:36 / car
Zinc	ND	mg/L		0.01		E200.7	09/04/18 17:40 / rjh
<b>METALS, TOTAL</b>							
Selenium	ND	mg/L	D	0.003		A3114 C	09/10/18 13:24 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	09/10/18 12:22 / eli-h
Selenium-VI	ND	mg/L		0.003		A3114 C	09/10/18 17:28 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18083012-008  
**Client Sample ID:** R5

**Report Date:** 09/17/18  
**Collection Date:** 08/29/18 11:00  
**Date Received:** 08/30/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	26	mg/L	D	2		A5310 C	09/07/18 07:38 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.87	mg/L		0.03		E200.8	09/09/18 11:40 / car
Antimony	ND	mg/L		0.001		E200.8	09/09/18 11:40 / car
Arsenic	0.010	mg/L		0.001		E200.8	09/09/18 11:40 / car
Barium	ND	mg/L		0.05		E200.7	09/04/18 17:44 / rjh
Beryllium	ND	mg/L		0.001		E200.7	09/04/18 17:44 / rjh
Boron	0.05	mg/L		0.05		E200.7	09/04/18 17:44 / rjh
Cadmium	ND	mg/L		0.001		E200.8	09/09/18 11:40 / car
Calcium	5	mg/L		1		E200.7	09/04/18 17:44 / rjh
Chromium	ND	mg/L		0.005		E200.8	09/09/18 11:40 / car
Cobalt	ND	mg/L		0.005		E200.8	09/09/18 11:40 / car
Copper	ND	mg/L		0.005		E200.7	09/04/18 17:44 / rjh
Iron	0.63	mg/L		0.02		E200.7	09/04/18 17:44 / rjh
Lead	ND	mg/L		0.001		E200.8	09/09/18 11:40 / car
Lithium	ND	mg/L		0.1		E200.7	09/04/18 17:44 / rjh
Magnesium	2	mg/L		1		E200.7	09/04/18 17:44 / rjh
Manganese	0.002	mg/L		0.001		E200.8	09/09/18 11:40 / car
Molybdenum	ND	mg/L		0.001		E200.8	09/09/18 11:40 / car
Nickel	ND	mg/L		0.005		E200.7	09/04/18 17:44 / rjh
Potassium	1	mg/L		1		E200.7	09/04/18 17:44 / rjh
Selenium	ND	mg/L		0.001		E200.8	09/09/18 11:40 / car
Silicon	6.9	mg/L		0.1		E200.7	09/04/18 17:44 / rjh
Silver	ND	mg/L		0.001		E200.8	09/09/18 11:40 / car
Sodium	8	mg/L		1		E200.7	09/04/18 17:44 / rjh
Strontium	0.01	mg/L		0.01		E200.7	09/04/18 17:44 / rjh
Thallium	ND	mg/L		0.0005		E200.8	09/09/18 11:40 / car
Tin	ND	mg/L		0.01		E200.8	09/09/18 11:40 / car
Titanium	0.029	mg/L		0.005		E200.8	09/09/18 11:40 / car
Uranium	ND	mg/L		0.0003		E200.8	09/09/18 11:40 / car
Vanadium	ND	mg/L		0.01		E200.8	09/09/18 11:40 / car
Zinc	0.02	mg/L		0.01		E200.7	09/04/18 17:44 / rjh
<b>METALS, TOTAL</b>							
Selenium	ND	mg/L	D	0.003		A3114 C	09/10/18 13:29 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	09/10/18 12:24 / eli-h
Selenium-VI	ND	mg/L		0.003		A3114 C	09/10/18 17:28 / eli-h

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18083012-009  
**Client Sample ID:** R6

**Report Date:** 09/17/18  
**Collection Date:** 08/29/18 11:00  
**Date Received:** 08/30/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	13	mg/L	D	2		A5310 C	09/07/18 07:54 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.06	mg/L		0.03		E200.8	09/09/18 11:44 / car
Antimony	ND	mg/L		0.001		E200.8	09/09/18 11:44 / car
Arsenic	0.036	mg/L		0.001		E200.8	09/09/18 11:44 / car
Barium	0.09	mg/L		0.05		E200.7	09/04/18 17:55 / rjh
Beryllium	ND	mg/L		0.001		E200.7	09/04/18 17:55 / rjh
Boron	ND	mg/L		0.05		E200.7	09/04/18 17:55 / rjh
Cadmium	ND	mg/L		0.001		E200.8	09/09/18 11:44 / car
Calcium	44	mg/L		1		E200.7	09/04/18 17:55 / rjh
Chromium	ND	mg/L		0.005		E200.8	09/09/18 11:44 / car
Cobalt	ND	mg/L		0.005		E200.8	09/09/18 11:44 / car
Copper	ND	mg/L		0.005		E200.7	09/04/18 17:55 / rjh
Iron	0.06	mg/L		0.02		E200.7	09/04/18 17:55 / rjh
Lead	ND	mg/L		0.001		E200.8	09/09/18 11:44 / car
Lithium	ND	mg/L		0.1		E200.7	09/04/18 17:55 / rjh
Magnesium	38	mg/L		1		E200.7	09/04/18 17:55 / rjh
Manganese	0.003	mg/L		0.001		E200.8	09/09/18 11:44 / car
Molybdenum	0.006	mg/L		0.001		E200.8	09/09/18 11:44 / car
Nickel	ND	mg/L		0.005		E200.7	09/04/18 17:55 / rjh
Potassium	2	mg/L		1		E200.7	09/04/18 17:55 / rjh
Selenium	0.030	mg/L		0.001		E200.8	09/09/18 11:44 / car
Silicon	3.1	mg/L		0.1		E200.7	09/04/18 17:55 / rjh
Silver	ND	mg/L		0.001		E200.8	09/09/18 11:44 / car
Sodium	8	mg/L		1		E200.7	09/04/18 17:55 / rjh
Strontium	0.24	mg/L		0.01		E200.7	09/04/18 17:55 / rjh
Thallium	ND	mg/L		0.0005		E200.8	09/09/18 11:44 / car
Tin	ND	mg/L		0.01		E200.8	09/09/18 11:44 / car
Titanium	ND	mg/L		0.005		E200.8	09/09/18 11:44 / car
Uranium	0.0053	mg/L		0.0003		E200.8	09/09/18 11:44 / car
Vanadium	ND	mg/L		0.01		E200.8	09/09/18 11:44 / car
Zinc	ND	mg/L		0.01		E200.7	09/04/18 17:55 / rjh
<b>METALS, TOTAL</b>							
Selenium	0.023	mg/L	D	0.003		A3114 C	09/10/18 13:31 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	09/10/18 12:25 / eli-h
Selenium-VI	0.023	mg/L		0.003		A3114 C	09/10/18 17:28 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 09/10/18  
**Work Order:** B18083012

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: A5310 C</b>							Analytical Run: TOC3-C_180906A		
<b>Lab ID: CCV-10292</b>	Continuing Calibration Verification Standard						09/07/18 05:29		
Organic Carbon, Dissolved (DOC)	4.81	mg/L	0.50	96	90	110			
<b>Method: A5310 C</b>							Batch: R239347		
<b>Lab ID: LCS-10002</b>	Laboratory Control Sample						Run: TOC3-C_180906A 09/07/18 04:58		
Organic Carbon, Dissolved (DOC)	4.79	mg/L	0.50	93	90	110			
<b>Lab ID: MBLK</b>	Method Blank						Run: TOC3-C_180906A 09/07/18 05:13		
Organic Carbon, Dissolved (DOC)	0.2	mg/L	0.04						
<b>Lab ID: C18090089-001AMS</b>	Sample Matrix Spike						Run: TOC3-C_180906A 09/07/18 08:26		
Organic Carbon, Dissolved (DOC)	8.89	mg/L	0.50	99	85	115			
<b>Lab ID: C18090089-001AMSD</b>	Sample Matrix Spike Duplicate						Run: TOC3-C_180906A 09/07/18 08:42		
Organic Carbon, Dissolved (DOC)	8.94	mg/L	0.50	101	85	115	0.6	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 09/11/18  
**Work Order:** B18083012

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A3114 C	ritical Run: SELENIUM PSA MILLENIUM_180910A								
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard								
Selenium-IV	0.0208	mg/L	0.0010	104	90	110			09/10/18 12:00
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								
Selenium-IV	0.0202	mg/L	0.0010	101	90	110			09/10/18 12:02
<b>Method:</b> A3114 C	Batch: 43031								
<b>Lab ID:</b> MB-43031	Method Blank								
Selenium-IV	ND	mg/L	0.0006						Run: SELENIUM PSA MILLENIUM_ 09/10/18 12:05
<b>Lab ID:</b> LCS-43031	Laboratory Control Sample								
Selenium-IV	0.0202	mg/L	0.0010	101	90	110			Run: SELENIUM PSA MILLENIUM_ 09/10/18 12:07
<b>Lab ID:</b> LFB-43031	Laboratory Fortified Blank								
Selenium-IV	0.0197	mg/L	0.0010	98	85	115			Run: SELENIUM PSA MILLENIUM_ 09/10/18 12:08
<b>Lab ID:</b> B18083012-005CMS	Sample Matrix Spike								
Selenium-IV	0.0557	mg/L	0.0030	93	70	130			Run: SELENIUM PSA MILLENIUM_ 09/10/18 12:18
<b>Lab ID:</b> B18083012-005CMSD	Sample Matrix Spike Duplicate								
Selenium-IV	0.0569	mg/L	0.0030	95	70	130	2.3	20	Run: SELENIUM PSA MILLENIUM_ 09/10/18 12:19
<b>Method:</b> A3114 C	ritical Run: SELENIUM PSA MILLENIUM_180910B								
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard								
Selenium	0.0375	mg/L	0.0010	94	90	110			09/10/18 12:59
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								
Selenium	0.0217	mg/L	0.0010	109	90	110			09/10/18 13:07
<b>Method:</b> A3114 C	Batch: 43030								
<b>Lab ID:</b> MB-43030	Method Blank								
Selenium	0.0003	mg/L	0.0002						Run: SELENIUM PSA MILLENIUM_ 09/10/18 13:10
<b>Lab ID:</b> LCS-43030	Laboratory Control Sample								
Selenium	0.0361	mg/L	0.0010	90	90	110			Run: SELENIUM PSA MILLENIUM_ 09/10/18 13:12
<b>Lab ID:</b> LFB-43030	Laboratory Fortified Blank								
Selenium	0.0376	mg/L	0.0010	93	85	115			Run: SELENIUM PSA MILLENIUM_ 09/10/18 13:13
<b>Lab ID:</b> B18083012-007CMS	Sample Matrix Spike								
Selenium	0.113	mg/L	0.0030	93	70	130			Run: SELENIUM PSA MILLENIUM_ 09/10/18 13:26
<b>Lab ID:</b> B18083012-007CMSD	Sample Matrix Spike Duplicate								
Selenium	0.115	mg/L	0.0030	95	70	130	2.5	20	Run: SELENIUM PSA MILLENIUM_ 09/10/18 13:28

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.





# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 09/17/18  
**Work Order:** B18083012

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E200.7		Analytical Run: ICP204-B_180904A								
<b>Lab ID:</b> ICV	14 Continuing Calibration Verification Standard									09/04/18 10:54
Barium		2.48	mg/L	0.10	99	95	105			
Beryllium		1.23	mg/L	0.010	99	95	105			
Boron		2.46	mg/L	0.10	99	95	105			
Calcium		25.1	mg/L	1.0	100	95	105			
Copper		2.42	mg/L	0.010	97	95	105			
Iron		2.53	mg/L	0.020	101	95	105			
Lithium		1.26	mg/L	0.10	101	95	105			
Magnesium		25.3	mg/L	1.0	101	95	105			
Nickel		2.44	mg/L	0.050	98	95	105			
Potassium		25.4	mg/L	1.0	102	95	105			
Silicon		5.02	mg/L	0.10	100	95	105			
Sodium		25.4	mg/L	1.0	102	95	105			
Strontium		2.46	mg/L	0.10	98	95	105			
Zinc		2.48	mg/L	0.010	99	95	105			

<b>Method:</b> E200.7		Batch: R306752								
<b>Lab ID:</b> MB-7400DIS180831A	14 Method Blank									Run: ICP204-B_180904A
09/04/18 11:02										
Barium		ND	mg/L	0.0010						
Beryllium		ND	mg/L	0.0005						
Boron		ND	mg/L	0.01						
Calcium		ND	mg/L	0.07						
Copper		ND	mg/L	0.004						
Iron		ND	mg/L	0.02						
Lithium		ND	mg/L	0.02						
Magnesium		ND	mg/L	0.02						
Nickel		ND	mg/L	0.004						
Potassium		ND	mg/L	0.1						
Silicon		ND	mg/L	0.07						
Sodium		ND	mg/L	0.1						
Strontium		ND	mg/L	0.001						
Zinc		ND	mg/L	0.002						

<b>Lab ID:</b> LFB-7400DIS180831A	14 Laboratory Fortified Blank									Run: ICP204-B_180904A
09/04/18 11:09										
Barium		0.966	mg/L	0.10	97	85	115			
Beryllium		0.474	mg/L	0.010	95	85	115			
Boron		0.965	mg/L	0.10	96	85	115			
Calcium		49.5	mg/L	1.0	99	85	115			
Copper		0.946	mg/L	0.010	95	85	115			
Iron		4.99	mg/L	0.020	100	85	115			
Lithium		0.988	mg/L	0.10	99	85	115			
Magnesium		49.6	mg/L	1.0	99	85	115			
Nickel		0.937	mg/L	0.050	94	85	115			
Potassium		49.7	mg/L	1.0	99	85	115			
Silicon		9.78	mg/L	0.10	98	85	115			

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 09/17/18  
**Work Order:** B18083012

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>										
Batch: R306752										
<b>Lab ID:</b>	<b>LFB-7400DIS180831A</b>	14	Laboratory Fortified Blank							
										Run: ICP204-B_180904A 09/04/18 11:09
Sodium		50.3	mg/L	1.0	101	85	115			
Strontium		0.974	mg/L	0.10	97	85	115			
Zinc		0.961	mg/L	0.010	96	85	115			
<b>Lab ID:</b>	<b>B18083012-003AMS2</b>	14	Sample Matrix Spike							
										Run: ICP204-B_180904A 09/04/18 17:21
Barium		1.02	mg/L	0.050	96	70	130			
Beryllium		0.455	mg/L	0.0010	91	70	130			
Boron		0.942	mg/L	0.050	94	70	130			
Calcium		54.1	mg/L	1.0	97	70	130			
Copper		0.930	mg/L	0.0050	93	70	130			
Iron		5.36	mg/L	0.020	100	70	130			
Lithium		0.984	mg/L	0.10	98	70	130			
Magnesium		51.4	mg/L	1.0	99	70	130			
Nickel		0.931	mg/L	0.0050	93	70	130			
Potassium		50.4	mg/L	1.0	100	70	130			
Silicon		12.9	mg/L	0.10	98	70	130			
Sodium		80.0	mg/L	1.0	98	70	130			
Strontium		0.992	mg/L	0.010	97	70	130			
Zinc		0.953	mg/L	0.010	95	70	130			
<b>Lab ID:</b>	<b>B18083012-003AMS2</b>	14	Sample Matrix Spike Duplicate							
										Run: ICP204-B_180904A 09/04/18 17:25
Barium		1.04	mg/L	0.050	98	70	130	1.6	20	
Beryllium		0.457	mg/L	0.0010	91	70	130	0.5	20	
Boron		0.952	mg/L	0.050	95	70	130	1.0	20	
Calcium		54.0	mg/L	1.0	97	70	130	0.2	20	
Copper		0.943	mg/L	0.0050	94	70	130	1.3	20	
Iron		5.35	mg/L	0.020	99	70	130	0.2	20	
Lithium		1.01	mg/L	0.10	101	70	130	3.0	20	
Magnesium		51.9	mg/L	1.0	100	70	130	0.9	20	
Nickel		0.935	mg/L	0.0050	93	70	130	0.4	20	
Potassium		51.5	mg/L	1.0	102	70	130	2.1	20	
Silicon		13.1	mg/L	0.10	100	70	130	1.2	20	
Sodium		80.8	mg/L	1.0	100	70	130	1.1	20	
Strontium		1.00	mg/L	0.010	98	70	130	0.9	20	
Zinc		0.958	mg/L	0.010	95	70	130	0.5	20	
<b>Lab ID:</b>	<b>B18083015-004BMS2</b>	14	Sample Matrix Spike							
										Run: ICP204-B_180904A 09/04/18 18:19
Barium		4.75	mg/L	0.050	95	70	130			
Beryllium		2.30	mg/L	0.0024	92	70	130			
Boron		6.35	mg/L	0.065	96	70	130			
Calcium		581	mg/L	1.0	104	70	130			
Copper		4.63	mg/L	0.019	93	70	130			
Iron		24.6	mg/L	0.086	99	70	130			
Lithium		4.87	mg/L	0.10	94	70	130			
Magnesium		397	mg/L	1.0	104	70	130			

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 09/17/18  
**Work Order:** B18083012

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>										Batch: R306752
<b>Lab ID:</b>	<b>B18083015-004BMS2</b>	14	Sample Matrix Spike							09/04/18 18:19
Nickel		4.65	mg/L	0.023	93	70	130			
Potassium		251	mg/L	1.0	95	70	130			
Silicon		54.8	mg/L	0.38	98	70	130			
Sodium		572	mg/L	1.0	105	70	130			
Strontium		9.80	mg/L	0.010	99	70	130			
Zinc		4.77	mg/L	0.012	95	70	130			
<b>Lab ID: B18083015-004BMSD</b>										09/04/18 18:23
		14	Sample Matrix Spike Duplicate							
Barium		4.68	mg/L	0.050	93	70	130	1.5	20	
Beryllium		2.28	mg/L	0.0024	91	70	130	0.8	20	
Boron		6.28	mg/L	0.065	95	70	130	1.1	20	
Calcium		580	mg/L	1.0	104	70	130	0.1	20	
Copper		4.53	mg/L	0.019	91	70	130	2.1	20	
Iron		24.5	mg/L	0.086	98	70	130	0.5	20	
Lithium		4.66	mg/L	0.10	90	70	130	4.3	20	
Magnesium		396	mg/L	1.0	104	70	130	0.1	20	
Nickel		4.64	mg/L	0.023	93	70	130	0.4	20	
Potassium		241	mg/L	1.0	91	70	130	4.0	20	
Silicon		54.3	mg/L	0.38	97	70	130	0.8	20	
Sodium		561	mg/L	1.0	100	70	130	2.0	20	
Strontium		9.60	mg/L	0.010	95	70	130	2.0	20	
Zinc		4.77	mg/L	0.012	95	70	130	0.1	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 09/17/18  
**Work Order:** B18083012

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.8</b>										Analytical Run: ICPMS207-B_180908A	
<b>Lab ID: QCS</b>	16 Initial Calibration Verification Standard									09/08/18 12:39	
Aluminum		0.248	mg/L	0.10	99	90	110				
Antimony		0.0503	mg/L	0.050	101	90	110				
Arsenic		0.0505	mg/L	0.0050	101	90	110				
Cadmium		0.0248	mg/L	0.0010	99	90	110				
Chromium		0.0505	mg/L	0.010	101	90	110				
Cobalt		0.0507	mg/L	0.010	101	90	110				
Lead		0.0490	mg/L	0.010	98	90	110				
Manganese		0.252	mg/L	0.010	101	90	110				
Molybdenum		0.0490	mg/L	0.0050	98	90	110				
Selenium		0.0472	mg/L	0.0050	95	90	110				
Silver		0.0253	mg/L	0.0050	101	90	110				
Thallium		0.0487	mg/L	0.10	97	90	110				
Tin		0.0503	mg/L	0.10	101	90	110				
Titanium		0.0479	mg/L	0.010	96	90	110				
Uranium		0.0214	mg/L	0.00030	107	90	110				
Vanadium		0.0496	mg/L	0.10	99	90	110				

<b>Method: E200.8</b>										Batch: R307032	
<b>Lab ID: LRB</b>	16 Method Blank									Run: ICPMS207-B_180908A	09/08/18 12:55
Aluminum		ND	mg/L	0.0009							
Antimony		ND	mg/L	0.0004							
Arsenic		ND	mg/L	0.0002							
Cadmium		ND	mg/L	0.00002							
Chromium		ND	mg/L	0.0002							
Cobalt		ND	mg/L	0.00004							
Lead		ND	mg/L	0.00006							
Manganese		ND	mg/L	0.00010							
Molybdenum		ND	mg/L	0.00005							
Selenium		ND	mg/L	0.0003							
Silver		ND	mg/L	0.00002							
Thallium		ND	mg/L	0.00004							
Tin		ND	mg/L	0.001							
Titanium		ND	mg/L	0.00009							
Uranium		ND	mg/L	0.00005							
Vanadium		ND	mg/L	0.001							

<b>Lab ID: LFB</b>	16 Laboratory Fortified Blank									Run: ICPMS207-B_180908A	09/08/18 12:59
Aluminum		0.0513	mg/L	0.10	103	85	115				
Antimony		0.0473	mg/L	0.050	95	85	115				
Arsenic		0.0533	mg/L	0.0050	107	85	115				
Cadmium		0.0512	mg/L	0.0010	102	85	115				
Chromium		0.0530	mg/L	0.010	106	85	115				
Cobalt		0.0529	mg/L	0.010	106	85	115				
Lead		0.0513	mg/L	0.010	103	85	115				

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 09/17/18  
**Work Order:** B18083012

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.8</b>											
Batch: R307032											
<b>Lab ID: LFB</b>	16 Laboratory Fortified Blank				Run: ICPMS207-B_180908A				09/08/18 12:59		
Manganese		0.0536	mg/L	0.010	107	85	115				
Molybdenum		0.0522	mg/L	0.0050	104	85	115				
Selenium		0.0502	mg/L	0.0050	100	85	115				
Silver		0.0206	mg/L	0.0050	103	85	115				
Thallium		0.0511	mg/L	0.10	102	85	115				
Tin		0.0515	mg/L	0.10	103	85	115				
Titanium		0.0546	mg/L	0.010	109	85	115				
Uranium		0.0518	mg/L	0.00030	104	85	115				
Vanadium		0.0530	mg/L	0.10	106	85	115				
<b>Lab ID: B18083012-004AMS</b>	16 Sample Matrix Spike				Run: ICPMS207-B_180908A				09/09/18 11:17		
Aluminum		2.96	mg/L	0.030		70	130			A	
Antimony		0.0466	mg/L	0.0010	92	70	130				
Arsenic		0.0704	mg/L	0.0010	103	70	130				
Cadmium		0.0519	mg/L	0.0010	104	70	130				
Chromium		0.0567	mg/L	0.0050	101	70	130				
Cobalt		0.0509	mg/L	0.0050	100	70	130				
Lead		0.0526	mg/L	0.0010	103	70	130				
Manganese		0.0588	mg/L	0.0010	103	70	130				
Molybdenum		0.0535	mg/L	0.0010	104	70	130				
Selenium		0.0535	mg/L	0.0010	100	70	130				
Silver		0.0252	mg/L	0.0010	111	70	130				
Thallium		0.0522	mg/L	0.00050	104	70	130				
Tin		0.0560	mg/L	0.010	105	70	130				
Titanium		0.126	mg/L	0.0050	117	70	130				
Uranium		0.0506	mg/L	0.00030	101	70	130				
Vanadium		0.0594	mg/L	0.010	103	70	130				
<b>Lab ID: B18083012-004AMSD</b>	16 Sample Matrix Spike Duplicate				Run: ICPMS207-B_180908A				09/09/18 11:21		
Aluminum		2.80	mg/L	0.030		70	130	5.4	20	A	
Antimony		0.0437	mg/L	0.0010	87	70	130	6.4	20		
Arsenic		0.0707	mg/L	0.0010	103	70	130	0.5	20		
Cadmium		0.0487	mg/L	0.0010	97	70	130	6.3	20		
Chromium		0.0576	mg/L	0.0050	103	70	130	1.5	20		
Cobalt		0.0486	mg/L	0.0050	95	70	130	4.7	20		
Lead		0.0501	mg/L	0.0010	98	70	130	4.8	20		
Manganese		0.0585	mg/L	0.0010	102	70	130	0.4	20		
Molybdenum		0.0503	mg/L	0.0010	98	70	130	6.1	20		
Selenium		0.0544	mg/L	0.0010	102	70	130	1.6	20		
Silver		0.0236	mg/L	0.0010	103	70	130	6.8	20		
Thallium		0.0527	mg/L	0.00050	105	70	130	0.8	20		
Tin		0.0565	mg/L	0.010	106	70	130	0.7	20		
Titanium		0.121	mg/L	0.0050	107	70	130	4.1	20		
Uranium		0.0483	mg/L	0.00030	96	70	130	4.8	20		
Vanadium		0.0598	mg/L	0.010	104	70	130	0.8	20		

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 09/17/18  
**Work Order:** B18083012

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E200.8										Batch: R307032
<b>Lab ID:</b> B18083012-004AMSD	16	Sample Matrix Spike Duplicate						Run: ICPMS207-B_180908A		09/09/18 11:21

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# Work Order Receipt Checklist

Enviromin Inc

B18083012

Login completed by: Leslie S. Cadreau

Date Received: 8/30/2018

Reviewed by: BL2000\raschim

Received by: gda

Reviewed Date: 8/31/2018

Carrier name: Return-UPS Ground

- Shipping container/cooler in good condition? Yes  No  Not Present
- Custody seals intact on all shipping container(s)/cooler(s)? Yes  No  Not Present
- Custody seals intact on all sample bottles? Yes  No  Not Present
- Chain of custody present? Yes  No
- Chain of custody signed when relinquished and received? Yes  No
- Chain of custody agrees with sample labels? Yes  No
- Samples in proper container/bottle? Yes  No
- Sample containers intact? Yes  No
- Sufficient sample volume for indicated test? Yes  No
- All samples received within holding time?  
(Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.) Yes  No
- Temp Blank received in all shipping container(s)/cooler(s)? Yes  No  Not Applicable
- Container/Temp Blank temperature: 4.7°C On Ice
- Water - VOA vials have zero headspace? Yes  No  No VOA vials submitted
- Water - pH acceptable upon receipt? Yes  No  Not Applicable

## Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

## Contact and Corrective Action Comments:

None

# Chain of Custody & Analytical Request Record

Comments

### Report Information (if different than Account Information)

Company/Name: \_\_\_\_\_  
 Contact: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_  
 City, State, Zip: \_\_\_\_\_  
 Email: \_\_\_\_\_  
 Receive Report  Hard Copy  Email  
 Special Report/Format:  LEVEL IV  NELAC  EDD/EDT (contact laboratory)  Other \_\_\_\_\_

### Account Information (Billing Information)

Company/Name: EnergyLab  
 Contact: Terry Biere  
 Phone: 406 438 2333  
 Mailing Address: 524 Professional Drive  
 City, State, Zip: Bozeman, MT 59715  
 Email: terrybiere@energylab.com  
 Receive Invoice  Hard Copy  Email  
 Purchase Order: 4093 Bottle Order

### Project Information

Project Name, PWSID, Permit, etc.: NWP Column Study  
 Sampler Name: \_\_\_\_\_  
 Sample Origin State: \_\_\_\_\_  
 EPA/State Compliance  Yes  No  
 MIDDING CLIENTS, please indicate sample type.  
 Byproduct 11 (e)2 material  Unprocessed ore (NOT ground or refined)\*

All turnaround times are standard unless marked as RUSH.  
 Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling - See Instructions Page

### Analysis Requested

Matrix Codes	Number of Containers	Matrix (See Codes Allowed)
A - Air		
W - Water		
S - Solids		
V - Vegetation		
B - Bioassay		
O - Other		
DW - Drinking Water		

Sample Identification (Name, Location, Interval, etc.)	Collection		Number of Containers	Matrix (See Codes Allowed)	Analysis Requested	Date/Time	Signature
	Date	Time					
1 F1	8/29/08	11AM	3	W	DIC Drs Notable + Se Protocol A Se Speciation		
2 F2							
3 F3							
4 R1							
5 R2							
6 R3							
7 R4							
8 R5							
9 R6							
10							

Received by (print): GOULP ASCHEM  
 Date/Time: 8/29/08 1:10  
 Signature: [Signature]  
 Amount: \$ \_\_\_\_\_  
 Payment Type:  Cash  Check  
 Receipt Number (cash/check only): \_\_\_\_\_

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.





# ANALYTICAL SUMMARY REPORT

October 26, 2018

Enviromin Inc  
524 Professional Dr  
Bozeman, MT 59718

Work Order: B18101241                      Quote ID: B4093 - Enviromin Lab

Project Name: Not Indicated

Energy Laboratories Inc Billings MT received the following 9 samples for Enviromin Inc on 10/12/2018 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B18101241-001	F1	10/11/18 11:00	10/12/18	Aqueous	Metals by ICP/ICPMS, Dissolved Carbon, Dissolved Organic Selenium By CVAA, Total Selenium IV, Total Selenium-VI, Total
B18101241-002	F2	10/11/18 11:00	10/12/18	Aqueous	Same As Above
B18101241-003	F3	10/11/18 11:00	10/12/18	Aqueous	Same As Above
B18101241-004	R1	10/11/18 11:00	10/12/18	Aqueous	Same As Above
B18101241-005	R2	10/11/18 11:00	10/12/18	Aqueous	Same As Above
B18101241-006	R3	10/11/18 11:00	10/12/18	Aqueous	Same As Above
B18101241-007	R4	10/11/18 11:00	10/12/18	Aqueous	Same As Above
B18101241-008	R5	10/11/18 11:00	10/12/18	Aqueous	Same As Above
B18101241-009	R6	10/11/18 11:00	10/12/18	Aqueous	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:



**CLIENT:** Enviromin Inc  
**Project:** Not Indicated  
**Work Order:** B18101241

**Report Date:** 10/26/18

## CASE NARRATIVE

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Tests associated with analyst identified as ELI-CA were subcontracted to Energy Laboratories, PO Box 247, Casper, WY, EPA Number WY00002.

Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 East Lyndale Ave, Helena, MT, EPA Number MT00945.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18101241-001  
**Client Sample ID:** F1

**Report Date:** 10/26/18  
**Collection Date:** 10/11/18 11:00  
**Date Received:** 10/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	5.2	mg/L		0.5		A5310 C	10/18/18 16:11 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.07	mg/L		0.03		E200.8	10/24/18 05:06 / by
Antimony	0.001	mg/L		0.001		E200.8	10/23/18 07:34 / by
Arsenic	ND	mg/L		0.001		E200.8	10/23/18 07:34 / by
Barium	ND	mg/L		0.05		E200.7	10/16/18 21:38 / r/h
Beryllium	ND	mg/L		0.001		E200.7	10/16/18 21:38 / r/h
Boron	0.05	mg/L		0.05		E200.7	10/16/18 21:38 / r/h
Cadmium	ND	mg/L		0.001		E200.8	10/23/18 07:34 / by
Calcium	5	mg/L		1		E200.7	10/16/18 21:38 / r/h
Chromium	ND	mg/L		0.005		E200.8	10/23/18 07:34 / by
Cobalt	ND	mg/L		0.005		E200.8	10/23/18 07:34 / by
Copper	ND	mg/L		0.005		E200.7	10/16/18 21:38 / r/h
Iron	0.07	mg/L		0.02		E200.8	10/24/18 05:06 / by
Lead	ND	mg/L		0.001		E200.8	10/23/18 07:34 / by
Lithium	ND	mg/L		0.1		E200.7	10/16/18 21:38 / r/h
Magnesium	1	mg/L		1		E200.7	10/16/18 21:38 / r/h
Manganese	ND	mg/L		0.001		E200.8	10/23/18 07:34 / by
Molybdenum	ND	mg/L		0.001		E200.8	10/23/18 07:34 / by
Nickel	ND	mg/L		0.005		E200.8	10/23/18 07:34 / by
Potassium	ND	mg/L		1		E200.7	10/16/18 21:38 / r/h
Selenium	0.067	mg/L		0.001		E200.8	10/24/18 05:06 / by
Silicon	1.2	mg/L		0.1		E200.7	10/16/18 21:38 / r/h
Silver	ND	mg/L		0.001		E200.8	10/23/18 07:34 / by
Sodium	156	mg/L		1		E200.7	10/16/18 21:38 / r/h
Strontium	0.02	mg/L		0.01		E200.7	10/16/18 21:38 / r/h
Thallium	ND	mg/L		0.0005		E200.8	10/23/18 07:34 / by
Tin	ND	mg/L		0.01		E200.8	10/23/18 07:34 / by
Titanium	ND	mg/L		0.005		E200.8	10/23/18 07:34 / by
Uranium	ND	mg/L		0.0003		E200.8	10/23/18 07:34 / by
Vanadium	ND	mg/L		0.01		E200.8	10/23/18 07:34 / by
Zinc	ND	mg/L		0.01		E200.7	10/16/18 21:38 / r/h
<b>METALS, TOTAL</b>							
Selenium	0.067	mg/L	D	0.003		A3114 C	10/19/18 11:25 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.007	mg/L	D	0.003		A3114 C	10/19/18 15:16 / eli-h
Selenium-VI	0.059	mg/L		0.001		A3114 C	10/19/18 16:26 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18101241-002  
**Client Sample ID:** F2

**Report Date:** 10/26/18  
**Collection Date:** 10/11/18 11:00  
**Date Received:** 10/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	6	mg/L	D	2		A5310 C	10/18/18 16:21 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.18	mg/L		0.03		E200.8	10/24/18 05:10 / by
Antimony	ND	mg/L		0.001		E200.8	10/23/18 07:38 / by
Arsenic	0.001	mg/L		0.001		E200.8	10/23/18 07:38 / by
Barium	ND	mg/L		0.05		E200.7	10/16/18 21:53 / r/h
Beryllium	ND	mg/L		0.001		E200.7	10/16/18 21:53 / r/h
Boron	ND	mg/L		0.05		E200.7	10/16/18 21:53 / r/h
Cadmium	ND	mg/L		0.001		E200.8	10/23/18 07:38 / by
Calcium	3	mg/L		1		E200.7	10/16/18 21:53 / r/h
Chromium	ND	mg/L		0.005		E200.8	10/23/18 07:38 / by
Cobalt	ND	mg/L		0.005		E200.8	10/23/18 07:38 / by
Copper	ND	mg/L		0.005		E200.7	10/16/18 21:53 / r/h
Iron	0.15	mg/L		0.02		E200.8	10/24/18 05:10 / by
Lead	0.001	mg/L		0.001		E200.8	10/23/18 07:38 / by
Lithium	ND	mg/L		0.1		E200.7	10/16/18 21:53 / r/h
Magnesium	ND	mg/L		1		E200.7	10/16/18 21:53 / r/h
Manganese	ND	mg/L		0.001		E200.8	10/23/18 07:38 / by
Molybdenum	ND	mg/L		0.001		E200.8	10/23/18 07:38 / by
Nickel	ND	mg/L		0.005		E200.8	10/23/18 07:38 / by
Potassium	ND	mg/L		1		E200.7	10/16/18 21:53 / r/h
Selenium	0.095	mg/L		0.001		E200.8	10/24/18 05:10 / by
Silicon	1.1	mg/L		0.1		E200.7	10/16/18 21:53 / r/h
Silver	ND	mg/L		0.001		E200.8	10/23/18 07:38 / by
Sodium	163	mg/L		1		E200.7	10/16/18 21:53 / r/h
Strontium	ND	mg/L		0.01		E200.7	10/16/18 21:53 / r/h
Thallium	ND	mg/L		0.0005		E200.8	10/23/18 07:38 / by
Tin	ND	mg/L		0.01		E200.8	10/23/18 07:38 / by
Titanium	ND	mg/L		0.005		E200.8	10/23/18 07:38 / by
Uranium	0.0029	mg/L		0.0003		E200.8	10/23/18 07:38 / by
Vanadium	ND	mg/L		0.01		E200.8	10/23/18 07:38 / by
Zinc	ND	mg/L		0.01		E200.7	10/16/18 21:53 / r/h
<b>METALS, TOTAL</b>							
Selenium	0.095	mg/L		0.001		A3114 C	10/25/18 16:37 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.018	mg/L	D	0.003		A3114 C	10/19/18 15:18 / eli-h
Selenium-VI	0.077	mg/L		0.001		A3114 C	10/25/18 16:58 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18101241-003  
**Client Sample ID:** F3

**Report Date:** 10/26/18  
**Collection Date:** 10/11/18 11:00  
**Date Received:** 10/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	5.1	mg/L		0.5		A5310 C	10/18/18 16:31 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.04	mg/L		0.03		E200.8	10/24/18 05:14 / by
Antimony	ND	mg/L		0.001		E200.8	10/23/18 07:42 / by
Arsenic	ND	mg/L		0.001		E200.8	10/23/18 07:42 / by
Barium	ND	mg/L		0.05		E200.7	10/16/18 21:57 / r/h
Beryllium	ND	mg/L		0.001		E200.7	10/16/18 21:57 / r/h
Boron	0.06	mg/L		0.05		E200.7	10/16/18 21:57 / r/h
Cadmium	ND	mg/L		0.001		E200.8	10/23/18 07:42 / by
Calcium	6	mg/L		1		E200.7	10/16/18 21:57 / r/h
Chromium	ND	mg/L		0.005		E200.8	10/23/18 07:42 / by
Cobalt	ND	mg/L		0.005		E200.8	10/23/18 07:42 / by
Copper	ND	mg/L		0.005		E200.7	10/16/18 21:57 / r/h
Iron	0.07	mg/L		0.02		E200.8	10/24/18 05:14 / by
Lead	ND	mg/L		0.001		E200.8	10/23/18 07:42 / by
Lithium	ND	mg/L		0.1		E200.7	10/16/18 21:57 / r/h
Magnesium	2	mg/L		1		E200.7	10/16/18 21:57 / r/h
Manganese	ND	mg/L		0.001		E200.8	10/23/18 07:42 / by
Molybdenum	ND	mg/L		0.001		E200.8	10/23/18 07:42 / by
Nickel	ND	mg/L		0.005		E200.8	10/23/18 07:42 / by
Potassium	ND	mg/L		1		E200.7	10/16/18 21:57 / r/h
Selenium	0.201	mg/L		0.001		E200.8	10/24/18 05:14 / by
Silicon	1.8	mg/L		0.1		E200.7	10/16/18 21:57 / r/h
Silver	ND	mg/L		0.001		E200.8	10/23/18 07:42 / by
Sodium	155	mg/L		1		E200.7	10/16/18 21:57 / r/h
Strontium	0.02	mg/L		0.01		E200.7	10/16/18 21:57 / r/h
Thallium	ND	mg/L		0.0005		E200.8	10/23/18 07:42 / by
Tin	ND	mg/L		0.01		E200.8	10/23/18 07:42 / by
Titanium	ND	mg/L		0.005		E200.8	10/23/18 07:42 / by
Uranium	ND	mg/L		0.0003		E200.8	10/23/18 07:42 / by
Vanadium	ND	mg/L		0.01		E200.8	10/23/18 07:42 / by
Zinc	ND	mg/L		0.01		E200.7	10/16/18 21:57 / r/h
<b>METALS, TOTAL</b>							
Selenium	0.181	mg/L		0.001		A3114 C	10/25/18 16:39 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	10/19/18 15:19 / eli-h
Selenium-VI	0.181	mg/L		0.001		A3114 C	10/25/18 16:58 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18101241-004  
**Client Sample ID:** R1

**Report Date:** 10/26/18  
**Collection Date:** 10/11/18 11:00  
**Date Received:** 10/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	33	mg/L	D	2		A5310 C	10/18/18 16:42 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.34	mg/L		0.03		E200.8	10/23/18 08:03 / by
Antimony	0.001	mg/L		0.001		E200.8	10/23/18 08:03 / by
Arsenic	0.017	mg/L		0.001		E200.8	10/23/18 08:03 / by
Barium	ND	mg/L		0.05		E200.7	10/16/18 22:01 / rlh
Beryllium	ND	mg/L		0.001		E200.7	10/16/18 22:01 / rlh
Boron	0.16	mg/L		0.05		E200.7	10/16/18 22:01 / rlh
Cadmium	ND	mg/L		0.001		E200.8	10/23/18 08:03 / by
Calcium	5	mg/L		1		E200.7	10/16/18 22:01 / rlh
Chromium	ND	mg/L		0.005		E200.8	10/23/18 08:03 / by
Cobalt	ND	mg/L		0.005		E200.8	10/23/18 08:03 / by
Copper	0.006	mg/L		0.005		E200.7	10/16/18 22:01 / rlh
Iron	0.40	mg/L		0.02		E200.8	10/23/18 08:03 / by
Lead	ND	mg/L		0.001		E200.8	10/23/18 08:03 / by
Lithium	ND	mg/L		0.1		E200.7	10/16/18 22:01 / rlh
Magnesium	1	mg/L		1		E200.7	10/16/18 22:01 / rlh
Manganese	ND	mg/L		0.001		E200.8	10/23/18 08:03 / by
Molybdenum	0.001	mg/L		0.001		E200.8	10/23/18 08:03 / by
Nickel	0.006	mg/L		0.005		E200.8	10/23/18 08:03 / by
Potassium	ND	mg/L		1		E200.7	10/16/18 22:01 / rlh
Selenium	0.001	mg/L		0.001		E200.8	10/23/18 08:03 / by
Silicon	9.0	mg/L		0.1		E200.7	10/16/18 22:01 / rlh
Silver	0.002	mg/L		0.001		E200.8	10/23/18 08:03 / by
Sodium	22	mg/L		1		E200.7	10/16/18 22:01 / rlh
Strontium	ND	mg/L		0.01		E200.7	10/16/18 22:01 / rlh
Thallium	ND	mg/L		0.0005		E200.8	10/23/18 08:03 / by
Tin	ND	mg/L		0.01		E200.8	10/23/18 08:03 / by
Titanium	0.010	mg/L		0.005		E200.8	10/23/18 08:03 / by
Uranium	ND	mg/L		0.0003		E200.8	10/23/18 08:03 / by
Vanadium	ND	mg/L		0.01		E200.8	10/23/18 08:03 / by
Zinc	ND	mg/L		0.01		E200.7	10/16/18 22:01 / rlh
<b>METALS, TOTAL</b>							
Selenium	ND	mg/L	D	0.003		A3114 C	10/19/18 11:30 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	10/19/18 15:21 / eli-h
Selenium-VI	ND	mg/L		0.001		A3114 C	10/19/18 16:26 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18101241-005  
**Client Sample ID:** R2

**Report Date:** 10/26/18  
**Collection Date:** 10/11/18 11:00  
**Date Received:** 10/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	28	mg/L	D	2		A5310 C	10/18/18 16:53 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	10/24/18 05:45 / by
Antimony	ND	mg/L		0.001		E200.8	10/23/18 08:20 / by
Arsenic	0.041	mg/L		0.001		E200.8	10/23/18 08:20 / by
Barium	0.07	mg/L		0.05		E200.7	10/16/18 22:05 / rlh
Beryllium	ND	mg/L		0.001		E200.7	10/16/18 22:05 / rlh
Boron	0.05	mg/L		0.05		E200.7	10/16/18 22:05 / rlh
Cadmium	ND	mg/L		0.001		E200.8	10/23/18 08:20 / by
Calcium	38	mg/L		1		E200.7	10/16/18 22:05 / rlh
Chromium	ND	mg/L		0.005		E200.8	10/23/18 08:20 / by
Cobalt	ND	mg/L		0.005		E200.8	10/23/18 08:20 / by
Copper	ND	mg/L		0.005		E200.7	10/16/18 22:05 / rlh
Iron	0.09	mg/L		0.02		E200.8	10/24/18 05:45 / by
Lead	ND	mg/L		0.001		E200.8	10/23/18 08:20 / by
Lithium	ND	mg/L		0.1		E200.7	10/16/18 22:05 / rlh
Magnesium	38	mg/L		1		E200.7	10/16/18 22:05 / rlh
Manganese	0.002	mg/L		0.001		E200.8	10/23/18 08:20 / by
Molybdenum	0.008	mg/L		0.001		E200.8	10/23/18 08:20 / by
Nickel	ND	mg/L		0.005		E200.8	10/23/18 08:20 / by
Potassium	2	mg/L		1		E200.7	10/16/18 22:05 / rlh
Selenium	0.015	mg/L		0.001		E200.8	10/23/18 08:20 / by
Silicon	3.9	mg/L		0.1		E200.7	10/16/18 22:05 / rlh
Silver	ND	mg/L		0.001		E200.8	10/23/18 08:20 / by
Sodium	11	mg/L		1		E200.7	10/16/18 22:05 / rlh
Strontium	0.24	mg/L		0.01		E200.7	10/16/18 22:05 / rlh
Thallium	ND	mg/L		0.0005		E200.8	10/23/18 08:20 / by
Tin	ND	mg/L		0.01		E200.8	10/23/18 08:20 / by
Titanium	ND	mg/L		0.005		E200.8	10/23/18 08:20 / by
Uranium	0.0055	mg/L		0.0003		E200.8	10/23/18 08:20 / by
Vanadium	ND	mg/L		0.01		E200.8	10/23/18 08:20 / by
Zinc	ND	mg/L		0.01		E200.7	10/16/18 22:05 / rlh
<b>METALS, TOTAL</b>							
Selenium	0.012	mg/L		0.001		A3114 C	10/25/18 16:40 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	10/19/18 15:23 / eli-h
Selenium-VI	0.012	mg/L		0.001		A3114 C	10/25/18 16:58 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18101241-006  
**Client Sample ID:** R3

**Report Date:** 10/26/18  
**Collection Date:** 10/11/18 11:00  
**Date Received:** 10/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	52	mg/L	D	4		A5310 C	10/18/18 17:03 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.13	mg/L		0.03		E200.8	10/23/18 08:36 / by
Antimony	0.001	mg/L		0.001		E200.8	10/23/18 08:36 / by
Arsenic	0.026	mg/L		0.001		E200.8	10/23/18 08:36 / by
Barium	ND	mg/L		0.05		E200.7	10/16/18 22:09 / rlh
Beryllium	ND	mg/L		0.001		E200.7	10/16/18 22:09 / rlh
Boron	0.17	mg/L		0.05		E200.7	10/16/18 22:09 / rlh
Cadmium	ND	mg/L		0.001		E200.8	10/23/18 08:36 / by
Calcium	7	mg/L		1		E200.7	10/16/18 22:09 / rlh
Chromium	ND	mg/L		0.005		E200.8	10/23/18 08:36 / by
Cobalt	ND	mg/L		0.005		E200.8	10/23/18 08:36 / by
Copper	ND	mg/L		0.005		E200.7	10/16/18 22:09 / rlh
Iron	0.42	mg/L		0.02		E200.8	10/23/18 08:36 / by
Lead	ND	mg/L		0.001		E200.8	10/23/18 08:36 / by
Lithium	ND	mg/L		0.1		E200.7	10/16/18 22:09 / rlh
Magnesium	4	mg/L		1		E200.7	10/16/18 22:09 / rlh
Manganese	0.003	mg/L		0.001		E200.8	10/23/18 08:36 / by
Molybdenum	0.004	mg/L		0.001		E200.8	10/23/18 08:36 / by
Nickel	ND	mg/L		0.005		E200.8	10/23/18 08:36 / by
Potassium	ND	mg/L		1		E200.7	10/16/18 22:09 / rlh
Selenium	ND	mg/L		0.001		E200.8	10/23/18 08:36 / by
Silicon	8.5	mg/L		0.1		E200.7	10/16/18 22:09 / rlh
Silver	0.002	mg/L		0.001		E200.8	10/23/18 08:36 / by
Sodium	37	mg/L		1		E200.7	10/16/18 22:09 / rlh
Strontium	0.02	mg/L		0.01		E200.7	10/16/18 22:09 / rlh
Thallium	ND	mg/L		0.0005		E200.8	10/23/18 08:36 / by
Tin	ND	mg/L		0.01		E200.8	10/23/18 08:36 / by
Titanium	0.008	mg/L		0.005		E200.8	10/23/18 08:36 / by
Uranium	ND	mg/L		0.0003		E200.8	10/23/18 08:36 / by
Vanadium	ND	mg/L		0.01		E200.8	10/23/18 08:36 / by
Zinc	ND	mg/L		0.01		E200.7	10/16/18 22:09 / rlh
<b>METALS, TOTAL</b>							
Selenium	ND	mg/L	D	0.003		A3114 C	10/19/18 11:33 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	10/19/18 15:24 / eli-h
Selenium-VI	ND	mg/L		0.001		A3114 C	10/19/18 16:26 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.





### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18101241-007  
**Client Sample ID:** R4

**Report Date:** 10/26/18  
**Collection Date:** 10/11/18 11:00  
**Date Received:** 10/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	11	mg/L	D	2		A5310 C	10/18/18 17:13 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	10/23/18 08:40 / by
Antimony	ND	mg/L		0.001		E200.8	10/23/18 08:40 / by
Arsenic	0.017	mg/L		0.001		E200.8	10/23/18 08:40 / by
Barium	ND	mg/L		0.05		E200.7	10/16/18 22:21 / r/h
Beryllium	ND	mg/L		0.001		E200.7	10/16/18 22:21 / r/h
Boron	0.07	mg/L		0.05		E200.7	10/16/18 22:21 / r/h
Cadmium	ND	mg/L		0.001		E200.8	10/23/18 08:40 / by
Calcium	21	mg/L		1		E200.7	10/16/18 22:21 / r/h
Chromium	ND	mg/L		0.005		E200.8	10/23/18 08:40 / by
Cobalt	ND	mg/L		0.005		E200.8	10/23/18 08:40 / by
Copper	ND	mg/L		0.005		E200.7	10/16/18 22:21 / r/h
Iron	ND	mg/L		0.02		E200.8	10/23/18 08:40 / by
Lead	ND	mg/L		0.001		E200.8	10/23/18 08:40 / by
Lithium	ND	mg/L		0.1		E200.7	10/16/18 22:21 / r/h
Magnesium	63	mg/L		1		E200.7	10/16/18 22:21 / r/h
Manganese	ND	mg/L		0.001		E200.8	10/23/18 08:40 / by
Molybdenum	0.004	mg/L		0.001		E200.8	10/23/18 08:40 / by
Nickel	ND	mg/L		0.005		E200.8	10/23/18 08:40 / by
Potassium	2	mg/L		1		E200.7	10/16/18 22:21 / r/h
Selenium	ND	mg/L		0.001		E200.8	10/23/18 08:40 / by
Silicon	5.1	mg/L		0.1		E200.7	10/16/18 22:21 / r/h
Silver	ND	mg/L		0.001		E200.8	10/23/18 08:40 / by
Sodium	10	mg/L		1		E200.7	10/16/18 22:21 / r/h
Strontium	0.25	mg/L		0.01		E200.7	10/16/18 22:21 / r/h
Thallium	ND	mg/L		0.0005		E200.8	10/23/18 08:40 / by
Tin	ND	mg/L		0.01		E200.8	10/23/18 08:40 / by
Titanium	ND	mg/L		0.005		E200.8	10/23/18 08:40 / by
Uranium	0.0056	mg/L		0.0003		E200.8	10/23/18 08:40 / by
Vanadium	ND	mg/L		0.01		E200.8	10/23/18 08:40 / by
Zinc	ND	mg/L		0.01		E200.7	10/16/18 22:21 / r/h
<b>METALS, TOTAL</b>							
Selenium	ND	mg/L	D	0.003		A3114 C	10/19/18 11:35 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	10/19/18 15:26 / eli-h
Selenium-VI	ND	mg/L		0.001		A3114 C	10/19/18 16:26 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18101241-008  
**Client Sample ID:** R5

**Report Date:** 10/26/18  
**Collection Date:** 10/11/18 11:00  
**Date Received:** 10/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	57	mg/L	D	4		A5310 C	10/18/18 17:24 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.07	mg/L		0.03		E200.8	10/23/18 08:45 / by
Antimony	0.001	mg/L		0.001		E200.8	10/23/18 08:45 / by
Arsenic	0.036	mg/L		0.001		E200.8	10/23/18 08:45 / by
Barium	ND	mg/L		0.05		E200.7	10/16/18 22:25 / rlh
Beryllium	ND	mg/L		0.001		E200.7	10/16/18 22:25 / rlh
Boron	0.21	mg/L		0.05		E200.7	10/16/18 22:25 / rlh
Cadmium	ND	mg/L		0.001		E200.8	10/23/18 08:45 / by
Calcium	11	mg/L		1		E200.7	10/16/18 22:25 / rlh
Chromium	0.005	mg/L		0.005		E200.8	10/23/18 08:45 / by
Cobalt	ND	mg/L		0.005		E200.8	10/23/18 08:45 / by
Copper	0.007	mg/L		0.005		E200.7	10/16/18 22:25 / rlh
Iron	0.09	mg/L		0.02		E200.8	10/23/18 08:45 / by
Lead	ND	mg/L		0.001		E200.8	10/23/18 08:45 / by
Lithium	ND	mg/L		0.1		E200.7	10/16/18 22:25 / rlh
Magnesium	6	mg/L		1		E200.7	10/16/18 22:25 / rlh
Manganese	ND	mg/L		0.001		E200.8	10/23/18 08:45 / by
Molybdenum	0.003	mg/L		0.001		E200.8	10/23/18 08:45 / by
Nickel	0.014	mg/L		0.005		E200.8	10/23/18 08:45 / by
Potassium	ND	mg/L		1		E200.7	10/16/18 22:25 / rlh
Selenium	ND	mg/L		0.001		E200.8	10/23/18 08:45 / by
Silicon	8.5	mg/L		0.1		E200.7	10/16/18 22:25 / rlh
Silver	ND	mg/L		0.001		E200.8	10/23/18 08:45 / by
Sodium	37	mg/L		1		E200.7	10/16/18 22:25 / rlh
Strontium	0.02	mg/L		0.01		E200.7	10/16/18 22:25 / rlh
Thallium	ND	mg/L		0.0005		E200.8	10/23/18 08:45 / by
Tin	ND	mg/L		0.01		E200.8	10/23/18 08:45 / by
Titanium	ND	mg/L		0.005		E200.8	10/23/18 08:45 / by
Uranium	ND	mg/L		0.0003		E200.8	10/23/18 08:45 / by
Vanadium	ND	mg/L		0.01		E200.8	10/23/18 08:45 / by
Zinc	0.04	mg/L		0.01		E200.7	10/16/18 22:25 / rlh
<b>METALS, TOTAL</b>							
Selenium	ND	mg/L	D	0.003		A3114 C	10/19/18 11:40 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	10/19/18 15:27 / eli-h
Selenium-VI	ND	mg/L		0.001		A3114 C	10/19/18 16:26 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18101241-009  
**Client Sample ID:** R6

**Report Date:** 10/26/18  
**Collection Date:** 10/11/18 11:00  
**Date Received:** 10/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	10	mg/L	D	2		A5310 C	10/18/18 17:33 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	10/23/18 08:49 / by
Antimony	ND	mg/L		0.001		E200.8	10/23/18 08:49 / by
Arsenic	0.035	mg/L		0.001		E200.8	10/23/18 08:49 / by
Barium	ND	mg/L		0.05		E200.7	10/16/18 22:28 / r/h
Beryllium	ND	mg/L		0.001		E200.7	10/16/18 22:28 / r/h
Boron	0.05	mg/L		0.05		E200.7	10/16/18 22:28 / r/h
Cadmium	ND	mg/L		0.001		E200.8	10/23/18 08:49 / by
Calcium	30	mg/L		1		E200.7	10/16/18 22:28 / r/h
Chromium	ND	mg/L		0.005		E200.8	10/23/18 08:49 / by
Cobalt	ND	mg/L		0.005		E200.8	10/23/18 08:49 / by
Copper	ND	mg/L		0.005		E200.7	10/16/18 22:28 / r/h
Iron	0.05	mg/L		0.02		E200.8	10/24/18 05:49 / by
Lead	ND	mg/L		0.001		E200.8	10/23/18 08:49 / by
Lithium	ND	mg/L		0.1		E200.7	10/16/18 22:28 / r/h
Magnesium	55	mg/L		1		E200.7	10/16/18 22:28 / r/h
Manganese	ND	mg/L		0.001		E200.8	10/23/18 08:49 / by
Molybdenum	0.005	mg/L		0.001		E200.8	10/23/18 08:49 / by
Nickel	ND	mg/L		0.005		E200.8	10/23/18 08:49 / by
Potassium	2	mg/L		1		E200.7	10/16/18 22:28 / r/h
Selenium	0.033	mg/L		0.001		E200.8	10/23/18 08:49 / by
Silicon	4.1	mg/L		0.1		E200.7	10/16/18 22:28 / r/h
Silver	ND	mg/L		0.001		E200.8	10/23/18 08:49 / by
Sodium	13	mg/L		1		E200.7	10/16/18 22:28 / r/h
Strontium	0.25	mg/L		0.01		E200.7	10/16/18 22:28 / r/h
Thallium	ND	mg/L		0.0005		E200.8	10/23/18 08:49 / by
Tin	ND	mg/L		0.01		E200.8	10/23/18 08:49 / by
Titanium	ND	mg/L		0.005		E200.8	10/23/18 08:49 / by
Uranium	0.0065	mg/L		0.0003		E200.8	10/23/18 08:49 / by
Vanadium	ND	mg/L		0.01		E200.8	10/23/18 08:49 / by
Zinc	ND	mg/L		0.01		E200.7	10/16/18 22:28 / r/h
<b>METALS, TOTAL</b>							
Selenium	0.028	mg/L		0.001		A3114 C	10/25/18 16:42 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	10/19/18 15:29 / eli-h
Selenium-VI	0.028	mg/L		0.001		A3114 C	10/25/18 16:58 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc

**Report Date:** 10/21/18

**Project:** Not Indicated

**Work Order:** B18101241

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A3114 C									tical Run: SELENIUM PSA MILLENIUM_181019A
<b>Lab ID:</b> ICV-43502	Initial Calibration Verification Standard								
Selenium	1.65	mg/L	0.020	93	90	110			10/19/18 11:04
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								
Selenium	0.0215	mg/L	0.0010	107	90	110			10/19/18 11:07
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								
Selenium	0.0194	mg/L	0.0010	97	90	110			10/19/18 11:38
<b>Method:</b> A3114 C									Batch: 43502
<b>Lab ID:</b> MB-43502	Method Blank								
Selenium	ND	mg/L	0.0002				Run: SELENIUM PSA MILLENIUM_		10/19/18 11:10
<b>Lab ID:</b> LFB-43502	Laboratory Fortified Blank								
Selenium	0.0410	mg/L	0.0010	102	85	115	Run: SELENIUM PSA MILLENIUM_		10/19/18 11:12
<b>Lab ID:</b> LCS-43502	Laboratory Control Sample								
Selenium	1.61	mg/L	0.020	91	90	110	Run: SELENIUM PSA MILLENIUM_		10/19/18 11:16
<b>Lab ID:</b> H18100296-001AMS	Sample Matrix Spike								
Selenium	0.0419	mg/L	0.0010	105	70	130	Run: SELENIUM PSA MILLENIUM_		10/19/18 11:19
<b>Lab ID:</b> H18100296-001AMSD	Sample Matrix Spike Duplicate								
Selenium	0.0399	mg/L	0.0010	100	70	130	5.0	20	Run: SELENIUM PSA MILLENIUM_ 10/19/18 11:21

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc

**Report Date:** 10/21/18

**Project:** Not Indicated

**Work Order:** B18101241

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A3114 C									ritical Run: SELENIUM PSA MILLENIUM_181019B
<b>Lab ID:</b> ICV-43503	Initial Calibration Verification Standard								10/19/18 15:00
Selenium-IV	0.691	mg/L	0.010	101	90	110			
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								10/19/18 15:05
Selenium-IV	0.0198	mg/L	0.0010	99	90	110			
<b>Method:</b> A3114 C									Batch: 43503
<b>Lab ID:</b> MB-43503	Method Blank								Run: SELENIUM PSA MILLENIUM_ 10/19/18 15:06
Selenium-IV	ND	mg/L	0.0006						
<b>Lab ID:</b> LFB-43503	Laboratory Fortified Blank								Run: SELENIUM PSA MILLENIUM_ 10/19/18 15:11
Selenium-IV	0.0200	mg/L	0.0010	100	85	115			
<b>Lab ID:</b> LCS-43503	Laboratory Control Sample								Run: SELENIUM PSA MILLENIUM_ 10/19/18 15:13
Selenium-IV	0.741	mg/L	0.010	109	90	110			
<b>Lab ID:</b> H18100433-001DMS	Sample Matrix Spike								Run: SELENIUM PSA MILLENIUM_ 10/19/18 15:35
Selenium-IV	0.0197	mg/L	0.0010	98	70	130			
<b>Lab ID:</b> H18100433-001DMSD	Sample Matrix Spike Duplicate								Run: SELENIUM PSA MILLENIUM_ 10/19/18 15:37
Selenium-IV	0.0185	mg/L	0.0010	92	70	130	6.3	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc

**Report Date:** 10/21/18

**Project:** Not Indicated

**Work Order:** B18101241

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method:</b> A3114 C								tical Run: SELENIUM PSA MILLENIUM_181025A		
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard									
Selenium	1.64	mg/L	0.010	93	90	110			10/25/18 16:04	
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard									
Selenium	0.0208	mg/L	0.0010	104	90	110			10/25/18 16:06	
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard									
Selenium	0.0201	mg/L	0.0010	101	90	110			10/25/18 16:45	
<b>Method:</b> A3114 C								Batch: 43502		
<b>Lab ID:</b> MB-43502	Method Blank									
Selenium	ND	mg/L	0.0002				Run: SELENIUM PSA MILLENIUM_		10/25/18 16:09	
<b>Lab ID:</b> LCS-43502	Laboratory Control Sample									
Selenium	1.61	mg/L	0.010	91	90	110	Run: SELENIUM PSA MILLENIUM_		10/25/18 16:11	
<b>Lab ID:</b> LFB-43502	Laboratory Fortified Blank									
Selenium	0.0359	mg/L	0.0010	90	85	115	Run: SELENIUM PSA MILLENIUM_		10/25/18 16:20	
<b>Lab ID:</b> H18100499-001AMS	Sample Matrix Spike									
Selenium	0.0451	mg/L	0.0010	113	70	130	Run: SELENIUM PSA MILLENIUM_		10/25/18 16:30	
<b>Lab ID:</b> H18100499-001AMSD	Sample Matrix Spike Duplicate									
Selenium	0.0437	mg/L	0.0010	109	70	130	3.1	20	Run: SELENIUM PSA MILLENIUM_ 10/25/18 16:36	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** Enviromin Inc

**Report Date:** 10/22/18

**Project:** Not Indicated

**Work Order:** B18101241

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: A5310 C</b>							Analytical Run: TOC1-C_181018A		
<b>Lab ID: CCV-10292</b>	Continuing Calibration Verification Standard								
Organic Carbon, Dissolved (DOC)	5.16	mg/L	0.50	103	90	110			10/18/18 15:49
<b>Method: A5310 C</b>							Batch: R240781		
<b>Lab ID: LCS-10002</b>	Laboratory Control Sample								
Organic Carbon, Dissolved (DOC)	5.17	mg/L	0.50	103	90	110			Run: TOC1-C_181018A 10/18/18 15:30
<b>Lab ID: MBLK</b>	Method Blank								
Organic Carbon, Dissolved (DOC)	ND	mg/L	0.5						Run: TOC1-C_181018A 10/18/18 15:39
<b>Lab ID: C18100536-001EMS</b>	Sample Matrix Spike								
Organic Carbon, Dissolved (DOC)	91.9	mg/L	4.0	85	85	115			Run: TOC1-C_181018A 10/18/18 17:45
<b>Lab ID: C18100536-001EMSD</b>	Sample Matrix Spike Duplicate								
Organic Carbon, Dissolved (DOC)	91.5	mg/L	4.0	83	85	115	0.5	20	S 10/18/18 17:57

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 10/24/18

**Project:** Not Indicated

**Work Order:** B18101241

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.7</b>								Analytical Run: ICP203-B_181016A			
<b>Lab ID: ICV</b>	12 Continuing Calibration Verification Standard							10/16/18 11:22			
Barium		2.49	mg/L	0.10	100	95	105				
Beryllium		1.24	mg/L	0.010	99	95	105				
Boron		2.45	mg/L	0.10	98	95	105				
Calcium		25.3	mg/L	1.0	101	95	105				
Copper		2.48	mg/L	0.010	99	95	105				
Lithium		1.28	mg/L	0.10	103	95	105				
Magnesium		25.7	mg/L	1.0	103	95	105				
Potassium		26.0	mg/L	1.0	104	95	105				
Silicon		4.98	mg/L	0.10	100	95	105				
Sodium		25.8	mg/L	1.0	103	95	105				
Strontium		2.47	mg/L	0.10	99	95	105				
Zinc		2.48	mg/L	0.010	99	95	105				
<b>Method: E200.7</b>								Batch: R309299			
<b>Lab ID: MB-6500DIS181015A</b>	12 Method Blank							Run: ICP203-B_181016A 10/16/18 11:30			
Barium		ND	mg/L	0.0010							
Beryllium		ND	mg/L	0.0005							
Boron		ND	mg/L	0.01							
Calcium		ND	mg/L	0.07							
Copper		ND	mg/L	0.004							
Lithium		ND	mg/L	0.02							
Magnesium		ND	mg/L	0.02							
Potassium		ND	mg/L	0.1							
Silicon		ND	mg/L	0.07							
Sodium		ND	mg/L	0.1							
Strontium		ND	mg/L	0.001							
Zinc		ND	mg/L	0.002							
<b>Lab ID: LFB-6500DIS181015A</b>	12 Laboratory Fortified Blank							Run: ICP203-B_181016A 10/16/18 11:38			
Barium		0.970	mg/L	0.10	97	85	115				
Beryllium		0.461	mg/L	0.010	92	85	115				
Boron		0.968	mg/L	0.10	97	85	115				
Calcium		49.2	mg/L	1.0	98	85	115				
Copper		0.959	mg/L	0.010	96	85	115				
Lithium		0.996	mg/L	0.10	100	85	115				
Magnesium		49.8	mg/L	1.0	100	85	115				
Potassium		50.4	mg/L	1.0	101	85	115				
Silicon		9.87	mg/L	0.10	99	85	115				
Sodium		50.1	mg/L	1.0	100	85	115				
Strontium		0.964	mg/L	0.10	96	85	115				
Zinc		0.959	mg/L	0.010	96	85	115				
<b>Lab ID: B18101241-001AMS2</b>	12 Sample Matrix Spike							Run: ICP203-B_181016A 10/16/18 21:46			
Barium		0.967	mg/L	0.050	93	70	130				
Beryllium		0.437	mg/L	0.0010	87	70	130				

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.





# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 10/24/18

**Project:** Not Indicated

**Work Order:** B18101241

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b> <span style="float: right;">Batch: R309299</span>										
<b>Lab ID:</b> B18101241-001AMS2	12	Sample Matrix Spike					Run: ICP203-B_181016A			10/16/18 21:46
Boron		1.07	mg/L	0.050	102	70	130			
Calcium		52.5	mg/L	1.0	96	70	130			
Copper		0.923	mg/L	0.0050	92	70	130			
Lithium		0.945	mg/L	0.10	95	70	130			
Magnesium		50.8	mg/L	1.0	99	70	130			
Potassium		47.6	mg/L	1.0	94	70	130			
Silicon		11.9	mg/L	0.10	107	70	130			
Sodium		204	mg/L	1.0	96	70	130			
Strontium		0.977	mg/L	0.010	96	70	130			
Zinc		0.909	mg/L	0.010	91	70	130			
<b>Lab ID:</b> B18101241-001AMSD	12	Sample Matrix Spike Duplicate					Run: ICP203-B_181016A			10/16/18 21:49
Barium		0.979	mg/L	0.050	95	70	130	1.2	20	
Beryllium		0.440	mg/L	0.0010	88	70	130	0.7	20	
Boron		1.08	mg/L	0.050	103	70	130	0.8	20	
Calcium		52.1	mg/L	1.0	95	70	130	0.7	20	
Copper		0.943	mg/L	0.0050	94	70	130	2.1	20	
Lithium		0.974	mg/L	0.10	97	70	130	3.0	20	
Magnesium		51.3	mg/L	1.0	100	70	130	1.1	20	
Potassium		48.8	mg/L	1.0	97	70	130	2.5	20	
Silicon		12.0	mg/L	0.10	108	70	130	1.1	20	
Sodium		208	mg/L	1.0	104	70	130	1.9	20	
Strontium		0.988	mg/L	0.010	97	70	130	1.1	20	
Zinc		0.905	mg/L	0.010	90	70	130	0.4	20	
<b>Lab ID:</b> B18101130-006BMS2	12	Sample Matrix Spike					Run: ICP203-B_181016A			10/16/18 22:40
Barium		9.33	mg/L	0.050	93	70	130			
Beryllium		4.54	mg/L	0.0048	91	70	130			
Boron		11.1	mg/L	0.13	106	70	130			
Calcium		782	mg/L	1.0	97	70	130			
Copper		9.08	mg/L	0.037	91	70	130			
Lithium		8.95	mg/L	0.16	90	70	130			
Magnesium		661	mg/L	1.0	103	70	130			
Potassium		460	mg/L	1.5	89	70	130			
Silicon		119	mg/L	0.76	110	70	130			
Sodium		839	mg/L	2.0	92	70	130			
Strontium		26.6	mg/L	0.015	86	70	130			
Zinc		8.91	mg/L	0.025	88	70	130			
<b>Lab ID:</b> B18101130-006BMSD	12	Sample Matrix Spike Duplicate					Run: ICP203-B_181016A			10/16/18 22:44
Barium		10.2	mg/L	0.050	101	70	130	8.8	20	
Beryllium		4.96	mg/L	0.0048	99	70	130	8.9	20	
Boron		12.0	mg/L	0.13	115	70	130	7.7	20	
Calcium		821	mg/L	1.0	104	70	130	4.8	20	
Copper		10.1	mg/L	0.037	101	70	130	11	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 10/24/18

**Project:** Not Indicated

**Work Order:** B18101241

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.7</b>										Batch: R309299	
<b>Lab ID:</b>	<b>B18101130-006BMSD</b>	12 Sample Matrix Spike Duplicate			Run: ICP203-B_181016A				10/16/18 22:44		
Lithium		9.98	mg/L	0.16	100	70	130	11	20		
Magnesium		713	mg/L	1.0	113	70	130	7.6	20		
Potassium		506	mg/L	1.5	99	70	130	9.4	20		
Silicon		113	mg/L	0.76	104	70	130	5.2	20		
Sodium		893	mg/L	2.0	103	70	130	6.3	20		
Strontium		27.8	mg/L	0.015	98	70	130	4.4	20		
Zinc		8.81	mg/L	0.025	87	70	130	1.1	20		

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 10/24/18

**Project:** Not Indicated

**Work Order:** B18101241

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.8</b>								Analytical Run: ICPMS206-B_181022A			
<b>Lab ID: QCS</b>	18	Initial Calibration Verification Standard								10/23/18 03:20	
Aluminum		0.251	mg/L	0.10	100	90	110				
Antimony		0.0502	mg/L	0.050	100	90	110				
Arsenic		0.0500	mg/L	0.0050	100	90	110				
Cadmium		0.0250	mg/L	0.0010	100	90	110				
Chromium		0.0502	mg/L	0.010	100	90	110				
Cobalt		0.0509	mg/L	0.010	102	90	110				
Iron		0.263	mg/L	0.020	105	90	110				
Lead		0.0497	mg/L	0.010	99	90	110				
Manganese		0.249	mg/L	0.010	100	90	110				
Molybdenum		0.0487	mg/L	0.0050	97	90	110				
Nickel		0.0511	mg/L	0.010	102	90	110				
Selenium		0.0502	mg/L	0.0050	100	90	110				
Silver		0.0252	mg/L	0.0050	101	90	110				
Thallium		0.0493	mg/L	0.10	99	90	110				
Tin		0.0493	mg/L	0.10	99	90	110				
Titanium		0.0486	mg/L	0.010	97	90	110				
Uranium		0.0191	mg/L	0.00030	95	90	110				
Vanadium		0.0502	mg/L	0.10	100	90	110				
<b>Method: E200.8</b>								Batch: R309707			
<b>Lab ID: LRB</b>	18	Method Blank								Run: ICPMS206-B_181022A 10/22/18 17:45	
Aluminum		ND	mg/L	0.0008							
Antimony		ND	mg/L	0.0004							
Arsenic		ND	mg/L	0.0002							
Cadmium		ND	mg/L	0.00003							
Chromium		ND	mg/L	0.0002							
Cobalt		ND	mg/L	0.00004							
Iron		ND	mg/L	0.001							
Lead		ND	mg/L	0.00005							
Manganese		ND	mg/L	0.00010							
Molybdenum		0.0001	mg/L	0.00005							
Nickel		ND	mg/L	0.0006							
Selenium		ND	mg/L	0.0003							
Silver		ND	mg/L	0.00002							
Thallium		0.0001	mg/L	0.00007							
Tin		ND	mg/L	0.001							
Titanium		ND	mg/L	0.0001							
Uranium		ND	mg/L	0.00005							
Vanadium		ND	mg/L	0.001							
<b>Lab ID: LFB</b>	18	Laboratory Fortified Blank								Run: ICPMS206-B_181022A 10/23/18 08:11	
Aluminum		0.0465	mg/L	0.10	93	85	115				
Antimony		0.0438	mg/L	0.050	88	85	115				
Arsenic		0.0472	mg/L	0.0050	94	85	115				

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 10/24/18

**Project:** Not Indicated

**Work Order:** B18101241

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>										
Batch: R309707										
<b>Lab ID:</b>	<b>LFB</b>	18 Laboratory Fortified Blank				Run: ICPMS206-B_181022A			10/23/18 08:11	
Cadmium		0.0461	mg/L	0.0010	92	85	115			
Chromium		0.0464	mg/L	0.010	93	85	115			
Cobalt		0.0457	mg/L	0.010	91	85	115			
Iron		4.87	mg/L	0.020	97	85	115			
Lead		0.0472	mg/L	0.010	94	85	115			
Manganese		0.0452	mg/L	0.010	90	85	115			
Molybdenum		0.0461	mg/L	0.0050	92	85	115			
Nickel		0.0468	mg/L	0.010	94	85	115			
Selenium		0.0470	mg/L	0.0050	94	85	115			
Silver		0.0183	mg/L	0.0050	91	85	115			
Thallium		0.0474	mg/L	0.10	95	85	115			
Tin		0.0464	mg/L	0.10	93	85	115			
Titanium		0.0501	mg/L	0.010	100	85	115			
Uranium		0.0472	mg/L	0.00030	94	85	115			
Vanadium		0.0444	mg/L	0.10	89	85	115			
<b>Lab ID:</b>	<b>B18101241-005AMS</b>	18 Sample Matrix Spike				Run: ICPMS206-B_181022A			10/23/18 08:24	
Aluminum		0.0565	mg/L	0.030	95	70	130			
Antimony		0.0481	mg/L	0.0010	94	70	130			
Arsenic		0.0910	mg/L	0.0010	100	70	130			
Cadmium		0.0481	mg/L	0.0010	96	70	130			
Chromium		0.0485	mg/L	0.0050	97	70	130			
Cobalt		0.0485	mg/L	0.0050	97	70	130			
Iron		5.07	mg/L	0.020	100	70	130			
Lead		0.0493	mg/L	0.0010	97	70	130			
Manganese		0.0507	mg/L	0.0010	97	70	130			
Molybdenum		0.0593	mg/L	0.0010	102	70	130			
Nickel		0.0496	mg/L	0.0050	96	70	130			
Selenium		0.0648	mg/L	0.0010	99	70	130			
Silver		0.0188	mg/L	0.0010	94	70	130			
Thallium		0.0489	mg/L	0.00050	98	70	130			
Tin		0.0506	mg/L	0.010	101	70	130			
Titanium		0.0523	mg/L	0.0050	103	70	130			
Uranium		0.0553	mg/L	0.00030	99	70	130			
Vanadium		0.0466	mg/L	0.010	93	70	130			
<b>Lab ID:</b>	<b>B18101241-005AMSD</b>	18 Sample Matrix Spike Duplicate				Run: ICPMS206-B_181022A			10/23/18 08:28	
Aluminum		0.0570	mg/L	0.030	96	70	130	0.8	20	
Antimony		0.0480	mg/L	0.0010	94	70	130	0.3	20	
Arsenic		0.0916	mg/L	0.0010	101	70	130	0.6	20	
Cadmium		0.0475	mg/L	0.0010	95	70	130	1.3	20	
Chromium		0.0483	mg/L	0.0050	97	70	130	0.4	20	
Cobalt		0.0478	mg/L	0.0050	95	70	130	1.3	20	
Iron		5.12	mg/L	0.020	101	70	130	1.0	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 10/24/18

**Project:** Not Indicated

**Work Order:** B18101241

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E200.8										Batch: R309707
<b>Lab ID:</b> B18101241-005AMSD	18	Sample Matrix Spike Duplicate			Run: ICPMS206-B_181022A				10/23/18 08:28	
Lead		0.0489	mg/L	0.0010	96	70	130	0.8	20	
Manganese		0.0515	mg/L	0.0010	98	70	130	1.5	20	
Molybdenum		0.0591	mg/L	0.0010	102	70	130	0.3	20	
Nickel		0.0499	mg/L	0.0050	96	70	130	0.6	20	
Selenium		0.0644	mg/L	0.0010	98	70	130	0.6	20	
Silver		0.0187	mg/L	0.0010	93	70	130	0.7	20	
Thallium		0.0493	mg/L	0.00050	99	70	130	0.8	20	
Tin		0.0503	mg/L	0.010	101	70	130	0.6	20	
Titanium		0.0528	mg/L	0.0050	105	70	130	1.1	20	
Uranium		0.0546	mg/L	0.00030	98	70	130	1.2	20	
Vanadium		0.0473	mg/L	0.010	95	70	130	1.4	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 10/24/18

**Project:** Not Indicated

**Work Order:** B18101241

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.8</b>								Analytical Run: ICPMS207-B_181022A			
<b>Lab ID: QCS</b>	3	Initial Calibration Verification Standard									10/23/18 10:26
Aluminum		0.250	mg/L	0.10	100	90	110				
Iron		0.255	mg/L	0.020	102	90	110				
Selenium		0.0498	mg/L	0.0050	100	90	110				
<b>Method: E200.8</b>								Batch: R309660			
<b>Lab ID: LRB</b>	3	Method Blank									Run: ICPMS207-B_181022A 10/22/18 18:49
Aluminum		ND	mg/L	0.0009							
Iron		0.001	mg/L	0.001							
Selenium		ND	mg/L	0.0003							
<b>Lab ID: LFB</b>	3	Laboratory Fortified Blank									Run: ICPMS207-B_181022A 10/22/18 18:53
Aluminum		0.0453	mg/L	0.10	91	85	115				
Iron		4.85	mg/L	0.020	97	85	115				
Selenium		0.0455	mg/L	0.0050	91	85	115				
<b>Lab ID: B18101748-001BMS</b>	3	Sample Matrix Spike									Run: ICPMS207-B_181022A 10/24/18 04:43
Aluminum		0.0976	mg/L	0.030	95	70	130				
Iron		9.17	mg/L	0.020	92	70	130				
Selenium		0.137	mg/L	0.0010	86	70	130				
<b>Lab ID: B18101748-001BMSD</b>	3	Sample Matrix Spike Duplicate									Run: ICPMS207-B_181022A 10/24/18 04:47
Aluminum		0.0986	mg/L	0.030	96	70	130	1.0	20		
Iron		9.97	mg/L	0.020	100	70	130	8.4	20		
Selenium		0.145	mg/L	0.0010	94	70	130	5.1	20		
<b>Lab ID: B18101241-003AMS</b>	3	Sample Matrix Spike									Run: ICPMS207-B_181022A 10/24/18 05:34
Aluminum		0.0901	mg/L	0.030	99	70	130				
Iron		5.13	mg/L	0.020	101	70	130				
Selenium		0.251	mg/L	0.0010		70	130			A	
<b>Lab ID: B18101241-003AMSD</b>	3	Sample Matrix Spike Duplicate									Run: ICPMS207-B_181022A 10/24/18 05:38
Aluminum		0.0915	mg/L	0.030	102	70	130	1.6	20		
Iron		5.03	mg/L	0.020	99	70	130	1.9	20		
Selenium		0.246	mg/L	0.0010		70	130	1.9	20	A	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.



# Work Order Receipt Checklist

Enviromin Inc

B18101241

Login completed by: Kathi Renier

Date Received: 10/12/2018

Reviewed by: BL2000\raschim

Received by: se

Reviewed Date: 10/15/2018

Carrier name: Return-UPS Ground

- Shipping container/cooler in good condition? Yes  No  Not Present
- Custody seals intact on all shipping container(s)/cooler(s)? Yes  No  Not Present
- Custody seals intact on all sample bottles? Yes  No  Not Present
- Chain of custody present? Yes  No
- Chain of custody signed when relinquished and received? Yes  No
- Chain of custody agrees with sample labels? Yes  No
- Samples in proper container/bottle? Yes  No
- Sample containers intact? Yes  No
- Sufficient sample volume for indicated test? Yes  No
- All samples received within holding time?  
(Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.) Yes  No
- Temp Blank received in all shipping container(s)/cooler(s)? Yes  No  Not Applicable
- Container/Temp Blank temperature: 3.8°C Blue Ice
- Water - VOA vials have zero headspace? Yes  No  No VOA vials submitted
- Water - pH acceptable upon receipt? Yes  No  Not Applicable

## Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

## Contact and Corrective Action Comments:

None

# Chain of Custody & Analytical Request Record

www.energylab.com

### Account Information (Billing Information)

Company/Name: Environia, Inc.  
 Contact: Genit Egnew  
 Phone: 208-315-4218  
 Mailing Address: 524 Professional Drive  
 City, State, Zip: Bozeman, MT 59718  
 Email: genitegnew@environia.com  
 Receive Invoice:  Hard Copy  Email  Hard Copy  Email  
 Purchase Order: 4093 Bottle Order

### Report Information (if different than Account Information)

Company/Name: \_\_\_\_\_  
 Contact: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_  
 City, State, Zip: \_\_\_\_\_  
 Email: \_\_\_\_\_  
 Receive Report:  Hard Copy  Email  
 Special Report/Formats:  LEVEL IV  NELAC  EDD/EDT (contact laboratory)  Other

### Comments

\_\_\_\_\_

### Project Information

Project Name, PWSID, Permit, etc.: \_\_\_\_\_  
 Sampler Name: \_\_\_\_\_ Sampler Phone: \_\_\_\_\_  
 Sample Origin State: \_\_\_\_\_ EPA/State Compliance:  Yes  No  
 WARNING CLIENTS, please indicate sample type.  
 Byproduct 11 (e)2 material  Unprocessed ore (NOT ground or refined)\*

**Matrix Codes**

- A - Air
- W - Water
- S - Solids
- V - Vegetation
- B - Bioassay
- O - Other
- DW - Water

### Analysis Requested

Analysis Requested	Received by Laboratory (print)	Payment Type
DOC	X	Cash
Dissolved metals + Se protection	X	Check
Se protection	X	Check

All turnaround times are standard unless marked as RUSH.  
 Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling - See Instructions Page

Sample Identification (Name, Location, Interval, etc.)	Collection		Matrix (See Codes Above)	Number of Containers	Temp Blank	Receipt Temp °C	Intact	Cooler ID(s)	Custody Seals	Relinquished by (print)	Relinquished by (print)	Signature	Date/Time	Date/Time	Signature	Amount
	Date	Time														
F1	10/11/18	11am	W	3	Y	N	Y	N	Y	N	Cash	Check	10/12/18	11:18	Genit Egnew	\$
F2																
F3																
R1																
R2																
R3																
R4																
R5																
R6																

Signature: Genit Egnew  
 Date/Time: 10/11/18  
 Received by Laboratory (print): Genit Egnew  
 Payment Type: Cash  
 Amount: \$ \_\_\_\_\_  
 Receipt Number (cash/check only): \_\_\_\_\_

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.





# ANALYTICAL SUMMARY REPORT

November 09, 2018

Enviromin Inc  
524 Professional Dr  
Bozeman, MT 59718

Work Order: B18110070      Quote ID: B4093 - Enviromin Lab

Project Name: NWP Column Study

Energy Laboratories Inc Billings MT received the following 9 samples for Enviromin Inc on 10/31/2018 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B18110070-001	F1	10/26/18 9:00	10/31/18	Aqueous	Metals by ICP/ICPMS, Dissolved Carbon, Dissolved Organic
B18110070-002	F2	10/26/18 9:00	10/31/18	Aqueous	Same As Above
B18110070-003	F3	10/26/18 9:00	10/31/18	Aqueous	Same As Above
B18110070-004	R1	10/26/18 9:00	10/31/18	Aqueous	Same As Above
B18110070-005	R2	10/26/18 9:00	10/31/18	Aqueous	Same As Above
B18110070-006	R3	10/26/18 9:00	10/31/18	Aqueous	Same As Above
B18110070-007	R4	10/26/18 9:00	10/31/18	Aqueous	Same As Above
B18110070-008	R5	10/26/18 9:00	10/31/18	Aqueous	Same As Above
B18110070-009	R6	10/26/18 9:00	10/31/18	Aqueous	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:



**CLIENT:** Enviromin Inc  
**Project:** NWP Column Study  
**Work Order:** B18110070

**Report Date:** 11/09/18

## **CASE NARRATIVE**

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Tests associated with analyst identified as ELI-CA were subcontracted to Energy Laboratories, PO Box 247, Casper, WY, EPA Number WY00002.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18110070-001  
**Client Sample ID:** F1

**Report Date:** 11/09/18  
**Collection Date:** 10/26/18 09:00  
**DateReceived:** 10/31/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	2.5	mg/L		0.5		A5310 C	11/05/18 20:18 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	11/02/18 20:35 / by
Antimony	ND	mg/L		0.001		E200.8	11/02/18 20:35 / by
Arsenic	ND	mg/L		0.001		E200.8	11/02/18 20:35 / by
Barium	0.06	mg/L		0.05		E200.8	11/02/18 20:35 / by
Beryllium	ND	mg/L		0.001		E200.8	11/02/18 20:35 / by
Boron	ND	mg/L		0.05		E200.7	11/05/18 11:13 / rlh
Cadmium	ND	mg/L		0.001		E200.8	11/02/18 20:35 / by
Calcium	8	mg/L		1		E200.8	11/02/18 20:35 / by
Chromium	ND	mg/L		0.005		E200.8	11/02/18 20:35 / by
Cobalt	ND	mg/L		0.005		E200.8	11/02/18 20:35 / by
Copper	ND	mg/L		0.005		E200.8	11/02/18 20:35 / by
Iron	0.09	mg/L		0.02		E200.8	11/02/18 20:35 / by
Lead	ND	mg/L		0.001		E200.8	11/02/18 20:35 / by
Lithium	ND	mg/L		0.1		E200.7	11/05/18 11:13 / rlh
Magnesium	2	mg/L		1		E200.8	11/02/18 20:35 / by
Manganese	ND	mg/L		0.001		E200.8	11/02/18 20:35 / by
Molybdenum	ND	mg/L		0.001		E200.8	11/02/18 20:35 / by
Nickel	ND	mg/L		0.005		E200.8	11/02/18 20:35 / by
Potassium	ND	mg/L		1		E200.8	11/02/18 20:35 / by
Selenium	0.232	mg/L		0.001		E200.8	11/02/18 20:35 / by
Silicon	2.1	mg/L		0.1		E200.7	11/05/18 11:13 / rlh
Silver	ND	mg/L		0.001		E200.8	11/02/18 20:35 / by
Sodium	162	mg/L		1		E200.8	11/02/18 20:35 / by
Strontium	0.02	mg/L		0.01		E200.8	11/02/18 20:35 / by
Thallium	ND	mg/L		0.0005		E200.8	11/05/18 17:11 / by
Tin	ND	mg/L		0.01		E200.8	11/02/18 20:35 / by
Titanium	ND	mg/L		0.005		E200.8	11/02/18 20:35 / by
Uranium	ND	mg/L		0.0003		E200.8	11/02/18 20:35 / by
Vanadium	ND	mg/L		0.01		E200.8	11/02/18 20:35 / by
Zinc	ND	mg/L		0.01		E200.8	11/02/18 20:35 / by

**Report Definitions:** RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18110070-002  
**Client Sample ID:** F2

**Report Date:** 11/09/18  
**Collection Date:** 10/26/18 09:00  
**DateReceived:** 10/31/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	2.6	mg/L		0.5		A5310 C	11/05/18 20:34 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.92	mg/L		0.03		E200.8	11/02/18 20:39 / by
Antimony	ND	mg/L		0.001		E200.8	11/02/18 20:39 / by
Arsenic	ND	mg/L		0.001		E200.8	11/02/18 20:39 / by
Barium	0.06	mg/L		0.05		E200.8	11/02/18 20:39 / by
Beryllium	ND	mg/L		0.001		E200.8	11/02/18 20:39 / by
Boron	ND	mg/L		0.05		E200.7	11/05/18 11:29 / rlh
Cadmium	ND	mg/L		0.001		E200.8	11/02/18 20:39 / by
Calcium	6	mg/L		1		E200.8	11/02/18 20:39 / by
Chromium	ND	mg/L		0.005		E200.8	11/02/18 20:39 / by
Cobalt	ND	mg/L		0.005		E200.8	11/02/18 20:39 / by
Copper	ND	mg/L		0.005		E200.8	11/02/18 20:39 / by
Iron	0.51	mg/L		0.02		E200.8	11/02/18 20:39 / by
Lead	ND	mg/L		0.001		E200.8	11/02/18 20:39 / by
Lithium	ND	mg/L		0.1		E200.7	11/05/18 11:29 / rlh
Magnesium	2	mg/L		1		E200.8	11/02/18 20:39 / by
Manganese	0.002	mg/L		0.001		E200.8	11/02/18 20:39 / by
Molybdenum	ND	mg/L		0.001		E200.8	11/02/18 20:39 / by
Nickel	ND	mg/L		0.005		E200.8	11/02/18 20:39 / by
Potassium	ND	mg/L		1		E200.8	11/02/18 20:39 / by
Selenium	0.208	mg/L		0.001		E200.8	11/02/18 20:39 / by
Silicon	4.1	mg/L		0.1		E200.7	11/05/18 11:29 / rlh
Silver	ND	mg/L		0.001		E200.8	11/02/18 20:39 / by
Sodium	139	mg/L		1		E200.8	11/02/18 20:39 / by
Strontium	0.02	mg/L		0.01		E200.8	11/02/18 20:39 / by
Thallium	ND	mg/L		0.0005		E200.8	11/05/18 17:28 / by
Tin	ND	mg/L		0.01		E200.8	11/02/18 20:39 / by
Titanium	0.040	mg/L		0.005		E200.8	11/02/18 20:39 / by
Uranium	ND	mg/L		0.0003		E200.8	11/02/18 20:39 / by
Vanadium	ND	mg/L		0.01		E200.8	11/02/18 20:39 / by
Zinc	ND	mg/L		0.01		E200.8	11/02/18 20:39 / by

**Report Definitions:** RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18110070-003  
**Client Sample ID:** F3

**Report Date:** 11/09/18  
**Collection Date:** 10/26/18 09:00  
**DateReceived:** 10/31/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	5.6	mg/L		0.5		A5310 C	11/05/18 20:57 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.06	mg/L		0.03		E200.8	11/02/18 20:43 / by
Antimony	ND	mg/L		0.001		E200.8	11/02/18 20:43 / by
Arsenic	ND	mg/L		0.001		E200.8	11/02/18 20:43 / by
Barium	0.06	mg/L		0.05		E200.8	11/02/18 20:43 / by
Beryllium	ND	mg/L		0.001		E200.8	11/02/18 20:43 / by
Boron	ND	mg/L		0.05		E200.7	11/05/18 11:44 / rlh
Cadmium	ND	mg/L		0.001		E200.8	11/02/18 20:43 / by
Calcium	6	mg/L		1		E200.8	11/02/18 20:43 / by
Chromium	ND	mg/L		0.005		E200.8	11/02/18 20:43 / by
Cobalt	ND	mg/L		0.005		E200.8	11/02/18 20:43 / by
Copper	ND	mg/L		0.005		E200.8	11/02/18 20:43 / by
Iron	0.04	mg/L		0.02		E200.8	11/02/18 20:43 / by
Lead	ND	mg/L		0.001		E200.8	11/02/18 20:43 / by
Lithium	ND	mg/L		0.1		E200.7	11/05/18 11:44 / rlh
Magnesium	2	mg/L		1		E200.8	11/02/18 20:43 / by
Manganese	0.001	mg/L		0.001		E200.8	11/02/18 20:43 / by
Molybdenum	ND	mg/L		0.001		E200.8	11/02/18 20:43 / by
Nickel	ND	mg/L		0.005		E200.8	11/02/18 20:43 / by
Potassium	ND	mg/L		1		E200.8	11/02/18 20:43 / by
Selenium	0.235	mg/L		0.001		E200.8	11/02/18 20:43 / by
Silicon	2.2	mg/L		0.1		E200.7	11/05/18 11:44 / rlh
Silver	ND	mg/L		0.001		E200.8	11/02/18 20:43 / by
Sodium	148	mg/L		1		E200.8	11/02/18 20:43 / by
Strontium	0.02	mg/L		0.01		E200.8	11/02/18 20:43 / by
Thallium	ND	mg/L		0.0005		E200.8	11/05/18 17:32 / by
Tin	ND	mg/L		0.01		E200.8	11/02/18 20:43 / by
Titanium	ND	mg/L		0.005		E200.8	11/02/18 20:43 / by
Uranium	ND	mg/L		0.0003		E200.8	11/02/18 20:43 / by
Vanadium	ND	mg/L		0.01		E200.8	11/02/18 20:43 / by
Zinc	ND	mg/L		0.01		E200.8	11/02/18 20:43 / by

**Report Definitions:** RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



**LABORATORY ANALYTICAL REPORT**

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18110070-004  
**Client Sample ID:** R1

**Report Date:** 11/09/18  
**Collection Date:** 10/26/18 09:00  
**DateReceived:** 10/31/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	9	mg/L	D	4		A5310 C	11/05/18 21:16 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.46	mg/L		0.03		E200.8	11/02/18 20:47 / by
Antimony	ND	mg/L		0.001		E200.8	11/02/18 20:47 / by
Arsenic	0.003	mg/L		0.001		E200.8	11/02/18 20:47 / by
Barium	ND	mg/L		0.05		E200.8	11/02/18 20:47 / by
Beryllium	ND	mg/L		0.001		E200.8	11/02/18 20:47 / by
Boron	ND	mg/L		0.05		E200.7	11/05/18 11:48 / rlh
Cadmium	ND	mg/L		0.001		E200.8	11/02/18 20:47 / by
Calcium	5	mg/L		1		E200.8	11/02/18 20:47 / by
Chromium	ND	mg/L		0.005		E200.8	11/02/18 20:47 / by
Cobalt	ND	mg/L		0.005		E200.8	11/02/18 20:47 / by
Copper	ND	mg/L		0.005		E200.8	11/02/18 20:47 / by
Iron	0.32	mg/L		0.02		E200.8	11/02/18 20:47 / by
Lead	ND	mg/L		0.001		E200.8	11/02/18 20:47 / by
Lithium	ND	mg/L		0.1		E200.7	11/05/18 11:48 / rlh
Magnesium	2	mg/L		1		E200.8	11/02/18 20:47 / by
Manganese	0.005	mg/L		0.001		E200.8	11/02/18 20:47 / by
Molybdenum	ND	mg/L		0.001		E200.8	11/02/18 20:47 / by
Nickel	ND	mg/L		0.005		E200.8	11/02/18 20:47 / by
Potassium	ND	mg/L		1		E200.8	11/02/18 20:47 / by
Selenium	ND	mg/L		0.001		E200.8	11/02/18 20:47 / by
Silicon	4.8	mg/L		0.1		E200.7	11/05/18 11:48 / rlh
Silver	ND	mg/L		0.001		E200.8	11/02/18 20:47 / by
Sodium	4	mg/L		1		E200.8	11/02/18 20:47 / by
Strontium	0.02	mg/L		0.01		E200.8	11/02/18 20:47 / by
Thallium	ND	mg/L		0.0005		E200.8	11/05/18 17:36 / by
Tin	ND	mg/L		0.01		E200.8	11/02/18 20:47 / by
Titanium	0.021	mg/L		0.005		E200.8	11/02/18 20:47 / by
Uranium	ND	mg/L		0.0003		E200.8	11/02/18 20:47 / by
Vanadium	ND	mg/L		0.01		E200.8	11/02/18 20:47 / by
Zinc	ND	mg/L		0.01		E200.8	11/02/18 20:47 / by

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18110070-005  
**Client Sample ID:** R2

**Report Date:** 11/09/18  
**Collection Date:** 10/26/18 09:00  
**DateReceived:** 10/31/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	14	mg/L	D	4		A5310 C	11/05/18 22:10 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.30	mg/L		0.03		E200.8	11/02/18 20:51 / by
Antimony	ND	mg/L		0.001		E200.8	11/02/18 20:51 / by
Arsenic	0.028	mg/L		0.001		E200.8	11/02/18 20:51 / by
Barium	0.06	mg/L		0.05		E200.8	11/02/18 20:51 / by
Beryllium	ND	mg/L		0.001		E200.8	11/02/18 20:51 / by
Boron	ND	mg/L		0.05		E200.7	11/05/18 11:52 / rlh
Cadmium	ND	mg/L		0.001		E200.8	11/02/18 20:51 / by
Calcium	37	mg/L		1		E200.8	11/02/18 20:51 / by
Chromium	ND	mg/L		0.005		E200.8	11/02/18 20:51 / by
Cobalt	ND	mg/L		0.005		E200.8	11/02/18 20:51 / by
Copper	ND	mg/L		0.005		E200.8	11/02/18 20:51 / by
Iron	0.19	mg/L		0.02		E200.8	11/02/18 20:51 / by
Lead	ND	mg/L		0.001		E200.8	11/02/18 20:51 / by
Lithium	ND	mg/L		0.1		E200.7	11/05/18 11:52 / rlh
Magnesium	29	mg/L		1		E200.8	11/02/18 20:51 / by
Manganese	0.007	mg/L		0.001		E200.8	11/02/18 20:51 / by
Molybdenum	0.009	mg/L		0.001		E200.8	11/02/18 20:51 / by
Nickel	ND	mg/L		0.005		E200.8	11/02/18 20:51 / by
Potassium	2	mg/L		1		E200.8	11/02/18 20:51 / by
Selenium	0.018	mg/L		0.001		E200.8	11/02/18 20:51 / by
Silicon	7.1	mg/L		0.1		E200.7	11/05/18 11:52 / rlh
Silver	ND	mg/L		0.001		E200.8	11/02/18 20:51 / by
Sodium	8	mg/L		1		E200.8	11/02/18 20:51 / by
Strontium	0.19	mg/L		0.01		E200.8	11/02/18 20:51 / by
Thallium	ND	mg/L		0.0005		E200.8	11/05/18 17:57 / by
Tin	ND	mg/L		0.01		E200.8	11/02/18 20:51 / by
Titanium	0.008	mg/L		0.005		E200.8	11/02/18 20:51 / by
Uranium	0.0040	mg/L		0.0003		E200.8	11/02/18 20:51 / by
Vanadium	ND	mg/L		0.01		E200.8	11/02/18 20:51 / by
Zinc	ND	mg/L		0.01		E200.8	11/02/18 20:51 / by

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18110070-006  
**Client Sample ID:** R3

**Report Date:** 11/09/18  
**Collection Date:** 10/26/18 09:00  
**DateReceived:** 10/31/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	14	mg/L	D	4		A5310 C	11/05/18 22:28 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.24	mg/L		0.03		E200.8	11/02/18 20:55 / by
Antimony	ND	mg/L		0.001		E200.8	11/02/18 20:55 / by
Arsenic	0.005	mg/L		0.001		E200.8	11/02/18 20:55 / by
Barium	ND	mg/L		0.05		E200.8	11/02/18 20:55 / by
Beryllium	ND	mg/L		0.001		E200.8	11/02/18 20:55 / by
Boron	ND	mg/L		0.05		E200.7	11/05/18 11:56 / rlh
Cadmium	ND	mg/L		0.001		E200.8	11/02/18 20:55 / by
Calcium	6	mg/L		1		E200.8	11/02/18 20:55 / by
Chromium	ND	mg/L		0.005		E200.8	11/02/18 20:55 / by
Cobalt	ND	mg/L		0.005		E200.8	11/02/18 20:55 / by
Copper	ND	mg/L		0.005		E200.8	11/02/18 20:55 / by
Iron	0.20	mg/L		0.02		E200.8	11/02/18 20:55 / by
Lead	ND	mg/L		0.001		E200.8	11/02/18 20:55 / by
Lithium	ND	mg/L		0.1		E200.7	11/05/18 11:56 / rlh
Magnesium	2	mg/L		1		E200.8	11/02/18 20:55 / by
Manganese	0.004	mg/L		0.001		E200.8	11/02/18 20:55 / by
Molybdenum	0.001	mg/L		0.001		E200.8	11/02/18 20:55 / by
Nickel	ND	mg/L		0.005		E200.8	11/02/18 20:55 / by
Potassium	ND	mg/L		1		E200.8	11/02/18 20:55 / by
Selenium	ND	mg/L		0.001		E200.8	11/02/18 20:55 / by
Silicon	3.7	mg/L		0.1		E200.7	11/05/18 11:56 / rlh
Silver	ND	mg/L		0.001		E200.8	11/02/18 20:55 / by
Sodium	6	mg/L		1		E200.8	11/02/18 20:55 / by
Strontium	0.02	mg/L		0.01		E200.8	11/02/18 20:55 / by
Thallium	ND	mg/L		0.0005		E200.8	11/05/18 18:01 / by
Tin	ND	mg/L		0.01		E200.8	11/02/18 20:55 / by
Titanium	0.007	mg/L		0.005		E200.8	11/02/18 20:55 / by
Uranium	ND	mg/L		0.0003		E200.8	11/02/18 20:55 / by
Vanadium	ND	mg/L		0.01		E200.8	11/02/18 20:55 / by
Zinc	ND	mg/L		0.01		E200.8	11/02/18 20:55 / by

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.





### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18110070-007  
**Client Sample ID:** R4

**Report Date:** 11/09/18  
**Collection Date:** 10/26/18 09:00  
**DateReceived:** 10/31/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	12	mg/L	D	2		A5310 C	11/05/18 22:43 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	11/02/18 21:16 / by
Antimony	ND	mg/L		0.001		E200.8	11/02/18 21:16 / by
Arsenic	0.018	mg/L		0.001		E200.8	11/02/18 21:16 / by
Barium	0.06	mg/L		0.05		E200.8	11/02/18 21:16 / by
Beryllium	ND	mg/L		0.001		E200.8	11/02/18 21:16 / by
Boron	0.06	mg/L		0.05		E200.7	11/05/18 12:00 / rlh
Cadmium	ND	mg/L		0.001		E200.8	11/02/18 21:16 / by
Calcium	40	mg/L		1		E200.8	11/02/18 21:16 / by
Chromium	ND	mg/L		0.005		E200.8	11/02/18 21:16 / by
Cobalt	ND	mg/L		0.005		E200.8	11/02/18 21:16 / by
Copper	ND	mg/L		0.005		E200.8	11/02/18 21:16 / by
Iron	ND	mg/L		0.02		E200.8	11/02/18 21:16 / by
Lead	ND	mg/L		0.001		E200.8	11/02/18 21:16 / by
Lithium	ND	mg/L		0.1		E200.7	11/05/18 12:00 / rlh
Magnesium	73	mg/L		1		E200.8	11/02/18 21:16 / by
Manganese	0.005	mg/L		0.001		E200.8	11/02/18 21:16 / by
Molybdenum	0.003	mg/L		0.001		E200.8	11/02/18 21:16 / by
Nickel	ND	mg/L		0.005		E200.8	11/02/18 21:16 / by
Potassium	3	mg/L		1		E200.8	11/02/18 21:16 / by
Selenium	0.002	mg/L		0.001		E200.8	11/02/18 21:16 / by
Silicon	7.9	mg/L		0.1		E200.7	11/05/18 12:00 / rlh
Silver	ND	mg/L		0.001		E200.8	11/02/18 21:16 / by
Sodium	8	mg/L		1		E200.8	11/02/18 21:16 / by
Strontium	0.31	mg/L		0.01		E200.8	11/02/18 21:16 / by
Thallium	ND	mg/L		0.0005		E200.8	11/05/18 18:05 / by
Tin	ND	mg/L		0.01		E200.8	11/02/18 21:16 / by
Titanium	ND	mg/L		0.005		E200.8	11/02/18 21:16 / by
Uranium	0.0069	mg/L		0.0003		E200.8	11/02/18 21:16 / by
Vanadium	ND	mg/L		0.01		E200.8	11/02/18 21:16 / by
Zinc	ND	mg/L		0.01		E200.8	11/02/18 21:16 / by

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18110070-008  
**Client Sample ID:** R5

**Report Date:** 11/09/18  
**Collection Date:** 10/26/18 09:00  
**DateReceived:** 10/31/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	18	mg/L	D	4		A5310 C	11/05/18 23:01 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	1.02	mg/L		0.03		E200.8	11/02/18 21:20 / by
Antimony	ND	mg/L		0.001		E200.8	11/02/18 21:20 / by
Arsenic	0.008	mg/L		0.001		E200.8	11/02/18 21:20 / by
Barium	ND	mg/L		0.05		E200.8	11/02/18 21:20 / by
Beryllium	ND	mg/L		0.001		E200.8	11/02/18 21:20 / by
Boron	ND	mg/L		0.05		E200.7	11/05/18 12:04 / rlh
Cadmium	ND	mg/L		0.001		E200.8	11/02/18 21:20 / by
Calcium	10	mg/L		1		E200.8	11/02/18 21:20 / by
Chromium	ND	mg/L		0.005		E200.8	11/02/18 21:20 / by
Cobalt	ND	mg/L		0.005		E200.8	11/02/18 21:20 / by
Copper	ND	mg/L		0.005		E200.8	11/02/18 21:20 / by
Iron	0.67	mg/L		0.02		E200.8	11/02/18 21:20 / by
Lead	ND	mg/L		0.001		E200.8	11/02/18 21:20 / by
Lithium	ND	mg/L		0.1		E200.7	11/05/18 12:04 / rlh
Magnesium	4	mg/L		1		E200.8	11/02/18 21:20 / by
Manganese	0.003	mg/L		0.001		E200.8	11/02/18 21:20 / by
Molybdenum	ND	mg/L		0.001		E200.8	11/02/18 21:20 / by
Nickel	0.006	mg/L		0.005		E200.8	11/02/18 21:20 / by
Potassium	ND	mg/L		1		E200.8	11/02/18 21:20 / by
Selenium	ND	mg/L		0.001		E200.8	11/02/18 21:20 / by
Silicon	6.0	mg/L		0.1		E200.7	11/05/18 12:04 / rlh
Silver	ND	mg/L		0.001		E200.8	11/02/18 21:20 / by
Sodium	7	mg/L		1		E200.8	11/02/18 21:20 / by
Strontium	0.02	mg/L		0.01		E200.8	11/02/18 21:20 / by
Thallium	ND	mg/L		0.0005		E200.8	11/05/18 18:10 / by
Tin	ND	mg/L		0.01		E200.8	11/02/18 21:20 / by
Titanium	0.031	mg/L		0.005		E200.8	11/02/18 21:20 / by
Uranium	ND	mg/L		0.0003		E200.8	11/02/18 21:20 / by
Vanadium	ND	mg/L		0.01		E200.8	11/02/18 21:20 / by
Zinc	0.02	mg/L		0.01		E200.8	11/02/18 21:20 / by

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18110070-009  
**Client Sample ID:** R6

**Report Date:** 11/09/18  
**Collection Date:** 10/26/18 09:00  
**Date Received:** 10/31/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	14	mg/L	D	2		A5310 C	11/05/18 23:18 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	11/02/18 21:25 / by
Antimony	ND	mg/L		0.001		E200.8	11/02/18 21:25 / by
Arsenic	0.026	mg/L		0.001		E200.8	11/02/18 21:25 / by
Barium	0.06	mg/L		0.05		E200.8	11/02/18 21:25 / by
Beryllium	ND	mg/L		0.001		E200.8	11/02/18 21:25 / by
Boron	ND	mg/L		0.05		E200.7	11/05/18 12:07 / rlh
Cadmium	ND	mg/L		0.001		E200.8	11/02/18 21:25 / by
Calcium	34	mg/L		1		E200.8	11/02/18 21:25 / by
Chromium	ND	mg/L		0.005		E200.8	11/02/18 21:25 / by
Cobalt	ND	mg/L		0.005		E200.8	11/02/18 21:25 / by
Copper	ND	mg/L		0.005		E200.8	11/02/18 21:25 / by
Iron	0.48	mg/L		0.02		E200.8	11/02/18 21:25 / by
Lead	ND	mg/L		0.001		E200.8	11/02/18 21:25 / by
Lithium	ND	mg/L		0.1		E200.7	11/05/18 12:07 / rlh
Magnesium	49	mg/L		1		E200.8	11/02/18 21:25 / by
Manganese	0.002	mg/L		0.001		E200.8	11/02/18 21:25 / by
Molybdenum	0.004	mg/L		0.001		E200.8	11/02/18 21:25 / by
Nickel	ND	mg/L		0.005		E200.8	11/02/18 21:25 / by
Potassium	2	mg/L		1		E200.8	11/02/18 21:25 / by
Selenium	0.028	mg/L		0.001		E200.8	11/02/18 21:25 / by
Silicon	5.6	mg/L		0.1		E200.7	11/05/18 12:07 / rlh
Silver	ND	mg/L		0.001		E200.8	11/02/18 21:25 / by
Sodium	8	mg/L		1		E200.8	11/02/18 21:25 / by
Strontium	0.26	mg/L		0.01		E200.8	11/02/18 21:25 / by
Thallium	ND	mg/L		0.0005		E200.8	11/05/18 18:14 / by
Tin	ND	mg/L		0.01		E200.8	11/02/18 21:25 / by
Titanium	ND	mg/L		0.005		E200.8	11/02/18 21:25 / by
Uranium	0.0062	mg/L		0.0003		E200.8	11/02/18 21:25 / by
Vanadium	ND	mg/L		0.01		E200.8	11/02/18 21:25 / by
Zinc	ND	mg/L		0.01		E200.8	11/02/18 21:25 / by

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 11/08/18  
**Work Order:** B18110070

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A5310 C									Analytical Run: TOC3-C_181105A
<b>Lab ID:</b> CCV-10292	Continuing Calibration Verification Standard								11/05/18 20:02
Organic Carbon, Dissolved (DOC)	4.72	mg/L	0.50	94	90	110			
<b>Method:</b> A5310 C									Batch: R241490
<b>Lab ID:</b> LCS-10553	Laboratory Control Sample								Run: TOC3-C_181105A
Organic Carbon, Dissolved (DOC)	4.74	mg/L	0.50	95	90	110			11/05/18 19:32
<b>Lab ID:</b> MBLK	Method Blank								Run: TOC3-C_181105A
Organic Carbon, Dissolved (DOC)	ND	mg/L	0.5						11/05/18 19:47
<b>Lab ID:</b> B18110070-004BMS	Sample Matrix Spike								Run: TOC3-C_181105A
Organic Carbon, Dissolved (DOC)	46.7	mg/L	4.0	94	85	115			11/05/18 21:39
<b>Lab ID:</b> B18110070-004BMSD	Sample Matrix Spike Duplicate								Run: TOC3-C_181105A
Organic Carbon, Dissolved (DOC)	47.4	mg/L	4.0	96	85	115	1.5	20	11/05/18 21:55

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 11/09/18  
**Work Order:** B18110070

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>		Analytical Run: ICP204-B_181105A								
<b>Lab ID: ICV</b>	3	Continuing Calibration Verification Standard							11/05/18 09:17	
Boron		2.51	mg/L	0.10	100	95	105			
Lithium		1.31	mg/L	0.10	105	95	105			
Silicon		5.05	mg/L	0.10	101	95	105			
<b>Method: E200.7</b>		Batch: R310428								
<b>Lab ID: MB-7400DIS181105A</b>	3	Method Blank							Run: ICP204-B_181105A 11/05/18 09:25	
Boron		ND	mg/L	0.01						
Lithium		ND	mg/L	0.02						
Silicon		ND	mg/L	0.07						
<b>Lab ID: LFB-7400DIS181105A</b>	3	Laboratory Fortified Blank							Run: ICP204-B_181105A 11/05/18 09:32	
Boron		1.000	mg/L	0.10	100	85	115			
Lithium		1.02	mg/L	0.10	102	85	115			
Silicon		10.0	mg/L	0.10	100	85	115			
<b>Lab ID: B18110070-001AMS2</b>	3	Sample Matrix Spike							Run: ICP204-B_181105A 11/05/18 11:21	
Boron		1.07	mg/L	0.050	103	70	130			
Lithium		1.07	mg/L	0.10	107	70	130			
Silicon		12.5	mg/L	0.10	104	70	130			
<b>Lab ID: B18110070-001AMSD</b>	3	Sample Matrix Spike Duplicate							Run: ICP204-B_181105A 11/05/18 11:25	
Boron		1.07	mg/L	0.050	103	70	130	0.5	20	
Lithium		1.05	mg/L	0.10	105	70	130	2.1	20	
Silicon		12.5	mg/L	0.10	104	70	130	0.0	20	
<b>Lab ID: B18110133-001BMS2</b>	3	Sample Matrix Spike							Run: ICP204-B_181105A 11/05/18 12:19	
Boron		5.58	mg/L	0.065	104	70	130			
Lithium		5.54	mg/L	0.10	107	70	130			
Silicon		51.8	mg/L	0.38	101	70	130			
<b>Lab ID: B18110133-001BMSD</b>	3	Sample Matrix Spike Duplicate							Run: ICP204-B_181105A 11/05/18 12:30	
Boron		5.56	mg/L	0.065	103	70	130	0.5	20	
Lithium		5.46	mg/L	0.10	105	70	130	1.4	20	
Silicon		52.7	mg/L	0.38	103	70	130	1.8	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 11/09/18  
**Work Order:** B18110070

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.8</b>										Analytical Run: ICPMS206-B_181102A	
<b>Lab ID: QCS</b>	26	Initial Calibration Verification Standard							11/02/18 18:00		
Aluminum		0.257	mg/L	0.10	103	90	110				
Antimony		0.0501	mg/L	0.050	100	90	110				
Arsenic		0.0489	mg/L	0.0050	98	90	110				
Barium		0.0491	mg/L	0.10	98	90	110				
Beryllium		0.0241	mg/L	0.0010	96	90	110				
Cadmium		0.0253	mg/L	0.0010	101	90	110				
Calcium		2.49	mg/L	0.50	100	90	110				
Chromium		0.0500	mg/L	0.010	100	90	110				
Cobalt		0.0499	mg/L	0.010	100	90	110				
Copper		0.0516	mg/L	0.010	103	90	110				
Iron		0.262	mg/L	0.020	105	90	110				
Lead		0.0493	mg/L	0.010	99	90	110				
Magnesium		2.53	mg/L	0.50	101	90	110				
Manganese		0.250	mg/L	0.010	100	90	110				
Molybdenum		0.0492	mg/L	0.0050	98	90	110				
Nickel		0.0505	mg/L	0.010	101	90	110				
Potassium		2.50	mg/L	0.50	100	90	110				
Selenium		0.0493	mg/L	0.0050	99	90	110				
Silver		0.0254	mg/L	0.0050	102	90	110				
Sodium		2.53	mg/L	0.50	101	90	110				
Strontium		0.0496	mg/L	0.10	99	90	110				
Tin		0.0500	mg/L	0.10	100	90	110				
Titanium		0.0480	mg/L	0.010	96	90	110				
Uranium		0.0189	mg/L	0.00030	95	90	110				
Vanadium		0.0498	mg/L	0.10	100	90	110				
Zinc		0.0501	mg/L	0.010	100	90	110				

<b>Method: E200.8</b>										Batch: R310400	
<b>Lab ID: LRB</b>	26	Method Blank							Run: ICPMS206-B_181102A 11/03/18 11:22		
Aluminum		ND	mg/L	0.0008							
Antimony		ND	mg/L	0.0004							
Arsenic		ND	mg/L	0.0002							
Barium		ND	mg/L	0.00004							
Beryllium		ND	mg/L	0.0001							
Cadmium		ND	mg/L	0.00003							
Calcium		ND	mg/L	0.06							
Chromium		ND	mg/L	0.0002							
Cobalt		ND	mg/L	0.00004							
Copper		ND	mg/L	0.0003							
Iron		0.004	mg/L	0.001							
Lead		ND	mg/L	0.00005							
Magnesium		ND	mg/L	0.006							
Manganese		ND	mg/L	0.00010							
Molybdenum		ND	mg/L	0.00005							

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 11/09/18  
**Work Order:** B18110070

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>										
Batch: R310400										
<b>Lab ID: LRB</b>	26	Method Blank								
						Run: ICPMS206-B_181102A				11/03/18 11:22
Nickel		ND	mg/L	0.0006						
Potassium		ND	mg/L	0.08						
Selenium		ND	mg/L	0.0003						
Silver		ND	mg/L	0.00002						
Sodium		0.04	mg/L	0.02						
Strontium		ND	mg/L	0.0001						
Tin		ND	mg/L	0.001						
Titanium		0.0001	mg/L	0.0001						
Uranium		ND	mg/L	0.00005						
Vanadium		ND	mg/L	0.001						
Zinc		ND	mg/L	0.003						
<b>Lab ID: LFB</b>	26	Laboratory Fortified Blank								
						Run: ICPMS206-B_181102A				11/03/18 11:26
Aluminum		0.0442	mg/L	0.10	88	85	115			
Antimony		0.0449	mg/L	0.050	90	85	115			
Arsenic		0.0473	mg/L	0.0050	95	85	115			
Barium		0.0487	mg/L	0.10	97	85	115			
Beryllium		0.0459	mg/L	0.0010	92	85	115			
Cadmium		0.0476	mg/L	0.0010	95	85	115			
Calcium		47.6	mg/L	0.50	95	85	115			
Chromium		0.0472	mg/L	0.010	94	85	115			
Cobalt		0.0475	mg/L	0.010	95	85	115			
Copper		0.0472	mg/L	0.010	94	85	115			
Iron		4.78	mg/L	0.020	96	85	115			
Lead		0.0479	mg/L	0.010	96	85	115			
Magnesium		47.7	mg/L	0.50	95	85	115			
Manganese		0.0467	mg/L	0.010	93	85	115			
Molybdenum		0.0490	mg/L	0.0050	98	85	115			
Nickel		0.0467	mg/L	0.010	93	85	115			
Potassium		47.1	mg/L	0.50	94	85	115			
Selenium		0.0473	mg/L	0.0050	95	85	115			
Silver		0.0192	mg/L	0.0050	96	85	115			
Sodium		47.5	mg/L	0.50	95	85	115			
Strontium		0.0479	mg/L	0.10	96	85	115			
Tin		0.0482	mg/L	0.10	96	85	115			
Titanium		0.0528	mg/L	0.010	105	85	115			
Uranium		0.0484	mg/L	0.00030	97	85	115			
Vanadium		0.0467	mg/L	0.10	93	85	115			
Zinc		0.0481	mg/L	0.010	96	85	115			
<b>Lab ID: B18110054-001BMS</b>	26	Sample Matrix Spike								
						Run: ICPMS206-B_181102A				11/02/18 20:18
Aluminum		0.0501	mg/L	0.030	97	70	130			
Antimony		0.0446	mg/L	0.0010	89	70	130			
Arsenic		0.0507	mg/L	0.0010	101	70	130			
Barium		0.0725	mg/L	0.050	102	70	130			

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 11/09/18  
**Work Order:** B18110070

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>								Batch: R310400		
<b>Lab ID: B18110054-001BMS</b>	26	Sample Matrix Spike			Run: ICPMS206-B_181102A			11/02/18 20:18		
Beryllium		0.0491	mg/L	0.0010	98	70	130			
Cadmium		0.0497	mg/L	0.0010	99	70	130			
Calcium		49.6	mg/L	1.0	95	70	130			
Chromium		0.0492	mg/L	0.0050	98	70	130			
Cobalt		0.0491	mg/L	0.0050	98	70	130			
Copper		0.0529	mg/L	0.0050	103	70	130			
Iron		5.02	mg/L	0.020	98	70	130			
Lead		0.0497	mg/L	0.0010	99	70	130			
Magnesium		49.0	mg/L	1.0	97	70	130			
Manganese		0.111	mg/L	0.0010	96	70	130			
Molybdenum		0.0503	mg/L	0.0010	101	70	130			
Nickel		0.0526	mg/L	0.0050	98	70	130			
Potassium		50.9	mg/L	1.0	97	70	130			
Selenium		0.0516	mg/L	0.0010	102	70	130			
Silver		0.0170	mg/L	0.0010	85	70	130			
Sodium		438	mg/L	1.0		70	130			A
Strontium		0.0892	mg/L	0.010	102	70	130			
Tin		0.0501	mg/L	0.010	100	70	130			
Titanium		0.0568	mg/L	0.0050	109	70	130			
Uranium		0.0508	mg/L	0.00030	102	70	130			
Vanadium		0.0513	mg/L	0.010	103	70	130			
Zinc		0.102	mg/L	0.010	93	70	130			
<b>Lab ID: B18110054-001BMSD</b>	26	Sample Matrix Spike Duplicate			Run: ICPMS206-B_181102A			11/02/18 20:22		
Aluminum		0.0508	mg/L	0.030	98	70	130	1.4	20	
Antimony		0.0456	mg/L	0.0010	91	70	130	2.2	20	
Arsenic		0.0508	mg/L	0.0010	102	70	130	0.3	20	
Barium		0.0717	mg/L	0.050	100	70	130	1.0	20	
Beryllium		0.0487	mg/L	0.0010	97	70	130	1.0	20	
Cadmium		0.0489	mg/L	0.0010	98	70	130	1.7	20	
Calcium		49.0	mg/L	1.0	93	70	130	1.3	20	
Chromium		0.0496	mg/L	0.0050	99	70	130	0.6	20	
Cobalt		0.0490	mg/L	0.0050	98	70	130	0.3	20	
Copper		0.0526	mg/L	0.0050	103	70	130	0.4	20	
Iron		4.95	mg/L	0.020	97	70	130	1.4	20	
Lead		0.0493	mg/L	0.0010	99	70	130	0.7	20	
Magnesium		49.1	mg/L	1.0	98	70	130	0.1	20	
Manganese		0.111	mg/L	0.0010	97	70	130	0.3	20	
Molybdenum		0.0503	mg/L	0.0010	101	70	130	0.1	20	
Nickel		0.0525	mg/L	0.0050	98	70	130	0.2	20	
Potassium		50.8	mg/L	1.0	97	70	130	0.1	20	
Selenium		0.0516	mg/L	0.0010	102	70	130	0.0	20	
Silver		0.0170	mg/L	0.0010	85	70	130	0.2	20	
Sodium		439	mg/L	1.0		70	130	0.2	20	A

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.





# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 11/09/18  
**Work Order:** B18110070

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>										Batch: R310400
<b>Lab ID: B18110054-001BMSD</b>	26	Sample Matrix Spike Duplicate					Run: ICPMS206-B_181102A			11/02/18 20:22
Strontium		0.0889	mg/L	0.010	101	70	130	0.3	20	
Tin		0.0499	mg/L	0.010	100	70	130	0.4	20	
Titanium		0.0574	mg/L	0.0050	110	70	130	1.1	20	
Uranium		0.0499	mg/L	0.00030	100	70	130	1.8	20	
Vanadium		0.0517	mg/L	0.010	103	70	130	0.7	20	
Zinc		0.103	mg/L	0.010	94	70	130	0.5	20	
<b>Lab ID: B18110070-009AMS</b>	26	Sample Matrix Spike					Run: ICPMS206-B_181102A			11/02/18 21:29
Aluminum		0.0747	mg/L	0.030	97	70	130			
Antimony		0.0440	mg/L	0.0010	88	70	130			
Arsenic		0.0767	mg/L	0.0010	102	70	130			
Barium		0.107	mg/L	0.050	101	70	130			
Beryllium		0.0515	mg/L	0.0010	103	70	130			
Cadmium		0.0515	mg/L	0.0010	103	70	130			
Calcium		79.9	mg/L	1.0	92	70	130			
Chromium		0.0511	mg/L	0.0050	101	70	130			
Cobalt		0.0495	mg/L	0.0050	99	70	130			
Copper		0.0505	mg/L	0.0050	101	70	130			
Iron		5.48	mg/L	0.020	100	70	130			
Lead		0.0501	mg/L	0.0010	100	70	130			
Magnesium		99.1	mg/L	1.0	99	70	130			
Manganese		0.0519	mg/L	0.0010	100	70	130			
Molybdenum		0.0564	mg/L	0.0010	104	70	130			
Nickel		0.0511	mg/L	0.0050	99	70	130			
Potassium		51.2	mg/L	1.0	98	70	130			
Selenium		0.0787	mg/L	0.0010	102	70	130			
Silver		0.0202	mg/L	0.0010	101	70	130			
Sodium		56.7	mg/L	1.0	97	70	130			
Strontium		0.307	mg/L	0.010		70	130			A
Tin		0.0524	mg/L	0.010	105	70	130			
Titanium		0.0548	mg/L	0.0050	108	70	130			
Uranium		0.0574	mg/L	0.00030	102	70	130			
Vanadium		0.0532	mg/L	0.010	106	70	130			
Zinc		0.0508	mg/L	0.010	102	70	130			
<b>Lab ID: B18110070-009AMSD</b>	26	Sample Matrix Spike Duplicate					Run: ICPMS206-B_181102A			11/02/18 21:33
Aluminum		0.0741	mg/L	0.030	96	70	130	0.9	20	
Antimony		0.0457	mg/L	0.0010	91	70	130	3.8	20	
Arsenic		0.0764	mg/L	0.0010	102	70	130	0.3	20	
Barium		0.107	mg/L	0.050	101	70	130	0.0	20	
Beryllium		0.0513	mg/L	0.0010	103	70	130	0.4	20	
Cadmium		0.0504	mg/L	0.0010	101	70	130	2.2	20	
Calcium		80.5	mg/L	1.0	93	70	130	0.7	20	
Chromium		0.0504	mg/L	0.0050	100	70	130	1.4	20	
Cobalt		0.0498	mg/L	0.0050	99	70	130	0.7	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 11/09/18  
**Work Order:** B18110070

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>										Batch: R310400
<b>Lab ID:</b>	<b>B18110070-009AMSD</b>	26 Sample Matrix Spike Duplicate					Run: ICPMS206-B_181102A			11/02/18 21:33
Copper		0.0502	mg/L	0.0050	100	70	130	0.7	20	
Iron		5.48	mg/L	0.020	100	70	130	0.0	20	
Lead		0.0506	mg/L	0.0010	101	70	130	0.9	20	
Magnesium		99.6	mg/L	1.0	100	70	130	0.4	20	
Manganese		0.0518	mg/L	0.0010	100	70	130	0.2	20	
Molybdenum		0.0560	mg/L	0.0010	104	70	130	0.6	20	
Nickel		0.0510	mg/L	0.0050	99	70	130	0.1	20	
Potassium		51.9	mg/L	1.0	100	70	130	1.4	20	
Selenium		0.0784	mg/L	0.0010	101	70	130	0.4	20	
Silver		0.0201	mg/L	0.0010	101	70	130	0.4	20	
Sodium		56.9	mg/L	1.0	97	70	130	0.4	20	
Strontium		0.309	mg/L	0.010		70	130	0.5	20	A
Tin		0.0529	mg/L	0.010	106	70	130	0.9	20	
Titanium		0.0565	mg/L	0.0050	111	70	130	3.1	20	
Uranium		0.0584	mg/L	0.00030	104	70	130	1.6	20	
Vanadium		0.0523	mg/L	0.010	105	70	130	1.9	20	
Zinc		0.0510	mg/L	0.010	102	70	130	0.3	20	

<b>Method: E200.8</b>										Analytical Run: ICPMS206-B_181105A
<b>Lab ID:</b>	<b>QCS</b>	Initial Calibration Verification Standard								11/05/18 16:34
Thallium		0.0493	mg/L	0.10	99	90	110			

<b>Method: E200.8</b>										Batch: R310453
<b>Lab ID:</b>	<b>LRB</b>	Method Blank					Run: ICPMS206-B_181105A			11/05/18 11:38
Thallium		ND	mg/L	0.00007						

<b>Lab ID:</b>	<b>LFB</b>	Laboratory Fortified Blank					Run: ICPMS206-B_181105A			11/05/18 11:49
Thallium		0.0511	mg/L	0.10	102	85	115			

<b>Lab ID:</b>	<b>B18110070-001AMS</b>	Sample Matrix Spike					Run: ICPMS206-B_181105A			11/05/18 17:15
Thallium		0.103	mg/L	0.00050	103	70	130			

<b>Lab ID:</b>	<b>B18110070-001AMSD</b>	Sample Matrix Spike Duplicate					Run: ICPMS206-B_181105A			11/05/18 17:19
Thallium		0.103	mg/L	0.00050	103	70	130	0.7	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.



# Work Order Receipt Checklist

Enviromin Inc

B18110070

Login completed by: Kathi Renier

Date Received: 10/31/2018

Reviewed by: BL2000\raschim

Received by: slm

Reviewed Date: 11/2/2018

Carrier name: Return-UPS Ground

- Shipping container/cooler in good condition? Yes  No  Not Present
- Custody seals intact on all shipping container(s)/cooler(s)? Yes  No  Not Present
- Custody seals intact on all sample bottles? Yes  No  Not Present
- Chain of custody present? Yes  No
- Chain of custody signed when relinquished and received? Yes  No
- Chain of custody agrees with sample labels? Yes  No
- Samples in proper container/bottle? Yes  No
- Sample containers intact? Yes  No
- Sufficient sample volume for indicated test? Yes  No
- All samples received within holding time?  
(Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.) Yes  No
- Temp Blank received in all shipping container(s)/cooler(s)? Yes  No  Not Applicable
- Container/Temp Blank temperature: 0.6°C On Ice
- Water - VOA vials have zero headspace? Yes  No  No VOA vials submitted
- Water - pH acceptable upon receipt? Yes  No  Not Applicable

## Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

## Contact and Corrective Action Comments:

None

# Chain of Custody & Analytical Request Record

www.energylab.com

### Account Information (Billing Information)

Company Name Environment  
 Contact Terry Biese  
 Phone 406 438 2333  
 Mailing Address 524 Professional Drive  
 City, State, Zip Bozeman, MT 59715  
 Email terrybiese@environment.com  
 Receive Invoice  Hard Copy  Email   
 Purchase Order 4093 Quote  
 Receive Report  Hard Copy  Email   
 Bottle Order

### Project Information

Project Name, PWSID, Permit, etc. NWP Column Study  
 Sampler Name  
 EPA/State Compliance  Yes  No  
 Sample Origin State  
 MINING CLIENTS, please indicate sample type.  
 If one has been processed or refined, call before sending.  
 Byproduct 11 (e/2 material)  Unprocessed ore (NOT ground or refined)\*

### Comments

Company/Name  
 Contact  
 Phone  
 Mailing Address  
 City, State, Zip  
 Email  
 Receive Report  Hard Copy  Email  
 Special Report/Formats:  
 LEVEL IV  NELAC  EDD/EDT (contact laboratory)  Other

### Analysis Requested

Matrix Codes
A - Air
W - Water
S - Solids
V - Vegetation
B - Biosassay
O - Other
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.  
 Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling - See Instructions Page

See Attached  
 B18/10270-1  
 2  
 3  
 4  
 5  
 6  
 7  
 8  
 9

Sample Identification (Name, Location, Interval, etc.)	Collection		Matrix (See Codes Above)
	Date	Time	
1 F1	10/26/18	9AM	Z
2 F2			W
3 F3			
4 R1			
5 R2			
6 R3			
7 R4			
8 R5			
9 R6			
10			

Signature Terry Biese  
 Date/Time 10/29/18 4PM  
 Receipt Temp  °C  
 Inlet  Y N  
 Custody Seals Y N C B  
 Cooler (D/E)  
 Shipped By

Received by (print) Stanley ...  
 Date/Time 10/29/18 1000  
 Payment Type Cash  
 Amount \$   
 Receipt Number (attach only)

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.



# ANALYTICAL SUMMARY REPORT

November 28, 2018

Enviromin Inc  
524 Professional Dr  
Bozeman, MT 59718

Work Order: B18110880                      Quote ID: B4093 - Enviromin Lab

Project Name: Not Indicated

Energy Laboratories Inc Billings MT received the following 9 samples for Enviromin Inc on 11/9/2018 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B18110880-001	F1	11/08/18 11:00	11/09/18	Aqueous	Selenium By CVAA, Total Selenium IV, Total Selenium-VI, Total
B18110880-002	F2	11/08/18 11:00	11/09/18	Aqueous	Same As Above
B18110880-003	F3	11/08/18 11:00	11/09/18	Aqueous	Same As Above
B18110880-004	R1	11/08/18 11:00	11/09/18	Aqueous	Same As Above
B18110880-005	R3	11/08/18 11:00	11/09/18	Aqueous	Same As Above
B18110880-006	R4	11/08/18 11:00	11/09/18	Aqueous	Same As Above
B18110880-007	R5	11/08/18 11:00	11/09/18	Aqueous	Same As Above
B18110880-008	R6	11/08/18 11:00	11/09/18	Aqueous	Same As Above
B18110880-009	R2	11/08/18 11:00	11/09/18	Aqueous	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:



**CLIENT:** Enviromin Inc  
**Project:** Not Indicated  
**Work Order:** B18110880

**Report Date:** 11/28/18

## CASE NARRATIVE

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Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 East Lyndale Ave, Helena, MT, EPA Number MT00945.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18110880-001  
**Client Sample ID:** F1

**Report Date:** 11/28/18  
**Collection Date:** 11/08/18 11:00  
**DateReceived:** 11/09/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, TOTAL</b>							
Selenium	0.130	mg/L	D	0.003		A3114 C	11/20/18 14:19 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	11/19/18 13:20 / eli-h
Selenium-VI	0.128	mg/L		0.003		A3114 C	11/21/18 17:06 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18110880-002  
**Client Sample ID:** F2

**Report Date:** 11/28/18  
**Collection Date:** 11/08/18 11:00  
**DateReceived:** 11/09/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, TOTAL</b>							
Selenium	0.184	mg/L	D	0.006		A3114 C	11/20/18 14:21 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.006		A3114 C	11/19/18 13:21 / eli-h
Selenium-VI	0.184	mg/L		0.006		A3114 C	11/21/18 17:06 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.





### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18110880-003  
**Client Sample ID:** F3

**Report Date:** 11/28/18  
**Collection Date:** 11/08/18 11:00  
**DateReceived:** 11/09/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, TOTAL</b>							
Selenium	0.215	mg/L	D	0.003		A3114 C	11/20/18 14:26 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	11/19/18 13:26 / eli-h
Selenium-VI	0.215	mg/L		0.003		A3114 C	11/21/18 17:06 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18110880-004  
**Client Sample ID:** R1

**Report Date:** 11/28/18  
**Collection Date:** 11/08/18 11:00  
**DateReceived:** 11/09/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, TOTAL</b>							
Selenium	ND	mg/L	D	0.003		A3114 C	11/20/18 14:28 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	11/19/18 13:28 / eli-h
Selenium-VI	ND	mg/L		0.003		A3114 C	11/21/18 17:06 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18110880-005  
**Client Sample ID:** R3

**Report Date:** 11/28/18  
**Collection Date:** 11/08/18 11:00  
**DateReceived:** 11/09/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, TOTAL</b>							
Selenium	ND	mg/L	D	0.003		A3114 C	11/20/18 14:30 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	11/19/18 13:30 / eli-h
Selenium-VI	ND	mg/L		0.003		A3114 C	11/21/18 17:06 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18110880-006  
**Client Sample ID:** R4

**Report Date:** 11/28/18  
**Collection Date:** 11/08/18 11:00  
**DateReceived:** 11/09/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, TOTAL</b>							
Selenium	ND	mg/L	D	0.003		A3114 C	11/20/18 14:32 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	11/19/18 14:27 / eli-h
Selenium-VI	ND	mg/L		0.003		A3114 C	11/21/18 17:06 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18110880-007  
**Client Sample ID:** R5

**Report Date:** 11/28/18  
**Collection Date:** 11/08/18 11:00  
**DateReceived:** 11/09/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, TOTAL</b>							
Selenium	ND	mg/L	D	0.003		A3114 C	11/20/18 14:34 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	11/19/18 14:29 / eli-h
Selenium-VI	ND	mg/L		0.003		A3114 C	11/21/18 17:06 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18110880-008  
**Client Sample ID:** R6

**Report Date:** 11/28/18  
**Collection Date:** 11/08/18 11:00  
**DateReceived:** 11/09/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, TOTAL</b>							
Selenium	0.028	mg/L	D	0.003		A3114 C	11/20/18 14:35 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.009	mg/L	D	0.003		A3114 C	11/19/18 14:31 / eli-h
Selenium-VI	0.019	mg/L		0.003		A3114 C	11/21/18 17:06 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18110880-009  
**Client Sample ID:** R2

**Report Date:** 11/28/18  
**Collection Date:** 11/08/18 11:00  
**DateReceived:** 11/09/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, TOTAL</b>							
Selenium	0.012	mg/L	D	0.003		A3114 C	11/20/18 14:37 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	11/19/18 14:32 / eli-h
Selenium-VI	0.012	mg/L		0.003		A3114 C	11/21/18 17:06 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc

**Report Date:** 11/27/18

**Project:** Not Indicated

**Work Order:** B18110880

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A3114 C									tical Run: SELENIUM PSA MILLENIUM_181119A
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard								11/19/18 12:28
Selenium-IV	0.0202	mg/L	0.0010	101	90	110			
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								11/19/18 13:01
Selenium-IV	0.0185	mg/L	0.0010	92	90	110			
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								11/19/18 13:35
Selenium-IV	0.0183	mg/L	0.0010	91	90	110			
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard								11/19/18 14:23
Selenium-IV	0.0189	mg/L	0.0010	95	90	110			
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								11/19/18 14:24
Selenium-IV	0.0184	mg/L	0.0010	92	90	110			
<b>Method:</b> A3114 C									Batch: 43844
<b>Lab ID:</b> MB-43844	Method Blank								Run: SELENIUM PSA MILLENIUM_ 11/19/18 13:15
Selenium-IV	ND	mg/L	0.0006						
<b>Lab ID:</b> LCS-43844	Laboratory Control Sample								Run: SELENIUM PSA MILLENIUM_ 11/19/18 13:16
Selenium-IV	0.0192	mg/L	0.0010	96	90	110			
<b>Lab ID:</b> LFB-43844	Laboratory Fortified Blank								Run: SELENIUM PSA MILLENIUM_ 11/19/18 13:18
Selenium-IV	0.0204	mg/L	0.0010	102	85	115			
<b>Lab ID:</b> B18110880-002BMS	Sample Matrix Spike								Run: SELENIUM PSA MILLENIUM_ 11/19/18 13:23
Selenium-IV	0.118	mg/L	0.0060	98	70	130			
<b>Lab ID:</b> B18110880-002BMSD	Sample Matrix Spike Duplicate								Run: SELENIUM PSA MILLENIUM_ 11/19/18 13:25
Selenium-IV	0.119	mg/L	0.0060	99	70	130	1.2	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.





## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc

**Report Date:** 11/27/18

**Project:** Not Indicated

**Work Order:** B18110880

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A3114 C									tical Run: SELENIUM PSA MILLENIUM_181120B
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard								
Selenium	0.101	mg/L	0.0010	94	90	110			11/20/18 12:49
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard								
Selenium	0.101	mg/L	0.0010	94	90	110			11/20/18 14:08
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								
Selenium	0.0212	mg/L	0.0010	106	90	110			11/20/18 14:10
<b>Method:</b> A3114 C									Batch: 43875
<b>Lab ID:</b> LCS-43875	Laboratory Control Sample								
Selenium	0.0969	mg/L	0.0010	90	90	110			Run: SELENIUM PSA MILLENIUM_ 11/20/18 13:36
<b>Lab ID:</b> LFB-43875	Laboratory Fortified Blank								
Selenium	0.0356	mg/L	0.0010	89	85	115			Run: SELENIUM PSA MILLENIUM_ 11/20/18 13:38
<b>Lab ID:</b> MB-43875	Method Blank								
Selenium	ND	mg/L	0.0002						Run: SELENIUM PSA MILLENIUM_ 11/20/18 14:14
<b>Lab ID:</b> B18110880-002BMS	Sample Matrix Spike								
Selenium	0.408	mg/L	0.0060	93	70	130			Run: SELENIUM PSA MILLENIUM_ 11/20/18 14:23
<b>Lab ID:</b> B18110880-002BMSD	Sample Matrix Spike Duplicate								
Selenium	0.420	mg/L	0.0060	98	70	130	2.9	20	Run: SELENIUM PSA MILLENIUM_ 11/20/18 14:24

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# Work Order Receipt Checklist

Enviromin Inc

B18110880

Login completed by: Tabitha Edwards

Date Received: 11/9/2018

Reviewed by: BL2000\raschim

Received by: slm

Reviewed Date: 11/12/2018

Carrier name: Return-UPS Ground

- Shipping container/cooler in good condition? Yes  No  Not Present
- Custody seals intact on all shipping container(s)/cooler(s)? Yes  No  Not Present
- Custody seals intact on all sample bottles? Yes  No  Not Present
- Chain of custody present? Yes  No
- Chain of custody signed when relinquished and received? Yes  No
- Chain of custody agrees with sample labels? Yes  No
- Samples in proper container/bottle? Yes  No
- Sample containers intact? Yes  No
- Sufficient sample volume for indicated test? Yes  No
- All samples received within holding time?  
(Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.) Yes  No
- Temp Blank received in all shipping container(s)/cooler(s)? Yes  No  Not Applicable
- Container/Temp Blank temperature: 0.8°C Blue Ice
- Water - VOA vials have zero headspace? Yes  No  No VOA vials submitted
- Water - pH acceptable upon receipt? Yes  No  Not Applicable

## Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

## Contact and Corrective Action Comments:

All samples for dissolved metals and dissolved organic carbon were received as non filtered and preserved to a pH <2. Cancelled the dissolved metals and dissolved organic carbon on all samples per Wynn Pippin, Energy Laboratories Project Manager.





# ANALYTICAL SUMMARY REPORT

December 28, 2018

Enviromin Inc  
524 Professional Dr  
Bozeman, MT 59718

Work Order: B18110979      Quote ID: B4093 - Enviromin Lab

Project Name: NWP Phase I

Energy Laboratories Inc Billings MT received the following 7 samples for Enviromin Inc on 11/13/2018 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B18110979-001	F1	11/12/18 11:00	11/13/18	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Dissolved Carbon, Dissolved Organic Metals Digestion by E200.2 Preparation, Dissolved Filtration for DOC MCAWW Preparation, Dissolved Filtration MCAWW
B18110979-002	F2	11/12/18 11:00	11/13/18	Aqueous	Same As Above
B18110979-003	F3	11/12/18 11:00	11/13/18	Aqueous	Same As Above
B18110979-004	R1	11/12/18 11:00	11/13/18	Aqueous	Same As Above
B18110979-005	R3	11/12/18 11:00	11/13/18	Aqueous	Same As Above
B18110979-006	R5	11/12/18 11:00	11/13/18	Aqueous	Same As Above
B18110979-007	R6	11/12/18 11:00	11/13/18	Aqueous	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:



**CLIENT:** Enviromin Inc  
**Project:** NWP Phase I  
**Work Order:** B18110979

**Report Date:** 12/28/18

## **CASE NARRATIVE**

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Tests associated with analyst identified as ELI-CA were subcontracted to Energy Laboratories, PO Box 247, Casper, WY, EPA Number WY00002.

Samples submitted for Dissolved metals were filtered through 0.45 um filters, preserved and analyzed, per standard procedure. It was observed the samples contained fine sediment which passed through the filter and likely contributed to varying results upon analysis.

After discussion with the client the Dissolved samples were then digested and analyzed. Per client request, all results from the original Dissolved and later Digested Dissolved analytical runs that have variance between analyses have been reported.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I  
**Lab ID:** B18110979-001  
**Client Sample ID:** F1

**Report Date:** 12/28/18  
**Collection Date:** 11/12/18 11:00  
**Date Received:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	4	mg/L	D	2		A5310 C	11/20/18 02:42 / eli-ca
<b>METALS, DIGESTED DISSOLVED</b>							
Aluminum	4.23	mg/L			0.03	E200.8	12/06/18 18:22 / by
Aluminum	10.3	mg/L			0.03	E200.8	12/12/18 22:41 / car
Antimony	ND	mg/L	D		0.002	E200.8	12/06/18 18:22 / by
Arsenic	0.005	mg/L			0.001	E200.8	12/06/18 18:22 / by
Barium	0.16	mg/L			0.05	E200.7	12/06/18 12:47 / rlh
Beryllium	0.001	mg/L			0.001	E200.8	12/06/18 18:22 / by
Boron	0.11	mg/L	D		0.09	E200.7	12/06/18 12:47 / rlh
Cadmium	ND	mg/L			0.001	E200.8	12/06/18 18:22 / by
Calcium	9	mg/L			1	E200.7	12/06/18 12:47 / rlh
Chromium	0.006	mg/L			0.005	E200.8	12/06/18 18:22 / by
Chromium	0.025	mg/L			0.005	E200.8	12/12/18 22:41 / car
Cobalt	ND	mg/L			0.005	E200.8	12/06/18 18:22 / by
Copper	0.012	mg/L			0.005	E200.8	12/12/18 22:41 / car
Iron	6.13	mg/L	D		0.04	E200.7	12/06/18 12:47 / rlh
Lead	0.006	mg/L			0.001	E200.8	12/08/18 03:20 / by
Lithium	ND	mg/L			0.1	E200.7	12/06/18 12:47 / rlh
Magnesium	3	mg/L			1	E200.7	12/06/18 12:47 / rlh
Manganese	0.019	mg/L			0.001	E200.8	12/06/18 18:22 / by
Molybdenum	0.003	mg/L			0.001	E200.8	12/06/18 18:22 / by
Nickel	0.019	mg/L			0.005	E200.8	12/06/18 18:22 / by
Potassium	7	mg/L			1	E200.7	12/06/18 12:47 / rlh
Potassium	4	mg/L			1	E200.8	12/06/18 18:22 / by
Selenium	0.131	mg/L			0.001	E200.8	12/06/18 18:22 / by
Silicon	10.4	mg/L			0.1	E200.7	12/06/18 12:47 / rlh
Silver	ND	mg/L			0.001	E200.8	12/06/18 18:22 / by
Sodium	200	mg/L	D		4	E200.7	12/06/18 12:47 / rlh
Strontium	0.04	mg/L			0.01	E200.7	12/06/18 12:47 / rlh
Thallium	0.0007	mg/L			0.0005	E200.8	12/08/18 03:20 / by
Tin	ND	mg/L			0.01	E200.8	12/06/18 18:22 / by
Titanium	0.10	mg/L	D		0.03	E200.7	12/06/18 12:47 / rlh
Titanium	0.047	mg/L			0.005	E200.8	12/06/18 18:22 / by
Titanium	0.245	mg/L			0.005	E200.8	12/12/18 22:41 / car
Uranium	0.0007	mg/L			0.0003	E200.8	12/06/18 18:22 / by
Vanadium	0.04	mg/L			0.01	E200.8	12/12/18 22:41 / car
Zinc	0.07	mg/L	D		0.02	E200.8	12/06/18 18:22 / by
<b>METALS, DISSOLVED</b>							
Aluminum	9.18	mg/L			0.03	E200.7	11/14/18 15:14 / rlh
Aluminum	11.3	mg/L			0.03	E200.8	11/16/18 20:15 / by
Aluminum	7.92	mg/L			0.03	E200.8	11/20/18 22:51 / by

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I  
**Lab ID:** B18110979-001  
**Client Sample ID:** F1

**Report Date:** 12/28/18  
**Collection Date:** 11/12/18 11:00  
**DateReceived:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Aluminum	5.13	mg/L		0.03		E200.8	11/26/18 18:24 / rlh
Antimony	ND	mg/L		0.001		E200.8	11/26/18 18:24 / rlh
Arsenic	0.002	mg/L		0.001		E200.8	11/26/18 18:24 / rlh
Barium	0.15	mg/L		0.05		E200.8	11/20/18 22:51 / by
Beryllium	ND	mg/L		0.001		E200.7	11/14/18 15:14 / rlh
Boron	ND	mg/L		0.05		E200.7	11/14/18 15:14 / rlh
Cadmium	ND	mg/L		0.001		E200.8	11/16/18 20:15 / by
Calcium	8	mg/L		1		E200.7	11/14/18 15:14 / rlh
Chromium	0.015	mg/L		0.005		E200.8	11/16/18 20:15 / by
Cobalt	ND	mg/L		0.005		E200.8	11/16/18 20:15 / by
Copper	0.011	mg/L		0.005		E200.7	11/14/18 15:14 / rlh
Iron	3.27	mg/L		0.02		E200.7	11/14/18 15:14 / rlh
Lead	0.005	mg/L		0.001		E200.8	11/16/18 20:15 / by
Lithium	ND	mg/L		0.1		E200.7	11/14/18 15:14 / rlh
Magnesium	3	mg/L		1		E200.7	11/14/18 15:14 / rlh
Manganese	0.017	mg/L		0.001		E200.8	11/16/18 20:15 / by
Molybdenum	0.001	mg/L		0.001		E200.8	11/16/18 20:15 / by
Nickel	0.012	mg/L		0.005		E200.8	11/16/18 20:15 / by
Potassium	6	mg/L		1		E200.8	11/26/18 18:24 / rlh
Potassium	14	mg/L		1		E200.7	11/29/18 11:05 / rlh
Selenium	0.15	mg/L	L	0.04		E200.7	11/14/18 15:14 / rlh
Silicon	16.4	mg/L		0.1		E200.7	11/14/18 15:14 / rlh
Silicon	21.2	mg/L		0.1		E200.8	11/16/18 20:15 / by
Silicon	36.3	mg/L	D	0.4		E200.7	11/29/18 11:05 / rlh
Silver	ND	mg/L		0.001		E200.8	11/16/18 20:15 / by
Sodium	183	mg/L		1		E200.7	11/14/18 15:14 / rlh
Strontium	0.04	mg/L		0.01		E200.7	11/14/18 15:14 / rlh
Thallium	ND	mg/L		0.0005		E200.8	11/26/18 18:24 / rlh
Tin	ND	mg/L		0.01		E200.8	11/16/18 20:15 / by
Titanium	0.260	mg/L		0.005		E200.7	11/14/18 15:14 / rlh
Titanium	0.323	mg/L		0.005		E200.8	11/16/18 20:15 / by
Titanium	0.184	mg/L		0.005		E200.8	11/20/18 22:51 / by
Titanium	0.150	mg/L		0.005		E200.8	11/26/18 18:24 / rlh
Titanium	0.59	mg/L	D	0.03		E200.7	11/29/18 11:05 / rlh
Uranium	0.0008	mg/L		0.0003		E200.8	11/16/18 20:15 / by
Uranium	0.0004	mg/L		0.0003		E200.8	11/26/18 18:24 / rlh
Vanadium	ND	mg/L		0.01		E200.8	11/26/18 18:24 / rlh
Zinc	0.05	mg/L		0.01		E200.7	11/14/18 15:14 / rlh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 L - Lowest available reporting limit for the analytical method used.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I  
**Lab ID:** B18110979-002  
**Client Sample ID:** F2

**Report Date:** 12/28/18  
**Collection Date:** 11/12/18 11:00  
**Date Received:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	4	mg/L	D	2		A5310 C	11/20/18 02:59 / eli-ca
<b>METALS, DIGESTED DISSOLVED</b>							
Aluminum	5.88	mg/L		0.03		E200.8	12/06/18 18:27 / by
Aluminum	18.8	mg/L		0.03		E200.8	12/12/18 22:45 / car
Antimony	ND	mg/L	D	0.002		E200.8	12/06/18 18:27 / by
Arsenic	0.002	mg/L		0.001		E200.8	12/06/18 18:27 / by
Arsenic	0.005	mg/L		0.001		E200.8	12/12/18 22:45 / car
Barium	0.19	mg/L		0.05		E200.7	12/06/18 12:51 / rlh
Beryllium	ND	mg/L		0.001		E200.8	12/06/18 18:27 / by
Boron	0.10	mg/L	D	0.09		E200.7	12/06/18 12:51 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/06/18 18:27 / by
Calcium	8	mg/L		1		E200.7	12/06/18 12:51 / rlh
Chromium	0.008	mg/L		0.005		E200.8	12/06/18 18:27 / by
Chromium	0.028	mg/L		0.005		E200.8	12/12/18 22:45 / car
Cobalt	ND	mg/L		0.005		E200.8	12/06/18 18:27 / by
Copper	ND	mg/L	D	0.03		E200.7	12/06/18 12:51 / rlh
Iron	5.92	mg/L	D	0.04		E200.7	12/06/18 12:51 / rlh
Iron	8.28	mg/L		0.02		E200.8	12/12/18 22:45 / car
Lead	0.005	mg/L		0.001		E200.8	12/06/18 18:27 / by
Lithium	ND	mg/L		0.1		E200.7	12/06/18 12:51 / rlh
Magnesium	3	mg/L		1		E200.7	12/06/18 12:51 / rlh
Manganese	0.016	mg/L		0.001		E200.8	12/06/18 18:27 / by
Manganese	0.025	mg/L		0.001		E200.8	12/12/18 22:45 / car
Molybdenum	0.002	mg/L		0.001		E200.8	12/06/18 18:27 / by
Nickel	0.021	mg/L		0.005		E200.8	12/06/18 18:27 / by
Potassium	4	mg/L		1		E200.7	12/06/18 12:51 / rlh
Potassium	1	mg/L		1		E200.8	12/06/18 18:27 / by
Selenium	0.207	mg/L		0.001		E200.8	12/06/18 18:27 / by
Silicon	11.5	mg/L		0.1		E200.7	12/06/18 12:51 / rlh
Silver	ND	mg/L		0.001		E200.8	12/06/18 18:27 / by
Sodium	180	mg/L	D	4		E200.7	12/06/18 12:51 / rlh
Sodium	159	mg/L		1		E200.8	12/06/18 18:27 / by
Strontium	0.04	mg/L		0.01		E200.7	12/06/18 12:51 / rlh
Thallium	0.0006	mg/L		0.0005		E200.8	12/08/18 03:24 / by
Tin	ND	mg/L		0.01		E200.8	12/06/18 18:27 / by
Titanium	0.064	mg/L		0.005		E200.8	12/06/18 18:27 / by
Titanium	0.397	mg/L		0.005		E200.8	12/12/18 22:45 / car
Uranium	0.0003	mg/L		0.0003		E200.8	12/06/18 18:27 / by
Uranium	0.0009	mg/L		0.0003		E200.8	12/12/18 22:45 / car
Vanadium	0.05	mg/L		0.01		E200.8	12/12/18 22:45 / car
Zinc	0.08	mg/L	D	0.02		E200.8	12/06/18 18:27 / by

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.





### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I  
**Lab ID:** B18110979-002  
**Client Sample ID:** F2

**Report Date:** 12/28/18  
**Collection Date:** 11/12/18 11:00  
**DateReceived:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Aluminum	3.19	mg/L		0.03		E200.7	11/14/18 15:18 / rlh
Aluminum	18.9	mg/L		0.03		E200.8	11/16/18 20:18 / by
Aluminum	34.2	mg/L		0.03		E200.8	11/20/18 23:11 / by
Aluminum	4.60	mg/L		0.03		E200.8	11/26/18 18:41 / rlh
Antimony	0.001	mg/L		0.001		E200.8	11/26/18 18:41 / rlh
Arsenic	0.007	mg/L	D	0.004		E200.8	11/20/18 23:11 / by
Arsenic	0.002	mg/L		0.001		E200.8	11/26/18 18:41 / rlh
Barium	0.17	mg/L		0.05		E200.8	11/26/18 18:41 / rlh
Beryllium	ND	mg/L		0.001		E200.7	11/14/18 15:18 / rlh
Boron	ND	mg/L		0.05		E200.7	11/14/18 15:18 / rlh
Cadmium	ND	mg/L		0.001		E200.8	11/16/18 20:18 / by
Calcium	8	mg/L		1		E200.7	11/14/18 15:18 / rlh
Chromium	0.006	mg/L		0.005		E200.8	11/26/18 18:41 / rlh
Cobalt	ND	mg/L		0.005		E200.8	11/16/18 20:18 / by
Copper	0.006	mg/L		0.005		E200.7	11/14/18 15:18 / rlh
Copper	0.02	mg/L	D	0.02		E200.7	11/29/18 11:08 / rlh
Iron	1.07	mg/L		0.02		E200.7	11/14/18 15:18 / rlh
Iron	8.58	mg/L		0.02		E200.8	11/16/18 20:18 / by
Iron	12.9	mg/L		0.02		E200.8	11/20/18 23:11 / by
Iron	2.35	mg/L		0.02		E200.8	11/26/18 18:41 / rlh
Lead	0.006	mg/L		0.001		E200.8	11/16/18 20:18 / by
Lithium	ND	mg/L		0.1		E200.7	11/14/18 15:18 / rlh
Magnesium	2	mg/L		1		E200.7	11/14/18 15:18 / rlh
Magnesium	4	mg/L		1		E200.7	11/29/18 11:08 / rlh
Manganese	0.037	mg/L	D	0.002		E200.8	11/20/18 23:11 / by
Manganese	0.011	mg/L		0.001		E200.8	11/26/18 18:41 / rlh
Molybdenum	ND	mg/L		0.001		E200.8	11/16/18 20:18 / by
Nickel	0.007	mg/L		0.005		E200.7	11/14/18 15:18 / rlh
Nickel	0.011	mg/L		0.005		E200.8	11/26/18 18:41 / rlh
Potassium	1	mg/L		1		E200.7	11/14/18 15:18 / rlh
Potassium	2	mg/L		1		E200.8	11/26/18 18:41 / rlh
Potassium	12	mg/L		1		E200.7	11/29/18 11:08 / rlh
Selenium	0.242	mg/L	D	0.002		E200.8	11/16/18 20:18 / by
Silicon	6.3	mg/L		0.1		E200.7	11/14/18 15:18 / rlh
Silicon	71.9	mg/L	D	0.2		E200.8	11/20/18 23:11 / by
Silicon	44.9	mg/L	D	0.4		E200.7	11/29/18 11:08 / rlh
Silver	ND	mg/L		0.001		E200.8	11/16/18 20:18 / by
Sodium	167	mg/L		1		E200.7	11/14/18 15:18 / rlh
Strontium	0.03	mg/L		0.01		E200.7	11/14/18 15:18 / rlh
Strontium	0.07	mg/L		0.01		E200.8	11/20/18 23:11 / by
Thallium	ND	mg/L		0.0005		E200.8	11/26/18 18:41 / rlh
Tin	ND	mg/L		0.01		E200.8	11/16/18 20:18 / by
Titanium	0.061	mg/L		0.005		E200.7	11/14/18 15:18 / rlh

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I  
**Lab ID:** B18110979-002  
**Client Sample ID:** F2

**Report Date:** 12/28/18  
**Collection Date:** 11/12/18 11:00  
**DateReceived:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Titanium	0.360	mg/L		0.005		E200.8	11/16/18 20:18 / by
Titanium	0.762	mg/L		0.005		E200.8	11/20/18 23:11 / by
Uranium	0.0010	mg/L		0.0003		E200.8	11/16/18 20:18 / by
Vanadium	ND	mg/L		0.01		E200.8	11/26/18 18:41 / rlh
Zinc	0.03	mg/L		0.01		E200.7	11/14/18 15:18 / rlh
Zinc	0.13	mg/L	D	0.05		E200.8	11/20/18 23:11 / by
Zinc	0.05	mg/L		0.01		E200.8	11/26/18 18:41 / rlh

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I  
**Lab ID:** B18110979-003  
**Client Sample ID:** F3

**Report Date:** 12/28/18  
**Collection Date:** 11/12/18 11:00  
**DateReceived:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	8	mg/L	D	2		A5310 C	11/20/18 03:17 / eli-ca
<b>METALS, DIGESTED DISSOLVED</b>							
Aluminum	5.97	mg/L			0.03	E200.8	12/06/18 18:31 / by
Aluminum	10.8	mg/L			0.03	E200.8	12/12/18 22:49 / car
Antimony	ND	mg/L	D		0.004	E200.8	12/06/18 18:31 / by
Arsenic	0.001	mg/L			0.001	E200.8	12/06/18 18:31 / by
Arsenic	0.003	mg/L			0.001	E200.8	12/12/18 22:49 / car
Barium	0.11	mg/L			0.05	E200.8	12/06/18 18:31 / by
Beryllium	ND	mg/L			0.001	E200.8	12/06/18 18:31 / by
Boron	0.3	mg/L	D		0.1	E200.8	12/06/18 18:31 / by
Cadmium	ND	mg/L			0.001	E200.8	12/06/18 18:31 / by
Calcium	7	mg/L			1	E200.7	12/06/18 12:55 / rlh
Chromium	0.014	mg/L			0.005	E200.8	12/06/18 18:31 / by
Cobalt	ND	mg/L			0.005	E200.8	12/06/18 18:31 / by
Copper	0.011	mg/L	D		0.009	E200.8	12/12/18 22:49 / car
Iron	4.34	mg/L	D		0.07	E200.7	12/06/18 12:55 / rlh
Lead	0.003	mg/L			0.001	E200.8	12/06/18 18:31 / by
Lithium	ND	mg/L			0.1	E200.7	12/06/18 12:55 / rlh
Magnesium	3	mg/L			1	E200.7	12/06/18 12:55 / rlh
Manganese	0.015	mg/L			0.001	E200.8	12/06/18 18:31 / by
Molybdenum	0.005	mg/L			0.001	E200.8	12/06/18 18:31 / by
Molybdenum	ND	mg/L			0.001	E200.8	12/12/18 22:49 / car
Nickel	0.018	mg/L	D		0.007	E200.8	12/06/18 18:31 / by
Potassium	4	mg/L			1	E200.7	12/06/18 12:55 / rlh
Selenium	0.227	mg/L	D		0.002	E200.8	12/06/18 18:31 / by
Silicon	13.4	mg/L	D		0.2	E200.7	12/06/18 12:55 / rlh
Silver	ND	mg/L			0.001	E200.8	12/06/18 18:31 / by
Sodium	187	mg/L	D		8	E200.7	12/06/18 12:55 / rlh
Strontium	0.03	mg/L			0.01	E200.7	12/06/18 12:55 / rlh
Thallium	ND	mg/L			0.0005	E200.8	12/12/18 22:49 / car
Tin	ND	mg/L			0.01	E200.8	12/06/18 18:31 / by
Titanium	0.121	mg/L			0.005	E200.8	12/06/18 18:31 / by
Uranium	ND	mg/L	D		0.0005	E200.8	12/06/18 18:31 / by
Vanadium	0.03	mg/L			0.01	E200.8	12/12/18 22:49 / car
Zinc	0.06	mg/L	D		0.04	E200.8	12/06/18 18:31 / by
<b>METALS, DISSOLVED</b>							
Aluminum	2.56	mg/L			0.03	E200.7	11/14/18 15:10 / rlh
Aluminum	11.3	mg/L			0.03	E200.8	11/16/18 20:22 / by
Aluminum	7.18	mg/L			0.03	E200.8	11/20/18 23:14 / by
Aluminum	5.63	mg/L			0.03	E200.8	11/26/18 18:45 / rlh
Antimony	0.001	mg/L			0.001	E200.8	11/26/18 18:45 / rlh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I  
**Lab ID:** B18110979-003  
**Client Sample ID:** F3

**Report Date:** 12/28/18  
**Collection Date:** 11/12/18 11:00  
**DateReceived:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Arsenic	ND	mg/L	D	0.004		E200.8	11/20/18 23:14 / by
Barium	0.10	mg/L		0.05		E200.7	11/14/18 15:10 / rlh
Beryllium	ND	mg/L		0.001		E200.7	11/14/18 15:10 / rlh
Boron	ND	mg/L		0.05		E200.7	11/14/18 15:10 / rlh
Cadmium	ND	mg/L		0.001		E200.8	11/16/18 20:22 / by
Calcium	7	mg/L		1		E200.7	11/14/18 15:10 / rlh
Chromium	0.013	mg/L		0.005		E200.8	11/16/18 20:22 / by
Cobalt	ND	mg/L		0.005		E200.8	11/16/18 20:22 / by
Copper	0.012	mg/L		0.005		E200.8	11/16/18 20:22 / by
Iron	0.97	mg/L		0.02		E200.7	11/14/18 15:10 / rlh
Iron	3.97	mg/L		0.02		E200.8	11/16/18 20:22 / by
Iron	2.68	mg/L		0.02		E200.8	11/20/18 23:14 / by
Lead	0.004	mg/L		0.001		E200.8	11/16/18 20:22 / by
Lithium	ND	mg/L		0.1		E200.7	11/14/18 15:10 / rlh
Magnesium	2	mg/L		1		E200.7	11/14/18 15:10 / rlh
Manganese	0.012	mg/L		0.001		E200.8	11/16/18 20:22 / by
Molybdenum	ND	mg/L		0.001		E200.8	11/16/18 20:22 / by
Nickel	0.011	mg/L		0.005		E200.8	11/16/18 20:22 / by
Potassium	2	mg/L		1		E200.7	11/14/18 15:10 / rlh
Potassium	3	mg/L		1		E200.8	11/26/18 18:45 / rlh
Potassium	6	mg/L		1		E200.7	11/29/18 11:12 / rlh
Selenium	0.257	mg/L	D	0.002		E200.8	11/16/18 20:22 / by
Silicon	5.7	mg/L		0.1		E200.7	11/14/18 15:10 / rlh
Silicon	19.4	mg/L		0.1		E200.8	11/16/18 20:22 / by
Silver	ND	mg/L		0.001		E200.8	11/16/18 20:22 / by
Sodium	168	mg/L		1		E200.7	11/14/18 15:10 / rlh
Strontium	0.04	mg/L		0.01		E200.8	11/16/18 20:22 / by
Thallium	ND	mg/L	D	0.0008		E200.8	11/20/18 23:14 / by
Tin	ND	mg/L		0.01		E200.8	11/16/18 20:22 / by
Titanium	0.316	mg/L		0.005		E200.8	11/16/18 20:22 / by
Uranium	0.0006	mg/L		0.0003		E200.8	11/16/18 20:22 / by
Uranium	0.0003	mg/L		0.0003		E200.8	11/26/18 18:45 / rlh
Vanadium	ND	mg/L		0.01		E200.8	11/26/18 18:45 / rlh
Zinc	0.04	mg/L		0.01		E200.8	11/26/18 18:45 / rlh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I  
**Lab ID:** B18110979-004  
**Client Sample ID:** R1

**Report Date:** 12/28/18  
**Collection Date:** 11/12/18 11:00  
**Date Received:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	13	mg/L	D	2		A5310 C	11/20/18 03:33 / eli-ca
<b>METALS, DIGESTED DISSOLVED</b>							
Aluminum	1.12	mg/L			0.03	E200.8	12/06/18 18:35 / by
Antimony	ND	mg/L	D		0.004	E200.8	12/06/18 18:35 / by
Arsenic	0.002	mg/L			0.001	E200.8	12/06/18 18:35 / by
Barium	ND	mg/L			0.05	E200.8	12/06/18 18:35 / by
Beryllium	ND	mg/L			0.001	E200.8	12/06/18 18:35 / by
Boron	0.2	mg/L	D		0.2	E200.7	12/06/18 12:59 / rlh
Cadmium	ND	mg/L			0.001	E200.8	12/06/18 18:35 / by
Calcium	5	mg/L			1	E200.7	12/06/18 12:59 / rlh
Chromium	ND	mg/L			0.005	E200.8	12/06/18 18:35 / by
Cobalt	ND	mg/L			0.005	E200.8	12/06/18 18:35 / by
Copper	ND	mg/L	D		0.009	E200.8	12/12/18 22:52 / car
Iron	0.72	mg/L	D		0.03	E200.8	12/12/18 22:52 / car
Lead	ND	mg/L			0.001	E200.8	12/06/18 18:35 / by
Lithium	ND	mg/L			0.1	E200.7	12/06/18 12:59 / rlh
Magnesium	2	mg/L			1	E200.7	12/06/18 12:59 / rlh
Manganese	0.014	mg/L			0.001	E200.8	12/06/18 18:35 / by
Molybdenum	0.005	mg/L			0.001	E200.8	12/06/18 18:35 / by
Nickel	0.012	mg/L	D		0.007	E200.8	12/06/18 18:35 / by
Potassium	1	mg/L			1	E200.7	12/06/18 12:59 / rlh
Selenium	ND	mg/L	D		0.002	E200.8	12/06/18 18:35 / by
Silicon	7.0	mg/L	D		0.2	E200.7	12/06/18 12:59 / rlh
Silver	0.001	mg/L			0.001	E200.8	12/08/18 03:32 / by
Sodium	5	mg/L			1	E200.7	12/06/18 12:59 / rlh
Strontium	0.02	mg/L			0.01	E200.7	12/06/18 12:59 / rlh
Thallium	ND	mg/L			0.0005	E200.8	12/12/18 22:52 / car
Tin	ND	mg/L			0.01	E200.8	12/06/18 18:35 / by
Titanium	0.015	mg/L			0.005	E200.8	12/06/18 18:35 / by
Uranium	ND	mg/L	D		0.0005	E200.8	12/06/18 18:35 / by
Vanadium	ND	mg/L			0.01	E200.8	12/12/18 22:52 / car
Zinc	0.04	mg/L	D		0.04	E200.8	12/06/18 18:35 / by
<b>METALS, DISSOLVED</b>							
Aluminum	1.42	mg/L			0.03	E200.8	11/26/18 18:49 / rlh
Antimony	0.001	mg/L			0.001	E200.8	11/26/18 18:49 / rlh
Arsenic	0.005	mg/L			0.001	E200.8	11/26/18 18:49 / rlh
Barium	ND	mg/L			0.05	E200.7	11/14/18 15:29 / rlh
Beryllium	ND	mg/L			0.001	E200.7	11/14/18 15:29 / rlh
Boron	ND	mg/L			0.05	E200.7	11/14/18 15:29 / rlh
Cadmium	ND	mg/L			0.001	E200.8	11/16/18 20:26 / by
Calcium	5	mg/L			1	E200.7	11/14/18 15:29 / rlh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I  
**Lab ID:** B18110979-004  
**Client Sample ID:** R1

**Report Date:** 12/28/18  
**Collection Date:** 11/12/18 11:00  
**DateReceived:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Chromium	ND	mg/L		0.005		E200.8	11/26/18 18:49 / rlh
Cobalt	ND	mg/L		0.005		E200.8	11/16/18 20:26 / by
Copper	0.006	mg/L		0.005		E200.7	11/14/18 15:29 / rlh
Iron	0.96	mg/L		0.02		E200.7	11/14/18 15:29 / rlh
Iron	0.49	mg/L		0.02		E200.8	11/16/18 20:26 / by
Iron	0.66	mg/L		0.02		E200.8	11/26/18 18:49 / rlh
Lead	ND	mg/L		0.001		E200.8	11/16/18 20:26 / by
Lithium	ND	mg/L		0.1		E200.7	11/14/18 15:29 / rlh
Magnesium	2	mg/L		1		E200.7	11/14/18 15:29 / rlh
Manganese	0.010	mg/L		0.001		E200.8	11/16/18 20:26 / by
Molybdenum	ND	mg/L		0.001		E200.8	11/16/18 20:26 / by
Nickel	0.006	mg/L		0.005		E200.8	11/16/18 20:26 / by
Potassium	2	mg/L		1		E200.7	11/14/18 15:29 / rlh
Selenium	ND	mg/L	D	0.002		E200.8	11/16/18 20:26 / by
Silicon	6.8	mg/L		0.1		E200.8	11/16/18 20:26 / by
Silver	ND	mg/L		0.001		E200.8	11/16/18 20:26 / by
Sodium	4	mg/L		1		E200.7	11/14/18 15:29 / rlh
Strontium	0.02	mg/L		0.01		E200.7	11/14/18 15:29 / rlh
Thallium	ND	mg/L		0.0005		E200.8	11/26/18 18:49 / rlh
Tin	ND	mg/L		0.01		E200.8	11/16/18 20:26 / by
Titanium	0.034	mg/L		0.005		E200.8	11/16/18 20:26 / by
Uranium	ND	mg/L		0.0003		E200.8	11/16/18 20:26 / by
Vanadium	ND	mg/L		0.01		E200.8	11/26/18 18:49 / rlh
Zinc	0.02	mg/L		0.01		E200.7	11/14/18 15:29 / rlh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I  
**Lab ID:** B18110979-005  
**Client Sample ID:** R3

**Report Date:** 12/28/18  
**Collection Date:** 11/12/18 11:00  
**DateReceived:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	19	mg/L	D	2		A5310 C	11/20/18 03:50 / eli-ca
<b>METALS, DIGESTED DISSOLVED</b>							
Aluminum	1.57	mg/L				E200.7	12/06/18 13:38 / rlh
Antimony	ND	mg/L	D	0.002		E200.8	12/06/18 18:39 / by
Arsenic	0.004	mg/L		0.001		E200.8	12/06/18 18:39 / by
Arsenic	0.006	mg/L		0.001		E200.8	12/12/18 23:08 / car
Barium	ND	mg/L		0.05		E200.7	12/06/18 13:38 / rlh
Beryllium	ND	mg/L		0.001		E200.8	12/06/18 18:39 / by
Boron	0.15	mg/L	D	0.09		E200.7	12/06/18 13:38 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/06/18 18:39 / by
Calcium	5	mg/L		1		E200.7	12/06/18 13:38 / rlh
Chromium	ND	mg/L		0.005		E200.8	12/06/18 18:39 / by
Cobalt	ND	mg/L		0.005		E200.8	12/06/18 18:39 / by
Copper	ND	mg/L		0.005		E200.8	12/12/18 23:08 / car
Iron	0.67	mg/L	D	0.04		E200.7	12/06/18 13:38 / rlh
Lead	ND	mg/L		0.001		E200.8	12/06/18 18:39 / by
Lithium	ND	mg/L		0.1		E200.7	12/06/18 13:38 / rlh
Magnesium	2	mg/L		1		E200.7	12/06/18 13:38 / rlh
Manganese	0.011	mg/L		0.001		E200.8	12/06/18 18:39 / by
Manganese	0.007	mg/L		0.001		E200.8	12/12/18 23:08 / car
Molybdenum	0.004	mg/L		0.001		E200.8	12/06/18 18:39 / by
Molybdenum	0.001	mg/L		0.001		E200.8	12/08/18 03:37 / by
Nickel	0.007	mg/L		0.005		E200.8	12/06/18 18:39 / by
Nickel	ND	mg/L		0.005		E200.8	12/08/18 03:37 / by
Potassium	ND	mg/L		1		E200.7	12/06/18 13:38 / rlh
Selenium	ND	mg/L		0.001		E200.8	12/06/18 18:39 / by
Silicon	6.2	mg/L		0.1		E200.7	12/06/18 13:38 / rlh
Silicon	7.3	mg/L		0.1		E200.8	12/12/18 23:08 / car
Silver	0.002	mg/L		0.001		E200.8	12/06/18 18:39 / by
Sodium	7	mg/L		1		E200.7	12/06/18 13:38 / rlh
Strontium	0.02	mg/L		0.01		E200.7	12/06/18 13:38 / rlh
Thallium	ND	mg/L		0.0005		E200.8	12/08/18 03:37 / by
Tin	ND	mg/L		0.01		E200.8	12/06/18 18:39 / by
Titanium	0.026	mg/L		0.005		E200.8	12/06/18 18:39 / by
Uranium	ND	mg/L		0.0003		E200.8	12/06/18 18:39 / by
Vanadium	ND	mg/L		0.01		E200.8	12/12/18 23:08 / car
Zinc	0.02	mg/L	D	0.02		E200.8	12/06/18 18:39 / by
<b>METALS, DISSOLVED</b>							
Aluminum	1.67	mg/L		0.03		E200.7	11/14/18 15:33 / rlh
Antimony	ND	mg/L		0.001		E200.8	11/26/18 18:53 / rlh
Arsenic	0.006	mg/L		0.001		E200.8	11/26/18 18:53 / rlh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I  
**Lab ID:** B18110979-005  
**Client Sample ID:** R3

**Report Date:** 12/28/18  
**Collection Date:** 11/12/18 11:00  
**Date Received:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Barium	ND	mg/L		0.05		E200.7	11/14/18 15:33 / rlh
Beryllium	ND	mg/L		0.001		E200.7	11/14/18 15:33 / rlh
Boron	ND	mg/L		0.05		E200.7	11/14/18 15:33 / rlh
Cadmium	ND	mg/L		0.001		E200.8	11/16/18 20:30 / by
Calcium	5	mg/L		1		E200.7	11/14/18 15:33 / rlh
Chromium	ND	mg/L	D	0.01		E200.8	11/20/18 23:22 / by
Cobalt	ND	mg/L		0.005		E200.8	11/16/18 20:30 / by
Copper	0.005	mg/L		0.005		E200.8	11/16/18 20:30 / by
Iron	0.54	mg/L		0.02		E200.7	11/14/18 15:33 / rlh
Lead	ND	mg/L		0.001		E200.8	11/16/18 20:30 / by
Lithium	ND	mg/L		0.1		E200.7	11/14/18 15:33 / rlh
Magnesium	2	mg/L		1		E200.7	11/14/18 15:33 / rlh
Manganese	0.007	mg/L		0.001		E200.8	11/16/18 20:30 / by
Molybdenum	0.001	mg/L		0.001		E200.8	11/16/18 20:30 / by
Nickel	ND	mg/L		0.005		E200.7	11/14/18 15:33 / rlh
Potassium	ND	mg/L		1		E200.7	11/14/18 15:33 / rlh
Selenium	ND	mg/L	D	0.002		E200.8	11/16/18 20:30 / by
Silicon	6.4	mg/L		0.1		E200.7	11/14/18 15:33 / rlh
Silver	0.002	mg/L		0.001		E200.8	11/16/18 20:30 / by
Sodium	7	mg/L		1		E200.7	11/14/18 15:33 / rlh
Strontium	0.02	mg/L		0.01		E200.7	11/14/18 15:33 / rlh
Thallium	ND	mg/L		0.0005		E200.8	11/26/18 18:53 / rlh
Tin	ND	mg/L		0.01		E200.8	11/16/18 20:30 / by
Titanium	0.041	mg/L		0.005		E200.7	11/14/18 15:33 / rlh
Uranium	ND	mg/L		0.0003		E200.8	11/16/18 20:30 / by
Vanadium	ND	mg/L		0.01		E200.8	11/26/18 18:53 / rlh
Zinc	0.01	mg/L		0.01		E200.8	11/16/18 20:30 / by

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.





### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I  
**Lab ID:** B18110979-006  
**Client Sample ID:** R5

**Report Date:** 12/28/18  
**Collection Date:** 11/12/18 11:00  
**DateReceived:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	21	mg/L	D	2		A5310 C	11/20/18 04:10 / eli-ca
<b>METALS, DIGESTED DISSOLVED</b>							
Aluminum	4.32	mg/L		0.03		E200.7	12/06/18 13:42 / rlh
Aluminum	3.80	mg/L		0.03		E200.8	12/06/18 18:43 / by
Aluminum	8.58	mg/L		0.03		E200.8	12/12/18 23:12 / car
Antimony	ND	mg/L	D	0.002		E200.8	12/06/18 18:43 / by
Arsenic	0.010	mg/L		0.001		E200.8	12/06/18 18:43 / by
Barium	0.05	mg/L		0.05		E200.8	12/06/18 18:43 / by
Beryllium	ND	mg/L		0.001		E200.8	12/06/18 18:43 / by
Boron	0.17	mg/L	D	0.09		E200.7	12/06/18 13:42 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/06/18 18:43 / by
Calcium	8	mg/L		1		E200.7	12/06/18 13:42 / rlh
Chromium	0.006	mg/L		0.005		E200.8	12/06/18 18:43 / by
Chromium	0.019	mg/L		0.005		E200.8	12/12/18 23:12 / car
Cobalt	ND	mg/L		0.005		E200.8	12/06/18 18:43 / by
Copper	0.007	mg/L		0.005		E200.8	12/12/18 23:12 / car
Iron	2.52	mg/L	D	0.04		E200.7	12/06/18 13:42 / rlh
Lead	0.002	mg/L		0.001		E200.8	12/06/18 18:43 / by
Lithium	ND	mg/L		0.1		E200.7	12/06/18 13:42 / rlh
Magnesium	3	mg/L		1		E200.7	12/06/18 13:42 / rlh
Manganese	0.011	mg/L		0.001		E200.8	12/06/18 18:43 / by
Molybdenum	0.004	mg/L		0.001		E200.8	12/06/18 18:43 / by
Molybdenum	ND	mg/L		0.001		E200.8	12/08/18 03:57 / by
Nickel	0.008	mg/L		0.005		E200.8	12/08/18 03:57 / by
Potassium	2	mg/L		1		E200.7	12/06/18 13:42 / rlh
Selenium	ND	mg/L		0.001		E200.8	12/06/18 18:43 / by
Silicon	10.5	mg/L		0.1		E200.7	12/06/18 13:42 / rlh
Silicon	19.9	mg/L		0.1		E200.8	12/12/18 23:12 / car
Silver	0.005	mg/L		0.001		E200.8	12/06/18 18:43 / by
Sodium	8	mg/L		1		E200.7	12/06/18 13:42 / rlh
Strontium	0.02	mg/L		0.01		E200.7	12/06/18 13:42 / rlh
Thallium	ND	mg/L		0.0005		E200.8	12/08/18 03:57 / by
Tin	ND	mg/L		0.01		E200.8	12/06/18 18:43 / by
Titanium	0.036	mg/L		0.005		E200.8	12/06/18 18:43 / by
Uranium	ND	mg/L		0.0003		E200.8	12/06/18 18:43 / by
Vanadium	0.03	mg/L		0.01		E200.8	12/12/18 23:12 / car
Zinc	0.05	mg/L	D	0.02		E200.8	12/06/18 18:43 / by
<b>METALS, DISSOLVED</b>							
Aluminum	12.5	mg/L		0.03		E200.8	11/29/18 05:58 / by
Antimony	ND	mg/L		0.001		E200.8	11/15/18 19:10 / by
Arsenic	0.010	mg/L		0.001		E200.8	11/15/18 19:10 / by

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I  
**Lab ID:** B18110979-006  
**Client Sample ID:** R5

**Report Date:** 12/28/18  
**Collection Date:** 11/12/18 11:00  
**Date Received:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Barium	0.08	mg/L		0.05		E200.8	11/15/18 19:10 / by
Beryllium	ND	mg/L		0.001		E200.8	11/15/18 19:10 / by
Boron	ND	mg/L		0.05		E200.7	11/16/18 18:27 / rlh
Cadmium	ND	mg/L		0.001		E200.8	11/15/18 19:10 / by
Calcium	7	mg/L		1		E200.7	11/15/18 21:44 / rlh
Chromium	0.018	mg/L		0.005		E200.8	11/15/18 19:10 / by
Cobalt	ND	mg/L		0.005		E200.8	11/15/18 19:10 / by
Copper	0.006	mg/L		0.005		E200.8	11/15/18 19:10 / by
Iron	3.69	mg/L		0.02		E200.8	11/29/18 05:58 / by
Lead	0.002	mg/L		0.001		E200.8	11/15/18 19:10 / by
Lithium	ND	mg/L		0.1		E200.7	11/15/18 21:44 / rlh
Magnesium	4	mg/L		1		E200.7	11/15/18 21:44 / rlh
Manganese	0.009	mg/L		0.001		E200.8	11/15/18 19:10 / by
Molybdenum	0.001	mg/L		0.001		E200.8	11/15/18 19:10 / by
Nickel	0.010	mg/L		0.005		E200.8	11/15/18 19:10 / by
Potassium	5	mg/L		1		E200.7	11/15/18 21:44 / rlh
Selenium	ND	mg/L		0.001		E200.8	11/15/18 19:10 / by
Silicon	26.9	mg/L		0.1		E200.8	11/15/18 19:10 / by
Silver	0.004	mg/L		0.001		E200.8	11/15/18 19:10 / by
Sodium	6	mg/L		1		E200.7	11/19/18 13:36 / rlh
Strontium	0.02	mg/L		0.01		E200.8	11/15/18 19:10 / by
Thallium	ND	mg/L		0.0005		E200.8	11/15/18 19:10 / by
Tin	ND	mg/L		0.01		E200.8	11/15/18 19:10 / by
Titanium	0.195	mg/L		0.005		E200.8	11/15/18 19:10 / by
Uranium	ND	mg/L		0.0003		E200.8	11/15/18 19:10 / by
Vanadium	0.03	mg/L		0.01		E200.8	11/15/18 19:10 / by
Zinc	0.05	mg/L		0.01		E200.8	11/15/18 19:10 / by

**Report Definitions:** RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I  
**Lab ID:** B18110979-007  
**Client Sample ID:** R6

**Report Date:** 12/28/18  
**Collection Date:** 11/12/18 11:00  
**Date Received:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	15	mg/L	D	2		A5310 C	11/20/18 04:25 / eli-ca
<b>METALS, DIGESTED DISSOLVED</b>							
Aluminum	ND	mg/L			0.03	E200.8	12/06/18 18:48 / by
Antimony	ND	mg/L	D		0.004	E200.8	12/06/18 18:48 / by
Arsenic	0.027	mg/L			0.001	E200.8	12/06/18 18:48 / by
Barium	0.07	mg/L			0.05	E200.8	12/06/18 18:48 / by
Beryllium	ND	mg/L			0.001	E200.8	12/06/18 18:48 / by
Boron	0.3	mg/L	D		0.2	E200.7	12/06/18 13:46 / rlh
Cadmium	ND	mg/L			0.001	E200.8	12/06/18 18:48 / by
Calcium	39	mg/L			1	E200.7	12/06/18 13:46 / rlh
Chromium	0.020	mg/L			0.005	E200.8	12/06/18 18:48 / by
Cobalt	ND	mg/L			0.005	E200.8	12/06/18 18:48 / by
Copper	ND	mg/L	D		0.009	E200.8	12/12/18 23:16 / car
Iron	0.21	mg/L	D		0.07	E200.7	12/06/18 13:46 / rlh
Lead	ND	mg/L			0.001	E200.8	12/06/18 18:48 / by
Lithium	ND	mg/L			0.1	E200.7	12/06/18 13:46 / rlh
Magnesium	48	mg/L			1	E200.7	12/06/18 13:46 / rlh
Manganese	0.012	mg/L			0.001	E200.8	12/06/18 18:48 / by
Manganese	0.004	mg/L			0.001	E200.8	12/12/18 23:16 / car
Molybdenum	0.012	mg/L			0.001	E200.8	12/06/18 18:48 / by
Nickel	ND	mg/L	D		0.007	E200.8	12/08/18 04:02 / by
Potassium	2	mg/L			1	E200.7	12/06/18 13:46 / rlh
Potassium	ND	mg/L			1	E200.8	12/06/18 18:48 / by
Selenium	0.024	mg/L	D		0.002	E200.8	12/08/18 04:02 / by
Silicon	5.9	mg/L	D		0.2	E200.7	12/06/18 13:46 / rlh
Silver	ND	mg/L			0.001	E200.8	12/06/18 18:48 / by
Sodium	9	mg/L			1	E200.7	12/06/18 13:46 / rlh
Strontium	0.27	mg/L			0.01	E200.7	12/06/18 13:46 / rlh
Thallium	ND	mg/L			0.0005	E200.8	12/08/18 04:02 / by
Tin	ND	mg/L			0.01	E200.8	12/06/18 18:48 / by
Titanium	ND	mg/L			0.005	E200.8	12/12/18 23:16 / car
Uranium	0.0050	mg/L	D		0.0005	E200.8	12/06/18 18:48 / by
Vanadium	ND	mg/L			0.01	E200.8	12/12/18 23:16 / car
Zinc	ND	mg/L	D		0.04	E200.8	12/06/18 18:48 / by
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L			0.03	E200.8	11/16/18 20:34 / by
Antimony	ND	mg/L			0.001	E200.8	11/26/18 18:57 / rlh
Arsenic	0.030	mg/L			0.001	E200.8	11/26/18 18:57 / rlh
Barium	0.08	mg/L			0.05	E200.7	11/14/18 15:37 / rlh
Beryllium	ND	mg/L			0.001	E200.7	11/14/18 15:37 / rlh
Boron	ND	mg/L			0.05	E200.7	11/14/18 15:37 / rlh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I  
**Lab ID:** B18110979-007  
**Client Sample ID:** R6

**Report Date:** 12/28/18  
**Collection Date:** 11/12/18 11:00  
**DateReceived:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Cadmium	ND	mg/L		0.001		E200.8	11/16/18 20:34 / by
Calcium	42	mg/L		1		E200.7	11/14/18 15:37 / rlh
Chromium	ND	mg/L		0.005		E200.8	11/16/18 20:34 / by
Cobalt	ND	mg/L		0.005		E200.8	11/16/18 20:34 / by
Copper	ND	mg/L		0.005		E200.7	11/14/18 15:37 / rlh
Iron	ND	mg/L		0.02		E200.7	11/14/18 15:37 / rlh
Lead	ND	mg/L		0.001		E200.8	11/16/18 20:34 / by
Lithium	ND	mg/L		0.1		E200.7	11/14/18 15:37 / rlh
Magnesium	54	mg/L		1		E200.7	11/14/18 15:37 / rlh
Manganese	0.002	mg/L		0.001		E200.8	11/16/18 20:34 / by
Molybdenum	0.005	mg/L		0.001		E200.8	11/16/18 20:34 / by
Nickel	ND	mg/L		0.005		E200.7	11/14/18 15:37 / rlh
Potassium	2	mg/L		1		E200.7	11/14/18 15:37 / rlh
Selenium	0.029	mg/L	D	0.002		E200.8	11/16/18 20:34 / by
Silicon	7.5	mg/L		0.1		E200.7	11/14/18 15:37 / rlh
Silver	ND	mg/L		0.001		E200.8	11/16/18 20:34 / by
Sodium	9	mg/L		1		E200.7	11/14/18 15:37 / rlh
Strontium	0.29	mg/L		0.01		E200.7	11/14/18 15:37 / rlh
Thallium	ND	mg/L		0.0005		E200.8	11/26/18 18:57 / rlh
Tin	ND	mg/L		0.01		E200.8	11/16/18 20:34 / by
Titanium	ND	mg/L		0.005		E200.7	11/14/18 15:37 / rlh
Uranium	0.0071	mg/L		0.0003		E200.8	11/26/18 18:57 / rlh
Vanadium	ND	mg/L		0.01		E200.8	11/26/18 18:57 / rlh
Zinc	ND	mg/L		0.01		E200.7	11/14/18 15:37 / rlh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** Enviromin Inc

**Report Date:** 11/21/18

**Project:** NWP Phase I

**Work Order:** B18110979

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A5310 C									Analytical Run: TOC3-C_181119A
<b>Lab ID:</b> CCV-10292	Continuing Calibration Verification Standard								11/20/18 00:55
Organic Carbon, Dissolved (DOC)	4.86	mg/L	0.50	97	90	110			
<b>Method:</b> A5310 C									Batch: R241890
<b>Lab ID:</b> LCS-10553	Laboratory Control Sample								Run: TOC3-C_181119A
Organic Carbon, Dissolved (DOC)	5.03	mg/L	0.50	101	90	110			11/20/18 00:23
<b>Lab ID:</b> MBLK	Method Blank								Run: TOC3-C_181119A
Organic Carbon, Dissolved (DOC)	ND	mg/L	0.5						11/20/18 00:39
<b>Lab ID:</b> C18110384-001EMS	Sample Matrix Spike								Run: TOC3-C_181119A
Organic Carbon, Dissolved (DOC)	9.00	mg/L	0.50	106	85	115			11/20/18 01:29
<b>Lab ID:</b> C18110384-001EMSD	Sample Matrix Spike Duplicate								Run: TOC3-C_181119A
Organic Carbon, Dissolved (DOC)	9.00	mg/L	0.50	106	85	115	0.1	20	11/20/18 01:45

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I

**Report Date:** 12/28/18  
**Work Order:** B18110979

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>								Analytical Run: ICP203-B_181129A		
<b>Lab ID: ICV</b>	5	Continuing Calibration Verification Standard								11/29/18 09:53
Copper		2.44	mg/L	0.010	98	95	105			
Magnesium		25.6	mg/L	1.0	103	95	105			
Potassium		26.3	mg/L	1.0	105	95	105			
Silicon		4.97	mg/L	0.10	99	95	105			
Titanium		2.45	mg/L	0.010	98	95	105			
<b>Method: E200.7</b>								Batch: R311731		
<b>Lab ID: MB-6500DIS181129A</b>	5	Method Blank						Run: ICP203-B_181129A		11/29/18 10:01
Copper		ND	mg/L	0.004						
Magnesium		ND	mg/L	0.02						
Potassium		ND	mg/L	0.1						
Silicon		ND	mg/L	0.07						
Titanium		ND	mg/L	0.006						
<b>Lab ID: LFB-6500DIS181129A</b>	5	Laboratory Fortified Blank						Run: ICP203-B_181129A		11/29/18 10:09
Copper		0.943	mg/L	0.010	94	85	115			
Magnesium		50.0	mg/L	1.0	100	85	115			
Potassium		50.4	mg/L	1.0	101	85	115			
Silicon		9.72	mg/L	0.10	97	85	115			
Titanium		0.954	mg/L	0.010	95	85	115			
<b>Lab ID: MB-127570</b>	5	Method Blank						Run: ICP203-B_181129A		11/29/18 11:01
Copper		ND	mg/L	0.004						
Magnesium		ND	mg/L	0.02						
Potassium		ND	mg/L	0.1						
Silicon		0.07	mg/L	0.07						
Titanium		ND	mg/L	0.006						
<b>Lab ID: B18112068-001CMS2</b>	5	Sample Matrix Spike						Run: ICP203-B_181129A		11/29/18 12:27
Copper		4.65	mg/L	0.019	93	70	130			
Magnesium		378	mg/L	1.0	94	70	130			
Potassium		256	mg/L	1.0	93	70	130			
Silicon		51.2	mg/L	0.38	97	70	130			
Titanium		4.68	mg/L	0.033	94	70	130			
<b>Lab ID: B18112068-001CMSD</b>	5	Sample Matrix Spike Duplicate						Run: ICP203-B_181129A		11/29/18 12:31
Copper		4.59	mg/L	0.019	92	70	130	1.4	20	
Magnesium		376	mg/L	1.0	94	70	130	0.5	20	
Potassium		255	mg/L	1.0	93	70	130	0.6	20	
Silicon		50.9	mg/L	0.38	96	70	130	0.5	20	
Titanium		4.68	mg/L	0.033	94	70	130	0.0	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I

**Report Date:** 12/28/18  
**Work Order:** B18110979

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.7</b>										Analytical Run: ICP204-B_181114A	
<b>Lab ID: ICV</b>	17 Continuing Calibration Verification Standard									11/14/18 09:51	
Aluminum		2.52	mg/L	0.10	101	95	105				
Barium		2.47	mg/L	0.10	99	95	105				
Beryllium		1.23	mg/L	0.010	98	95	105				
Boron		2.45	mg/L	0.10	98	95	105				
Calcium		25.5	mg/L	1.0	102	95	105				
Copper		2.43	mg/L	0.010	97	95	105				
Iron		2.52	mg/L	0.020	101	95	105				
Lithium		1.25	mg/L	0.10	100	95	105				
Magnesium		25.2	mg/L	1.0	101	95	105				
Nickel		2.47	mg/L	0.050	99	95	105				
Potassium		24.9	mg/L	1.0	100	95	105				
Selenium		2.44	mg/L	0.10	98	95	105				
Silicon		4.93	mg/L	0.10	99	95	105				
Sodium		24.9	mg/L	1.0	100	95	105				
Strontium		2.47	mg/L	0.10	99	95	105				
Titanium		2.46	mg/L	0.010	98	95	105				
Zinc		2.43	mg/L	0.010	97	95	105				

<b>Method: E200.7</b>										Batch: R310971	
<b>Lab ID: MB-7400DIS181114A</b>	17 Method Blank									Run: ICP204-B_181114A	11/14/18 09:59
Aluminum		ND	mg/L	0.03							
Barium		ND	mg/L	0.0010							
Beryllium		ND	mg/L	0.0005							
Boron		ND	mg/L	0.01							
Calcium		ND	mg/L	0.07							
Copper		ND	mg/L	0.004							
Iron		0.02	mg/L	0.02							
Lithium		ND	mg/L	0.02							
Magnesium		ND	mg/L	0.02							
Nickel		ND	mg/L	0.004							
Potassium		ND	mg/L	0.1							
Selenium		ND	mg/L	0.04							
Silicon		ND	mg/L	0.07							
Sodium		ND	mg/L	0.1							
Strontium		ND	mg/L	0.001							
Titanium		ND	mg/L	0.006							
Zinc		ND	mg/L	0.002							

<b>Lab ID: LFB-7400DIS181114A</b>	17 Laboratory Fortified Blank									Run: ICP204-B_181114A	11/14/18 10:06
Aluminum		5.05	mg/L	0.10	101	85	115				
Barium		0.988	mg/L	0.10	99	85	115				
Beryllium		0.490	mg/L	0.010	98	85	115				
Boron		0.993	mg/L	0.10	99	85	115				
Calcium		51.2	mg/L	1.0	102	85	115				

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I

**Report Date:** 12/28/18  
**Work Order:** B18110979

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>										
Batch: R310971										
<b>Lab ID:</b>	<b>LFB-7400DIS181114A</b>	17 Laboratory Fortified Blank					Run: ICP204-B_181114A			11/14/18 10:06
Copper		0.970	mg/L	0.010	97	85	115			
Iron		5.06	mg/L	0.020	101	85	115			
Lithium		1.01	mg/L	0.10	101	85	115			
Magnesium		50.8	mg/L	1.0	102	85	115			
Nickel		0.978	mg/L	0.050	98	85	115			
Potassium		50.5	mg/L	1.0	101	85	115			
Selenium		0.974	mg/L	0.10	97	85	115			
Silicon		9.84	mg/L	0.10	98	85	115			
Sodium		50.2	mg/L	1.0	100	85	115			
Strontium		0.989	mg/L	0.10	99	85	115			
Titanium		0.997	mg/L	0.010	100	85	115			
Zinc		0.973	mg/L	0.010	97	85	115			
<b>Lab ID:</b>	<b>MB2-127570</b>	17 Method Blank					Run: ICP204-B_181114A			11/14/18 14:47
Aluminum		ND	mg/L	0.03						
Barium		ND	mg/L	0.0010						
Beryllium		ND	mg/L	0.0005						
Boron		0.03	mg/L	0.01						
Calcium		ND	mg/L	0.07						
Copper		ND	mg/L	0.004						
Iron		ND	mg/L	0.02						
Lithium		ND	mg/L	0.02						
Magnesium		ND	mg/L	0.02						
Nickel		ND	mg/L	0.004						
Potassium		ND	mg/L	0.1						
Selenium		ND	mg/L	0.04						
Silicon		ND	mg/L	0.07						
Sodium		ND	mg/L	0.1						
Strontium		ND	mg/L	0.001						
Titanium		ND	mg/L	0.006						
Zinc		ND	mg/L	0.002						
<b>Lab ID:</b>	<b>B18110979-002BMS2</b>	17 Sample Matrix Spike					Run: ICP204-B_181114A			11/14/18 15:22
Aluminum		8.90	mg/L	0.036	114	70	130			
Barium		1.12	mg/L	0.050	98	70	130			
Beryllium		0.470	mg/L	0.0010	94	70	130			
Boron		0.979	mg/L	0.050	98	70	130			
Calcium		57.4	mg/L	1.0	99	70	130			
Copper		0.969	mg/L	0.0050	96	70	130			
Iron		6.14	mg/L	0.020	101	70	130			
Lithium		1.02	mg/L	0.10	102	70	130			
Magnesium		51.6	mg/L	1.0	98	70	130			
Nickel		0.947	mg/L	0.0050	94	70	130			
Potassium		51.9	mg/L	1.0	101	70	130			
Selenium		1.16	mg/L	0.046	94	70	130			

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.





# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I

**Report Date:** 12/28/18  
**Work Order:** B18110979

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>										Batch: R310971
<b>Lab ID: B18110979-002BMS2</b>	17	Sample Matrix Spike					Run: ICP204-B_181114A			11/14/18 15:22
Silicon		17.0	mg/L	0.10	107	70	130			
Sodium		218	mg/L	1.0	102	70	130			
Strontium		1.01	mg/L	0.010	98	70	130			
Titanium		1.01	mg/L	0.0066	95	70	130			
Zinc		1.00	mg/L	0.010	97	70	130			
<b>Lab ID: B18110979-002BMSD</b>	17	Sample Matrix Spike Duplicate					Run: ICP204-B_181114A			11/14/18 15:25
Aluminum		8.55	mg/L	0.036	107	70	130	4.0	20	
Barium		1.11	mg/L	0.050	96	70	130	1.4	20	
Beryllium		0.465	mg/L	0.0010	93	70	130	1.1	20	
Boron		0.969	mg/L	0.050	97	70	130	1.0	20	
Calcium		57.2	mg/L	1.0	98	70	130	0.4	20	
Copper		0.953	mg/L	0.0050	95	70	130	1.7	20	
Iron		6.02	mg/L	0.020	99	70	130	1.9	20	
Lithium		1.00	mg/L	0.10	100	70	130	1.7	20	
Magnesium		51.5	mg/L	1.0	98	70	130	0.2	20	
Nickel		0.946	mg/L	0.0050	94	70	130	0.1	20	
Potassium		51.0	mg/L	1.0	99	70	130	1.6	20	
Selenium		1.15	mg/L	0.046	93	70	130	1.2	20	
Silicon		16.5	mg/L	0.10	102	70	130	2.6	20	
Sodium		214	mg/L	1.0	93	70	130	2.0	20	
Strontium		0.992	mg/L	0.010	96	70	130	1.7	20	
Titanium		0.994	mg/L	0.0066	93	70	130	1.7	20	
Zinc		1.000	mg/L	0.010	97	70	130	0.1	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I

**Report Date:** 12/28/18  
**Work Order:** B18110979

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.7</b>								Analytical Run: ICP204-B_181115A			
<b>Lab ID: ICV</b>	4	Continuing Calibration Verification Standard									11/15/18 09:47
Calcium		25.6	mg/L	1.0	102	95	105				
Lithium		1.29	mg/L	0.10	103	95	105				
Magnesium		25.9	mg/L	1.0	104	95	105				
Potassium		25.7	mg/L	1.0	103	95	105				
<b>Method: E200.7</b>								Batch: R311046			
<b>Lab ID: MB-7400DIS181115A</b>	4	Method Blank						Run: ICP204-B_181115A			11/15/18 09:55
Calcium		ND	mg/L	0.07							
Lithium		ND	mg/L	0.02							
Magnesium		ND	mg/L	0.02							
Potassium		ND	mg/L	0.1							
<b>Lab ID: LFB-7400DIS181115A</b>	4	Laboratory Fortified Blank						Run: ICP204-B_181115A			11/15/18 10:02
Calcium		50.9	mg/L	1.0	102	85	115				
Lithium		1.02	mg/L	0.10	102	85	115				
Magnesium		52.0	mg/L	1.0	104	85	115				
Potassium		51.1	mg/L	1.0	102	85	115				
<b>Lab ID: MB-127570</b>	4	Method Blank						Run: ICP204-B_181115A			11/15/18 20:27
Calcium		ND	mg/L	0.07							
Lithium		ND	mg/L	0.02							
Magnesium		ND	mg/L	0.02							
Potassium		ND	mg/L	0.1							
<b>Lab ID: B18110980-001BMS2</b>	4	Sample Matrix Spike						Run: ICP204-B_181115A			11/15/18 21:56
Calcium		111	mg/L	1.0	101	70	130				
Lithium		2.23	mg/L	0.10	112	70	130				
Magnesium		113	mg/L	1.0	110	70	130				
Potassium		109	mg/L	1.0	106	70	130				
<b>Lab ID: B18110980-001BMSD</b>	4	Sample Matrix Spike Duplicate						Run: ICP204-B_181115A			11/15/18 21:59
Calcium		114	mg/L	1.0	104	70	130	2.7	20		
Lithium		2.32	mg/L	0.10	116	70	130	3.8	20		
Magnesium		116	mg/L	1.0	113	70	130	3.0	20		
Potassium		113	mg/L	1.0	111	70	130	4.0	20		

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 12/28/18

**Project:** NWP Phase I

**Work Order:** B18110979

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>								Analytical Run: ICP204-B_181116B		
<b>Lab ID: ICV</b>	Continuing Calibration Verification Standard									
Boron		2.48	mg/L	0.10	99	95	105			11/16/18 11:25
<b>Method: E200.7</b>								Batch: R311149		
<b>Lab ID: MB-7400DIS181116B</b>	Method Blank									
Boron		ND	mg/L	0.01						11/16/18 11:33
<b>Lab ID: LFB-7400DIS181116B</b>	Laboratory Fortified Blank									
Boron		0.998	mg/L	0.10	100	85	115			11/16/18 11:40
<b>Lab ID: B18111320-003BMS2</b>	Sample Matrix Spike									
Boron		5.09	mg/L	0.065	100	70	130			11/16/18 16:46
<b>Lab ID: B18111320-003BMSD</b>	Sample Matrix Spike Duplicate									
Boron		5.11	mg/L	0.065	100	70	130	0.3	20	11/16/18 16:50
<b>Method: E200.7</b>								Analytical Run: ICP204-B_181119A		
<b>Lab ID: ICV</b>	Continuing Calibration Verification Standard									
Sodium		24.4	mg/L	1.0	97	95	105			11/19/18 09:33
<b>Method: E200.7</b>								Batch: R311210		
<b>Lab ID: MB-7400DIS181119A</b>	Method Blank									
Sodium		ND	mg/L	0.1						11/19/18 10:42
<b>Lab ID: LFB-7400DIS181119A</b>	Laboratory Fortified Blank									
Sodium		49.5	mg/L	1.0	99	85	115			11/19/18 10:50
<b>Lab ID: B18110979-006BMS2</b>	Sample Matrix Spike									
Sodium		258	mg/L	1.0	101	70	130			11/19/18 13:51
<b>Lab ID: B18110979-006BMSD</b>	Sample Matrix Spike Duplicate									
Sodium		258	mg/L	1.0	100	70	130	0.1	20	11/19/18 13:55

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 12/28/18

**Project:** NWP Phase I

**Work Order:** B18110979

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.7</b>										Analytical Run: ICP204-B_181206A	
<b>Lab ID: ICV</b>	13 Continuing Calibration Verification Standard									12/06/18 09:07	
Aluminum		2.44	mg/L	0.10	98	95	105				
Barium		2.46	mg/L	0.10	99	95	105				
Boron		2.47	mg/L	0.10	99	95	105				
Calcium		25.8	mg/L	1.0	103	95	105				
Copper		2.41	mg/L	0.010	96	95	105				
Iron		2.61	mg/L	0.020	104	95	105				
Lithium		1.29	mg/L	0.10	103	95	105				
Magnesium		25.6	mg/L	1.0	103	95	105				
Potassium		25.7	mg/L	1.0	103	95	105				
Silicon		4.98	mg/L	0.10	100	95	105				
Sodium		25.7	mg/L	1.0	103	95	105				
Strontium		2.43	mg/L	0.10	97	95	105				
Titanium		2.47	mg/L	0.010	99	95	105				
<b>Method: E200.7</b>										Batch: 128216	
<b>Lab ID: MB-128216</b>	13 Method Blank									Run: ICP204-B_181206A	
Aluminum		ND	mg/L	0.006						12/06/18 12:39	
Barium		ND	mg/L	0.007							
Boron		ND	mg/L	0.02							
Calcium		ND	mg/L	0.09							
Copper		ND	mg/L	0.005							
Iron		ND	mg/L	0.007							
Lithium		ND	mg/L	0.007							
Magnesium		0.03	mg/L	0.03							
Potassium		ND	mg/L	0.05							
Silicon		ND	mg/L	0.03							
Sodium		ND	mg/L	0.8							
Strontium		0.0002	mg/L	0.0002							
Titanium		ND	mg/L	0.005							
<b>Lab ID: LCS3-128216</b>	13 Laboratory Control Sample									Run: ICP204-B_181206A	
Aluminum		2.59	mg/L	0.10	104	85	115			12/06/18 12:43	
Barium		0.521	mg/L	0.10	104	85	115				
Boron		0.541	mg/L	0.10	108	85	115				
Calcium		27.0	mg/L	1.0	108	85	115				
Copper		0.505	mg/L	0.010	101	85	115				
Iron		2.78	mg/L	0.020	111	85	115				
Lithium		0.550	mg/L	0.10	110	85	115				
Magnesium		25.8	mg/L	1.0	103	85	115				
Potassium		27.1	mg/L	1.0	109	85	115				
Silicon		5.22	mg/L	0.10	104	85	115				
Sodium		27.4	mg/L	1.0	110	85	115				
Strontium		0.515	mg/L	0.10	103	85	115				
Titanium		0.524	mg/L	0.10	105	85	115				

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I

**Report Date:** 12/28/18  
**Work Order:** B18110979

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>										Batch: 128216
<b>Lab ID: B18120090-001CMS3</b>	13	Sample Matrix Spike					Run: ICP204-B_181206A			12/06/18 14:29
Aluminum		2.52	mg/L	0.030	98	70	130			
Barium		0.518	mg/L	0.050	96	70	130			
Boron		0.507	mg/L	0.050	96	70	130			
Calcium		106	mg/L	1.0	89	70	130			
Copper		0.470	mg/L	0.0051	94	70	130			
Iron		2.56	mg/L	0.020	99	70	130			
Lithium		0.527	mg/L	0.10	104	70	130			
Magnesium		38.7	mg/L	1.0	98	70	130			
Potassium		27.0	mg/L	1.0	103	70	130			
Silicon		9.26	mg/L	0.10	98	70	130			
Sodium		30.5	mg/L	1.0	100	70	130			
Strontium		0.960	mg/L	0.010	92	70	130			
Titanium		0.489	mg/L	0.0051	97	70	130			
<b>Lab ID: B18120090-001CMSD</b>	13	Sample Matrix Spike Duplicate					Run: ICP204-B_181206A			12/06/18 14:32
Aluminum		2.59	mg/L	0.030	101	70	130	2.5	20	
Barium		0.528	mg/L	0.050	98	70	130	1.9	20	
Boron		0.516	mg/L	0.050	98	70	130	1.7	20	
Calcium		109	mg/L	1.0	100	70	130	2.6	20	
Copper		0.481	mg/L	0.0051	96	70	130	2.5	20	
Iron		2.62	mg/L	0.020	101	70	130	2.2	20	
Lithium		0.536	mg/L	0.10	106	70	130	1.8	20	
Magnesium		39.6	mg/L	1.0	102	70	130	2.3	20	
Potassium		27.6	mg/L	1.0	105	70	130	2.2	20	
Silicon		9.44	mg/L	0.10	102	70	130	1.9	20	
Sodium		31.2	mg/L	1.0	103	70	130	2.2	20	
Strontium		0.981	mg/L	0.010	97	70	130	2.1	20	
Titanium		0.495	mg/L	0.0051	98	70	130	1.1	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I

**Report Date:** 12/28/18  
**Work Order:** B18110979

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.8</b>										Analytical Run: ICPMS206-B_181115A	
<b>Lab ID: QCS</b>	22 Initial Calibration Verification Standard									11/15/18 16:28	
Antimony		0.0477	mg/L	0.050	95	90	110				
Arsenic		0.0492	mg/L	0.0050	99	90	110				
Barium		0.0478	mg/L	0.10	96	90	110				
Beryllium		0.0246	mg/L	0.0010	98	90	110				
Cadmium		0.0242	mg/L	0.0010	97	90	110				
Chromium		0.0502	mg/L	0.010	100	90	110				
Cobalt		0.0493	mg/L	0.010	99	90	110				
Copper		0.0522	mg/L	0.010	104	90	110				
Lead		0.0503	mg/L	0.010	101	90	110				
Manganese		0.249	mg/L	0.010	100	90	110				
Molybdenum		0.0476	mg/L	0.0050	95	90	110				
Nickel		0.0513	mg/L	0.010	103	90	110				
Selenium		0.0482	mg/L	0.0050	96	90	110				
Silicon		0.487	mg/L	0.10	97	90	110				
Silver		0.0248	mg/L	0.0050	99	90	110				
Strontium		0.0482	mg/L	0.10	96	90	110				
Thallium		0.0495	mg/L	0.10	99	90	110				
Tin		0.0485	mg/L	0.10	97	90	110				
Titanium		0.0485	mg/L	0.010	97	90	110				
Uranium		0.0191	mg/L	0.00030	96	90	110				
Vanadium		0.0512	mg/L	0.10	102	90	110				
Zinc		0.0491	mg/L	0.010	98	90	110				

<b>Method: E200.8</b>										Batch: R311108
<b>Lab ID: LRB</b>	22 Method Blank									Run: ICPMS206-B_181115A
11/15/18 16:45										
Antimony		ND	mg/L	0.0004						
Arsenic		ND	mg/L	0.0002						
Barium		ND	mg/L	0.00004						
Beryllium		ND	mg/L	0.0001						
Cadmium		ND	mg/L	0.00003						
Chromium		ND	mg/L	0.0002						
Cobalt		ND	mg/L	0.00004						
Copper		ND	mg/L	0.0003						
Lead		ND	mg/L	0.00005						
Manganese		ND	mg/L	0.00010						
Molybdenum		ND	mg/L	0.00005						
Nickel		ND	mg/L	0.0006						
Selenium		ND	mg/L	0.0003						
Silicon		ND	mg/L	0.01						
Silver		ND	mg/L	0.00002						
Strontium		ND	mg/L	0.0001						
Thallium		ND	mg/L	0.00007						
Tin		ND	mg/L	0.001						
Titanium		ND	mg/L	0.0001						

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I

**Report Date:** 12/28/18  
**Work Order:** B18110979

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>										Batch: R311108
<b>Lab ID: LRB</b>	22	Method Blank					Run: ICPMS206-B_181115A			11/15/18 16:45
Uranium		ND	mg/L	0.00005						
Vanadium		0.002	mg/L	0.001						
Zinc		ND	mg/L	0.003						
<b>Lab ID: LFB</b>										11/15/18 16:53
	22	Laboratory Fortified Blank					Run: ICPMS206-B_181115A			
Antimony		0.0460	mg/L	0.050	92	85	115			
Arsenic		0.0487	mg/L	0.0050	97	85	115			
Barium		0.0486	mg/L	0.10	97	85	115			
Beryllium		0.0492	mg/L	0.0010	98	85	115			
Cadmium		0.0480	mg/L	0.0010	96	85	115			
Chromium		0.0492	mg/L	0.010	98	85	115			
Cobalt		0.0484	mg/L	0.010	97	85	115			
Copper		0.0480	mg/L	0.010	96	85	115			
Lead		0.0487	mg/L	0.010	97	85	115			
Manganese		0.0488	mg/L	0.010	98	85	115			
Molybdenum		0.0486	mg/L	0.0050	97	85	115			
Nickel		0.0476	mg/L	0.010	95	85	115			
Selenium		0.0490	mg/L	0.0050	98	85	115			
Silicon		0.204	mg/L	0.10	102	85	115			
Silver		0.0193	mg/L	0.0050	97	85	115			
Strontium		0.0484	mg/L	0.10	97	85	115			
Thallium		0.0490	mg/L	0.10	98	85	115			
Tin		0.0485	mg/L	0.10	97	85	115			
Titanium		0.0543	mg/L	0.010	109	85	115			
Uranium		0.0488	mg/L	0.00030	98	85	115			
Vanadium		0.0491	mg/L	0.10	94	85	115			
Zinc		0.0496	mg/L	0.010	99	85	115			
<b>Lab ID: B18111196-001BMS</b>										11/15/18 17:35
	22	Sample Matrix Spike					Run: ICPMS206-B_181115A			
Antimony		0.0492	mg/L	0.0010	98	70	130			
Arsenic		0.0506	mg/L	0.0010	100	70	130			
Barium		0.0935	mg/L	0.050	103	70	130			
Beryllium		0.0501	mg/L	0.0010	100	70	130			
Cadmium		0.0514	mg/L	0.0010	103	70	130			
Chromium		0.0504	mg/L	0.0050	101	70	130			
Cobalt		0.0488	mg/L	0.0050	97	70	130			
Copper		0.0516	mg/L	0.0050	98	70	130			
Lead		0.0516	mg/L	0.0010	103	70	130			
Manganese		0.0493	mg/L	0.0010	96	70	130			
Molybdenum		0.0529	mg/L	0.0010	105	70	130			
Nickel		0.0491	mg/L	0.0050	98	70	130			
Selenium		0.0495	mg/L	0.0010	99	70	130			
Silicon		7.19	mg/L	0.10		70	130			A
Silver		0.0202	mg/L	0.0010	101	70	130			
Strontium		0.126	mg/L	0.010	93	70	130			

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I

**Report Date:** 12/28/18  
**Work Order:** B18110979

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>										Batch: R311108
<b>Lab ID: B18111196-001BMS</b>	22	Sample Matrix Spike					Run: ICPMS206-B_181115A			11/15/18 17:35
Thallium		0.0515	mg/L	0.00050	103	70	130			
Tin		0.0515	mg/L	0.010	103	70	130			
Titanium		0.0575	mg/L	0.0050	113	70	130			
Uranium		0.0514	mg/L	0.00030	103	70	130			
Vanadium		0.0498	mg/L	0.010	100	70	130			
Zinc		0.0553	mg/L	0.010	100	70	130			
<b>Lab ID: B18111196-001BMSD</b>	22	Sample Matrix Spike Duplicate					Run: ICPMS206-B_181115A			11/15/18 17:39
Antimony		0.0498	mg/L	0.0010	100	70	130	1.2	20	
Arsenic		0.0506	mg/L	0.0010	100	70	130	0.1	20	
Barium		0.0920	mg/L	0.050	100	70	130	1.6	20	
Beryllium		0.0501	mg/L	0.0010	100	70	130	0.1	20	
Cadmium		0.0503	mg/L	0.0010	101	70	130	2.2	20	
Chromium		0.0495	mg/L	0.0050	99	70	130	1.8	20	
Cobalt		0.0492	mg/L	0.0050	98	70	130	0.7	20	
Copper		0.0515	mg/L	0.0050	98	70	130	0.2	20	
Lead		0.0504	mg/L	0.0010	101	70	130	2.3	20	
Manganese		0.0497	mg/L	0.0010	97	70	130	0.7	20	
Molybdenum		0.0529	mg/L	0.0010	105	70	130	0.1	20	
Nickel		0.0491	mg/L	0.0050	98	70	130	0.0	20	
Selenium		0.0518	mg/L	0.0010	104	70	130	4.6	20	
Silicon		7.53	mg/L	0.10		70	130	4.6	20	A
Silver		0.0202	mg/L	0.0010	101	70	130	0.1	20	
Strontium		0.125	mg/L	0.010	91	70	130	0.8	20	
Thallium		0.0511	mg/L	0.00050	102	70	130	0.9	20	
Tin		0.0516	mg/L	0.010	103	70	130	0.1	20	
Titanium		0.0574	mg/L	0.0050	113	70	130	0.3	20	
Uranium		0.0494	mg/L	0.00030	99	70	130	4.0	20	
Vanadium		0.0498	mg/L	0.010	100	70	130	0.0	20	
Zinc		0.0540	mg/L	0.010	97	70	130	2.4	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I

**Report Date:** 12/28/18  
**Work Order:** B18110979

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.8</b>										Analytical Run: ICPMS206-B_181126A	
<b>Lab ID: QCS</b>	14 Initial Calibration Verification Standard								11/26/18 12:51		
Aluminum		0.250	mg/L	0.10	100	90	110				
Antimony		0.0477	mg/L	0.050	95	90	110				
Arsenic		0.0495	mg/L	0.0050	99	90	110				
Barium		0.0493	mg/L	0.10	99	90	110				
Chromium		0.0510	mg/L	0.010	102	90	110				
Iron		0.262	mg/L	0.020	105	90	110				
Manganese		0.255	mg/L	0.010	102	90	110				
Nickel		0.0517	mg/L	0.010	103	90	110				
Potassium		2.51	mg/L	0.50	101	90	110				
Thallium		0.0493	mg/L	0.10	99	90	110				
Titanium		0.0493	mg/L	0.010	99	90	110				
Uranium		0.0191	mg/L	0.00030	96	90	110				
Vanadium		0.0509	mg/L	0.10	102	90	110				
Zinc		0.0516	mg/L	0.010	103	90	110				
<b>Method: E200.8</b>										Batch: R311481	
<b>Lab ID: LRB</b>	14 Method Blank								Run: ICPMS206-B_181126A 11/26/18 13:08		
Aluminum		0.0009	mg/L	0.0008							
Antimony		ND	mg/L	0.0004							
Arsenic		ND	mg/L	0.0002							
Barium		ND	mg/L	0.00004							
Chromium		ND	mg/L	0.0002							
Iron		ND	mg/L	0.001							
Manganese		ND	mg/L	0.00010							
Nickel		ND	mg/L	0.0006							
Potassium		ND	mg/L	0.08							
Thallium		ND	mg/L	0.00007							
Titanium		ND	mg/L	0.0001							
Uranium		ND	mg/L	0.00005							
Vanadium		ND	mg/L	0.001							
Zinc		ND	mg/L	0.003							
<b>Lab ID: LFB</b>	14 Laboratory Fortified Blank								Run: ICPMS206-B_181126A 11/26/18 13:45		
Aluminum		0.0496	mg/L	0.10	97	85	115				
Antimony		0.0452	mg/L	0.050	90	85	115				
Arsenic		0.0496	mg/L	0.0050	99	85	115				
Barium		0.0497	mg/L	0.10	99	85	115				
Chromium		0.0498	mg/L	0.010	100	85	115				
Iron		4.97	mg/L	0.020	99	85	115				
Manganese		0.0502	mg/L	0.010	100	85	115				
Nickel		0.0510	mg/L	0.010	102	85	115				
Potassium		49.4	mg/L	0.50	99	85	115				
Thallium		0.0501	mg/L	0.10	100	85	115				
Titanium		0.0552	mg/L	0.010	110	85	115				

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I

**Report Date:** 12/28/18  
**Work Order:** B18110979

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b> <span style="float: right;">Batch: R311481</span>										
<b>Lab ID: LFB</b>	14	Laboratory Fortified Blank					Run: ICPMS206-B_181126A		11/26/18 13:45	
Uranium		0.0495	mg/L	0.00030	99	85	115			
Vanadium		0.0461	mg/L	0.10	92	85	115			
Zinc		0.0490	mg/L	0.010	98	85	115			
<b>Lab ID: MB2-127570</b> <span style="float: right;">Run: ICPMS206-B_181126A 11/26/18 18:20</span>										
Aluminum		0.002	mg/L	0.0008						
Antimony		ND	mg/L	0.0004						
Arsenic		ND	mg/L	0.0002						
Barium		ND	mg/L	0.00004						
Chromium		ND	mg/L	0.0002						
Iron		ND	mg/L	0.001						
Manganese		ND	mg/L	0.00010						
Nickel		ND	mg/L	0.0006						
Potassium		ND	mg/L	0.08						
Thallium		ND	mg/L	0.00007						
Titanium		ND	mg/L	0.0001						
Uranium		ND	mg/L	0.00005						
Vanadium		ND	mg/L	0.001						
Zinc		ND	mg/L	0.003						
<b>Lab ID: B18110979-001BMS</b> <span style="float: right;">Run: ICPMS206-B_181126A 11/26/18 18:28</span>										
Aluminum		5.03	mg/L	0.030		70	130			A
Antimony		0.0929	mg/L	0.0010	93	70	130			
Arsenic		0.107	mg/L	0.0010	105	70	130			
Barium		0.248	mg/L	0.050	106	70	130			
Chromium		0.113	mg/L	0.0050	104	70	130			
Iron		13.5	mg/L	0.020	104	70	130			
Manganese		0.115	mg/L	0.0010	101	70	130			
Nickel		0.115	mg/L	0.0050	105	70	130			
Potassium		109	mg/L	1.0	104	70	130			
Thallium		0.104	mg/L	0.00050	104	70	130			
Titanium		0.252	mg/L	0.0050	101	70	130			
Uranium		0.108	mg/L	0.00030	107	70	130			
Vanadium		0.122	mg/L	0.010	114	70	130			
Zinc		0.150	mg/L	0.010	101	70	130			
<b>Lab ID: B18110979-001BMSD</b> <span style="float: right;">Run: ICPMS206-B_181126A 11/26/18 18:32</span>										
Aluminum		5.56	mg/L	0.030		70	130	10.0	20	A
Antimony		0.0914	mg/L	0.0010	91	70	130	1.7	20	
Arsenic		0.104	mg/L	0.0010	102	70	130	3.1	20	
Barium		0.247	mg/L	0.050	105	70	130	0.2	20	
Chromium		0.109	mg/L	0.0050	101	70	130	3.0	20	
Iron		13.5	mg/L	0.020	104	70	130	0.2	20	
Manganese		0.113	mg/L	0.0010	99	70	130	1.3	20	
Nickel		0.113	mg/L	0.0050	103	70	130	2.2	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.



## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 12/28/18

**Project:** NWP Phase I

**Work Order:** B18110979

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b> <span style="float: right;">Batch: R311481</span>										
<b>Lab ID: B18110979-001BMSD</b>	14	Sample Matrix Spike Duplicate					Run: ICPMS206-B_181126A			11/26/18 18:32
Potassium		109	mg/L	1.0	104	70	130	0.1	20	
Thallium		0.105	mg/L	0.00050	105	70	130	0.5	20	
Titanium		0.264	mg/L	0.0050	114	70	130	4.9	20	
Uranium		0.105	mg/L	0.00030	105	70	130	2.5	20	
Vanadium		0.121	mg/L	0.010	113	70	130	1.2	20	
Zinc		0.151	mg/L	0.010	102	70	130	0.5	20	
<b>Method: E200.8</b> <span style="float: right;">Analytical Run: ICPMS206-B_181128A</span>										
<b>Lab ID: QCS</b>	2	Initial Calibration Verification Standard								11/29/18 00:18
Aluminum		0.252	mg/L	0.10	101	90	110			
Iron		0.255	mg/L	0.020	102	90	110			
<b>Method: E200.8</b> <span style="float: right;">Batch: R311693</span>										
<b>Lab ID: LRB</b>	2	Method Blank					Run: ICPMS206-B_181128A			11/28/18 12:34
Aluminum		0.0008	mg/L	0.0008						
Iron		ND	mg/L	0.001						
<b>Lab ID: LFB</b>	2	Laboratory Fortified Blank					Run: ICPMS206-B_181128A			11/28/18 12:43
Aluminum		0.0504	mg/L	0.10	99	85	115			
Iron		4.81	mg/L	0.020	96	85	115			
<b>Lab ID: MB-127570</b>	2	Method Blank					Run: ICPMS206-B_181128A			11/29/18 04:14
Aluminum		0.002	mg/L	0.0008						
Iron		0.005	mg/L	0.001						
<b>Lab ID: B18112062-001CMS</b>	2	Sample Matrix Spike					Run: ICPMS206-B_181128A			11/29/18 06:23
Aluminum		0.0490	mg/L	0.030	94	70	130			
Iron		5.10	mg/L	0.020	102	70	130			
<b>Lab ID: B18112062-001CMSD</b>	2	Sample Matrix Spike Duplicate					Run: ICPMS206-B_181128A			11/29/18 06:44
Aluminum		0.0502	mg/L	0.030	96	70	130	2.5	20	
Iron		5.14	mg/L	0.020	102	70	130	0.9	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I

**Report Date:** 12/28/18  
**Work Order:** B18110979

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.8</b>										Analytical Run: ICPMS206-B_181205B	
<b>Lab ID: QCS</b>	21	Initial Calibration Verification Standard							12/06/18 10:25		
Aluminum		0.240	mg/L	0.10	96	90	110				
Antimony		0.0487	mg/L	0.050	97	90	110				
Arsenic		0.0463	mg/L	0.0050	93	90	110				
Barium		0.0456	mg/L	0.10	91	90	110				
Beryllium		0.0240	mg/L	0.0010	96	90	110				
Boron		0.0500	mg/L	0.10	100	90	110				
Cadmium		0.0229	mg/L	0.0010	92	90	110				
Chromium		0.0475	mg/L	0.010	95	90	110				
Cobalt		0.0479	mg/L	0.010	96	90	110				
Lead		0.0460	mg/L	0.010	92	90	110				
Manganese		0.240	mg/L	0.010	96	90	110				
Molybdenum		0.0466	mg/L	0.0050	93	90	110				
Nickel		0.0480	mg/L	0.010	96	90	110				
Potassium		2.48	mg/L	0.50	99	90	110				
Selenium		0.0465	mg/L	0.0050	93	90	110				
Silver		0.0235	mg/L	0.0050	94	90	110				
Sodium		2.58	mg/L	0.50	103	90	110				
Tin		0.0479	mg/L	0.10	96	90	110				
Titanium		0.0469	mg/L	0.010	94	90	110				
Uranium		0.0179	mg/L	0.00030	90	90	110				
Zinc		0.0481	mg/L	0.010	96	90	110				

<b>Method: E200.8</b>										Analytical Run: ICPMS206-B_181207A	
<b>Lab ID: QCS</b>	6	Initial Calibration Verification Standard							12/08/18 00:11		
Lead		0.0458	mg/L	0.010	92	90	110				
Molybdenum		0.0465	mg/L	0.0050	93	90	110				
Nickel		0.0463	mg/L	0.010	93	90	110				
Selenium		0.0464	mg/L	0.0050	93	90	110				
Silver		0.0235	mg/L	0.0050	94	90	110				
Thallium		0.0451	mg/L	0.10	90	90	110				

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I

**Report Date:** 12/28/18  
**Work Order:** B18110979

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.8</b>										Analytical Run: ICPMS207-B_181116A	
<b>Lab ID: QCS</b>	18 Initial Calibration Verification Standard									11/16/18 14:48	
Aluminum		0.235	mg/L	0.10	94	90	110				
Cadmium		0.0244	mg/L	0.0010	98	90	110				
Chromium		0.0479	mg/L	0.010	96	90	110				
Cobalt		0.0498	mg/L	0.010	100	90	110				
Copper		0.0491	mg/L	0.010	98	90	110				
Iron		0.247	mg/L	0.020	99	90	110				
Lead		0.0503	mg/L	0.010	101	90	110				
Manganese		0.244	mg/L	0.010	97	90	110				
Molybdenum		0.0481	mg/L	0.0050	96	90	110				
Nickel		0.0493	mg/L	0.010	99	90	110				
Selenium		0.0481	mg/L	0.0050	96	90	110				
Silicon		0.485	mg/L	0.10	97	90	110				
Silver		0.0246	mg/L	0.0050	98	90	110				
Strontium		0.0480	mg/L	0.10	96	90	110				
Tin		0.0487	mg/L	0.10	97	90	110				
Titanium		0.0456	mg/L	0.010	91	90	110				
Uranium		0.0215	mg/L	0.00030	107	90	110				
Zinc		0.0500	mg/L	0.010	100	90	110				

<b>Method: E200.8</b>										Batch: R311178	
<b>Lab ID: LRB</b>	18 Method Blank									Run: ICPMS207-B_181116A	11/16/18 14:56
Aluminum		ND	mg/L	0.0009							
Cadmium		ND	mg/L	0.00002							
Chromium		ND	mg/L	0.0002							
Cobalt		ND	mg/L	0.00004							
Copper		ND	mg/L	0.0003							
Iron		ND	mg/L	0.001							
Lead		ND	mg/L	0.00006							
Manganese		ND	mg/L	0.00010							
Molybdenum		0.00008	mg/L	0.00005							
Nickel		ND	mg/L	0.0006							
Selenium		ND	mg/L	0.0003							
Silicon		ND	mg/L	0.01							
Silver		ND	mg/L	0.00002							
Strontium		ND	mg/L	0.0001							
Tin		ND	mg/L	0.001							
Titanium		ND	mg/L	0.00009							
Uranium		ND	mg/L	0.00005							
Zinc		ND	mg/L	0.003							

<b>Lab ID: LFB</b>	18 Laboratory Fortified Blank									Run: ICPMS207-B_181116A	11/16/18 15:04
Aluminum		0.0476	mg/L	0.10	95	85	115				
Cadmium		0.0504	mg/L	0.0010	101	85	115				
Chromium		0.0498	mg/L	0.010	100	85	115				

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I

**Report Date:** 12/28/18  
**Work Order:** B18110979

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>								Batch: R311178		
<b>Lab ID: LFB</b>	18 Laboratory Fortified Blank				Run: ICPMS207-B_181116A			11/16/18 15:04		
Cobalt		0.0533	mg/L	0.010	107	85	115			
Copper		0.0490	mg/L	0.010	98	85	115			
Iron		4.92	mg/L	0.020	99	85	115			
Lead		0.0536	mg/L	0.010	107	85	115			
Manganese		0.0492	mg/L	0.010	98	85	115			
Molybdenum		0.0515	mg/L	0.0050	103	85	115			
Nickel		0.0492	mg/L	0.010	98	85	115			
Selenium		0.0494	mg/L	0.0050	99	85	115			
Silicon		0.201	mg/L	0.10	100	85	115			
Silver		0.0203	mg/L	0.0050	102	85	115			
Strontium		0.0496	mg/L	0.10	99	85	115			
Tin		0.0509	mg/L	0.10	102	85	115			
Titanium		0.0531	mg/L	0.010	106	85	115			
Uranium		0.0504	mg/L	0.00030	101	85	115			
Zinc		0.0497	mg/L	0.010	99	85	115			
<b>Lab ID: MB-127570</b>	18 Method Blank				Run: ICPMS207-B_181116A			11/16/18 19:39		
Aluminum		ND	mg/L	0.0009						
Cadmium		ND	mg/L	0.00002						
Chromium		ND	mg/L	0.0002						
Cobalt		ND	mg/L	0.00004						
Copper		0.0004	mg/L	0.0003						
Iron		ND	mg/L	0.001						
Lead		ND	mg/L	0.00006						
Manganese		ND	mg/L	0.00010						
Molybdenum		ND	mg/L	0.00005						
Nickel		ND	mg/L	0.0006						
Selenium		ND	mg/L	0.0003						
Silicon		0.07	mg/L	0.01						
Silver		ND	mg/L	0.00002						
Strontium		ND	mg/L	0.0001						
Tin		ND	mg/L	0.003						
Titanium		ND	mg/L	0.00009						
Uranium		ND	mg/L	0.00005						
Zinc		ND	mg/L	0.003						
<b>Lab ID: B18111270-001BMS</b>	18 Sample Matrix Spike				Run: ICPMS207-B_181116A			11/16/18 20:03		
Aluminum		0.0493	mg/L	0.030	99	70	130			
Cadmium		0.0497	mg/L	0.0010	99	70	130			
Chromium		0.0528	mg/L	0.0050	97	70	130			
Cobalt		0.0518	mg/L	0.0050	103	70	130			
Copper		0.0534	mg/L	0.0050	104	70	130			
Iron		4.94	mg/L	0.020	98	70	130			
Lead		0.0541	mg/L	0.0010	108	70	130			
Manganese		0.0542	mg/L	0.0010	100	70	130			

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I

**Report Date:** 12/28/18  
**Work Order:** B18110979

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>										Batch: R311178
<b>Lab ID: B18111270-001BMS</b>	18	Sample Matrix Spike					Run: ICPMS207-B_181116A			11/16/18 20:03
Molybdenum		0.0494	mg/L	0.0010	99	70	130			
Nickel		0.0498	mg/L	0.0050	98	70	130			
Selenium		0.0515	mg/L	0.0010	103	70	130			
Silicon		6.47	mg/L	0.10		70	130			A
Silver		0.0198	mg/L	0.0010	99	70	130			
Strontium		0.294	mg/L	0.010		70	130			A
Tin		0.0525	mg/L	0.010	105	70	130			
Titanium		0.0525	mg/L	0.0050	104	70	130			
Uranium		0.0529	mg/L	0.00030	105	70	130			
Zinc		0.114	mg/L	0.010	99	70	130			
<b>Lab ID: B18111270-001BMSD</b>	18	Sample Matrix Spike Duplicate					Run: ICPMS207-B_181116A			11/16/18 20:07
Aluminum		0.0507	mg/L	0.030	101	70	130	2.6	20	
Cadmium		0.0506	mg/L	0.0010	101	70	130	1.8	20	
Chromium		0.0561	mg/L	0.0050	103	70	130	5.9	20	
Cobalt		0.0539	mg/L	0.0050	107	70	130	4.0	20	
Copper		0.0561	mg/L	0.0050	110	70	130	5.0	20	
Iron		5.12	mg/L	0.020	102	70	130	3.5	20	
Lead		0.0551	mg/L	0.0010	110	70	130	1.8	20	
Manganese		0.0582	mg/L	0.0010	108	70	130	7.1	20	
Molybdenum		0.0517	mg/L	0.0010	103	70	130	4.5	20	
Nickel		0.0530	mg/L	0.0050	104	70	130	6.1	20	
Selenium		0.0527	mg/L	0.0010	105	70	130	2.3	20	
Silicon		6.70	mg/L	0.10		70	130	3.5	20	A
Silver		0.0205	mg/L	0.0010	103	70	130	3.4	20	
Strontium		0.310	mg/L	0.010		70	130	5.4	20	A
Tin		0.0560	mg/L	0.010	112	70	130	6.4	20	
Titanium		0.0552	mg/L	0.0050	109	70	130	4.9	20	
Uranium		0.0533	mg/L	0.00030	105	70	130	0.8	20	
Zinc		0.119	mg/L	0.010	111	70	130	5.1	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I

**Report Date:** 12/28/18  
**Work Order:** B18110979

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.8</b>								Analytical Run: ICPMS207-B_181119A			
<b>Lab ID: QCS</b>	11 Initial Calibration Verification Standard							11/19/18 16:17			
Aluminum		0.255	mg/L	0.10	102	90	110				
Arsenic		0.0480	mg/L	0.0050	96	90	110				
Barium		0.0497	mg/L	0.10	99	90	110				
Chromium		0.0491	mg/L	0.010	98	90	110				
Iron		0.250	mg/L	0.020	100	90	110				
Manganese		0.249	mg/L	0.010	100	90	110				
Silicon		0.481	mg/L	0.10	96	90	110				
Strontium		0.0476	mg/L	0.10	95	90	110				
Thallium		0.0519	mg/L	0.10	104	90	110				
Titanium		0.0480	mg/L	0.010	96	90	110				
Zinc		0.0491	mg/L	0.010	98	90	110				
<b>Method: E200.8</b>								Batch: R311230			
<b>Lab ID: LRB</b>	11 Method Blank							Run: ICPMS207-B_181119A		11/19/18 12:08	
Aluminum		ND	mg/L	0.0009							
Arsenic		ND	mg/L	0.0002							
Barium		ND	mg/L	0.00004							
Chromium		ND	mg/L	0.0002							
Iron		ND	mg/L	0.001							
Manganese		ND	mg/L	0.00010							
Silicon		ND	mg/L	0.01							
Strontium		ND	mg/L	0.0001							
Thallium		ND	mg/L	0.00004							
Titanium		ND	mg/L	0.00009							
Zinc		ND	mg/L	0.003							
<b>Lab ID: LFB</b>	11 Laboratory Fortified Blank							Run: ICPMS207-B_181119A		11/19/18 12:12	
Aluminum		0.0477	mg/L	0.10	95	85	115				
Arsenic		0.0488	mg/L	0.0050	98	85	115				
Barium		0.0466	mg/L	0.10	93	85	115				
Chromium		0.0475	mg/L	0.010	95	85	115				
Iron		4.97	mg/L	0.020	99	85	115				
Manganese		0.0485	mg/L	0.010	97	85	115				
Silicon		0.194	mg/L	0.10	97	85	115				
Strontium		0.0499	mg/L	0.10	100	85	115				
Thallium		0.0486	mg/L	0.10	97	85	115				
Titanium		0.0516	mg/L	0.010	103	85	115				
Zinc		0.0490	mg/L	0.010	98	85	115				
<b>Lab ID: B18111361-004BMS</b>	11 Sample Matrix Spike							Run: ICPMS207-B_181119A		11/20/18 22:17	
Aluminum		0.0639	mg/L	0.030	101	70	130				
Arsenic		0.0500	mg/L	0.0010	99	70	130				
Barium		0.0662	mg/L	0.050	101	70	130				
Chromium		0.0480	mg/L	0.0050	96	70	130				
Iron		4.64	mg/L	0.020	92	70	130				

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 12/28/18

**Project:** NWP Phase I

**Work Order:** B18110979

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>										Batch: R311230
<b>Lab ID: B18111361-004BMS</b>	11	Sample Matrix Spike					Run: ICPMS207-B_181119A			11/20/18 22:17
Manganese		3.25	mg/L	0.0010		70	130			A
Silicon		5.73	mg/L	0.10		70	130			A
Strontium		7.82	mg/L	0.010		70	130			A
Thallium		0.0415	mg/L	0.00050	83	70	130			
Titanium		0.0588	mg/L	0.0050	116	70	130			
Zinc		0.104	mg/L	0.010	57	70	130			S
<b>Lab ID: MB-127570</b>	11	Method Blank					Run: ICPMS207-B_181119A			11/20/18 22:47
Aluminum		0.003	mg/L	0.0009						
Arsenic		ND	mg/L	0.0002						
Barium		ND	mg/L	0.00004						
Chromium		ND	mg/L	0.0002						
Iron		0.001	mg/L	0.001						
Manganese		0.0002	mg/L	0.00010						
Silicon		0.09	mg/L	0.01						
Strontium		0.0001	mg/L	0.0001						
Thallium		ND	mg/L	0.00006						
Titanium		0.0004	mg/L	0.00009						
Zinc		ND	mg/L	0.003						
<b>Lab ID: B18110979-007BMS</b>	11	Sample Matrix Spike					Run: ICPMS207-B_181119A			11/20/18 23:30
Aluminum		1.23	mg/L	0.030	117	70	130			
Arsenic		1.19	mg/L	0.0039	116	70	130			
Barium		1.12	mg/L	0.050	103	70	130			
Chromium		1.17	mg/L	0.0050	117	70	130			
Iron		106	mg/L	0.024	106	70	130			
Manganese		1.20	mg/L	0.0019	119	70	130			
Silicon		14.9	mg/L	0.25	148	70	130			S
Strontium		1.50	mg/L	0.010	117	70	130			
Thallium		1.11	mg/L	0.0013	111	70	130			
Titanium		1.24	mg/L	0.0050	124	70	130			
Zinc		1.15	mg/L	0.056	115	70	130			
<b>Lab ID: B18110979-007BMSD</b>	11	Sample Matrix Spike Duplicate					Run: ICPMS207-B_181119A			11/20/18 23:34
Aluminum		1.27	mg/L	0.030	120	70	130	2.6	20	
Arsenic		1.16	mg/L	0.0039	113	70	130	2.2	20	
Barium		1.09	mg/L	0.050	101	70	130	2.5	20	
Chromium		1.15	mg/L	0.0050	115	70	130	1.2	20	
Iron		106	mg/L	0.024	106	70	130	0.1	20	
Manganese		1.30	mg/L	0.0019	129	70	130	7.9	20	
Silicon		15.4	mg/L	0.25	159	70	130	2.8	20	S
Strontium		1.47	mg/L	0.010	114	70	130	2.1	20	
Thallium		1.10	mg/L	0.0013	110	70	130	1.0	20	
Titanium		1.25	mg/L	0.0050	125	70	130	0.2	20	
Zinc		1.55	mg/L	0.056	155	70	130	30	20	SR

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

R - RPD exceeds advisory limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I

**Report Date:** 12/28/18  
**Work Order:** B18110979

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E200.8										Batch: R311230
<b>Lab ID:</b> B18110979-007BMSD	11	Sample Matrix Spike Duplicate								Run: ICPMS207-B_181119A 11/20/18 23:34
<b>Method:</b> E200.8										Analytical Run: ICPMS207-B_181212A
<b>Lab ID:</b> QCS	12	Initial Calibration Verification Standard								12/12/18 11:12
Aluminum		0.234	mg/L	0.10	94	90	110			
Arsenic		0.0460	mg/L	0.0050	92	90	110			
Chromium		0.0466	mg/L	0.010	93	90	110			
Copper		0.0476	mg/L	0.010	95	90	110			
Iron		0.236	mg/L	0.020	94	90	110			
Manganese		0.232	mg/L	0.010	93	90	110			
Molybdenum		0.0476	mg/L	0.0050	95	90	110			
Silicon		0.461	mg/L	0.10	92	90	110			
Thallium		0.0482	mg/L	0.10	97	90	110			
Titanium		0.0455	mg/L	0.010	91	90	110			
Uranium		0.0470	mg/L	0.00030	94	90	110			
Vanadium		0.0460	mg/L	0.10	92	90	110			

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I

**Report Date:** 12/28/18  
**Work Order:** B18110979

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E200.8										Batch: 128216
<b>Lab ID:</b> MB-128216	26	Method Blank		Run: ICPMS207-B_181213A				12/14/18 02:43		
Aluminum		0.003	mg/L	0.001						
Antimony		ND	mg/L	0.0004						
Arsenic		ND	mg/L	0.0001						
Barium		ND	mg/L	0.00009						
Beryllium		ND	mg/L	0.0001						
Boron		0.03	mg/L	0.01						
Cadmium		ND	mg/L	0.00003						
Chromium		0.0003	mg/L	0.0002						
Cobalt		ND	mg/L	0.00004						
Copper		ND	mg/L	0.0008						
Iron		ND	mg/L	0.003						
Lead		ND	mg/L	0.00008						
Manganese		ND	mg/L	0.0001						
Molybdenum		ND	mg/L	0.00006						
Nickel		ND	mg/L	0.0007						
Potassium		ND	mg/L	0.03						
Selenium		ND	mg/L	0.0002						
Silicon		0.008	mg/L	0.003						
Silver		ND	mg/L	0.00003						
Sodium		0.1	mg/L	0.03						
Thallium		ND	mg/L	0.00005						
Tin		ND	mg/L	0.001						
Titanium		ND	mg/L	0.0001						
Uranium		ND	mg/L	0.00005						
Vanadium		ND	mg/L	0.0006						
Zinc		ND	mg/L	0.004						
<b>Lab ID:</b> LCS4-128216	26	Laboratory Control Sample		Run: ICPMS207-B_181213A				12/14/18 02:47		
Aluminum		0.479	mg/L	0.030	95	85	115			
Antimony		0.113	mg/L	0.0010	113	85	115			
Arsenic		0.102	mg/L	0.0010	102	85	115			
Barium		0.100	mg/L	0.050	100	85	115			
Beryllium		0.0479	mg/L	0.0010	96	85	115			
Boron		0.127	mg/L	0.050	100	85	115			
Cadmium		0.0510	mg/L	0.0010	102	85	115			
Chromium		0.103	mg/L	0.0050	102	85	115			
Cobalt		0.101	mg/L	0.0050	101	85	115			
Copper		0.102	mg/L	0.0050	102	85	115			
Iron		0.507	mg/L	0.020	101	85	115			
Lead		0.100	mg/L	0.0010	100	85	115			
Manganese		0.533	mg/L	0.0010	107	85	115			
Molybdenum		0.0940	mg/L	0.0010	94	85	115			
Nickel		0.100	mg/L	0.0050	100	85	115			
Potassium		5.02	mg/L	1.0	100	85	115			

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I

**Report Date:** 12/28/18  
**Work Order:** B18110979

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.8</b>										Batch: 128216	
<b>Lab ID: LCS4-128216</b>	26 Laboratory Control Sample				Run: ICPMS207-B_181213A				12/14/18 02:47		
Selenium		0.102	mg/L	0.0010	102	85	115				
Silicon		1.01	mg/L	0.10	101	85	115				
Silver		0.0101	mg/L	0.0010	101	85	115				
Sodium		5.18	mg/L	1.0	102	85	115				
Thallium		0.100	mg/L	0.00050	100	85	115				
Tin		0.0988	mg/L	0.010	99	85	115				
Titanium		0.0958	mg/L	0.0050	96	85	115				
Uranium		0.0996	mg/L	0.00030	100	85	115				
Vanadium		0.0991	mg/L	0.010	99	85	115				
Zinc		0.105	mg/L	0.010	105	85	115				
<b>Lab ID: B18120093-001CMS4</b>	26 Sample Matrix Spike				Run: ICPMS207-B_181213A				12/14/18 03:11		
Aluminum		0.668	mg/L	0.030	97	70	130				
Antimony		0.114	mg/L	0.0010	114	70	130				
Arsenic		0.103	mg/L	0.0010	102	70	130				
Barium		0.133	mg/L	0.050	100	70	130				
Beryllium		0.0468	mg/L	0.0010	94	70	130				
Boron		0.146	mg/L	0.050	101	70	130				
Cadmium		0.0500	mg/L	0.0010	100	70	130				
Chromium		0.101	mg/L	0.0050	100	70	130				
Cobalt		0.0981	mg/L	0.0050	98	70	130				
Copper		0.0997	mg/L	0.0050	98	70	130				
Iron		0.763	mg/L	0.020	101	70	130				
Lead		0.102	mg/L	0.0010	101	70	130				
Manganese		0.536	mg/L	0.0010	105	70	130				
Molybdenum		0.0964	mg/L	0.0010	96	70	130				
Nickel		0.0987	mg/L	0.0050	96	70	130				
Potassium		6.41	mg/L	1.0	100	70	130				
Selenium		0.102	mg/L	0.0010	101	70	130				
Silicon		7.27	mg/L	0.10		70	130			A	
Silver		0.0101	mg/L	0.0010	20	70	130			S	
Sodium		19.0	mg/L	1.0	98	70	130				
Thallium		0.103	mg/L	0.00050	103	70	130				
Tin		0.0983	mg/L	0.010	98	70	130				
Titanium		0.104	mg/L	0.0050	96	70	130				
Uranium		0.105	mg/L	0.00030	105	70	130				
Vanadium		0.100	mg/L	0.010	100	70	130				
Zinc		0.106	mg/L	0.010	97	70	130				
<b>Lab ID: B18120093-001CMSD</b>	26 Sample Matrix Spike Duplicate				Run: ICPMS207-B_181213A				12/14/18 03:14		
Aluminum		0.684	mg/L	0.030	101	70	130	2.4	20		
Antimony		0.116	mg/L	0.0010	116	70	130	1.5	20		
Arsenic		0.105	mg/L	0.0010	104	70	130	1.7	20		
Barium		0.134	mg/L	0.050	101	70	130	0.7	20		
Beryllium		0.0495	mg/L	0.0010	99	70	130	5.6	20		

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase I

**Report Date:** 12/28/18  
**Work Order:** B18110979

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>								Batch: 128216		
<b>Lab ID: B18120093-001CMSD</b>	26	Sample Matrix Spike Duplicate			Run: ICPMS207-B_181213A				12/14/18 03:14	
Boron		0.156	mg/L	0.050	111	70	130	6.6	20	
Cadmium		0.0505	mg/L	0.0010	101	70	130	1.0	20	
Chromium		0.104	mg/L	0.0050	102	70	130	2.2	20	
Cobalt		0.102	mg/L	0.0050	102	70	130	4.2	20	
Copper		0.103	mg/L	0.0050	101	70	130	2.8	20	
Iron		0.765	mg/L	0.020	101	70	130	0.2	20	
Lead		0.104	mg/L	0.0010	103	70	130	1.9	20	
Manganese		0.548	mg/L	0.0010	107	70	130	2.3	20	
Molybdenum		0.0985	mg/L	0.0010	98	70	130	2.1	20	
Nickel		0.103	mg/L	0.0050	100	70	130	4.0	20	
Potassium		6.50	mg/L	1.0	101	70	130	1.3	20	
Selenium		0.104	mg/L	0.0010	103	70	130	2.0	20	
Silicon		7.30	mg/L	0.10		70	130	0.5	20	A
Silver		0.0100	mg/L	0.0010	20	70	130	0.2	20	S
Sodium		19.4	mg/L	1.0	106	70	130	2.1	20	
Thallium		0.105	mg/L	0.00050	105	70	130	1.6	20	
Tin		0.100	mg/L	0.010	100	70	130	1.8	20	
Titanium		0.107	mg/L	0.0050	100	70	130	3.0	20	
Uranium		0.104	mg/L	0.00030	103	70	130	1.5	20	
Vanadium		0.102	mg/L	0.010	102	70	130	1.9	20	
Zinc		0.109	mg/L	0.010	101	70	130	3.6	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.



# Work Order Receipt Checklist

Enviromin Inc

B18110979

Login completed by: Richard L. Shular

Date Received: 11/13/2018

Reviewed by: BL2000\raschim

Received by: bgs

Reviewed Date: 11/14/2018

Carrier name: Return-UPS Ground

- Shipping container/cooler in good condition? Yes  No  Not Present
- Custody seals intact on all shipping container(s)/cooler(s)? Yes  No  Not Present
- Custody seals intact on all sample bottles? Yes  No  Not Present
- Chain of custody present? Yes  No
- Chain of custody signed when relinquished and received? Yes  No
- Chain of custody agrees with sample labels? Yes  No
- Samples in proper container/bottle? Yes  No
- Sample containers intact? Yes  No
- Sufficient sample volume for indicated test? Yes  No
- All samples received within holding time?  
(Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.) Yes  No
- Temp Blank received in all shipping container(s)/cooler(s)? Yes  No  Not Applicable
- Container/Temp Blank temperature: 1.6°C Blue Ice
- Water - VOA vials have zero headspace? Yes  No  No VOA vials submitted
- Water - pH acceptable upon receipt? Yes  No  Not Applicable

## Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

## Contact and Corrective Action Comments:

The samples for Dissolved Organic Carbon were subsampled, filtered and preserved to pH <2 with 0.5 mL of phosphoric acid per 160 mL in the laboratory.

The samples for Dissolved Metals/Hardness were subsampled, filtered and preserved to pH <2 with 2 mL of nitric acid per 250 mL in the laboratory. According to 40CFR136, samples for Dissolved Metals should be filtered and preserved within 15 minutes of collection.

# Chain of Custody & Analytical Request Record

[www.energylab.com](http://www.energylab.com)

**Account Information (Billing information)**

Company Name: Environment, Inc.  
 Contact: Gerrit Egniew  
 Phone: 202-315-4218  
 Mailing Address: 5724 Professional Drive  
 City, State, Zip: Rockaway, MT 59718  
 Email: gerritegniew@environmentinc.com  
 Receive Invoices:  Hard Copy  Email  
 Purchase Order: 4093 Bottle Order

**Report Information (if different than Account Information)**

Company Name: \_\_\_\_\_  
 Contact: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_  
 City, State, Zip: \_\_\_\_\_  
 Email: \_\_\_\_\_  
 Receive Report:  Hard Copy  Email  
 Special Report/Format:  LEVEL IV  NELAC  EDD/EDT (contact laboratory)  Other

**Comments**  
 These samples are NOT preserved.

**Project Information**

Project Name, PWSID, Permit, etc.: NWP Phase I  
 Sampler Name: \_\_\_\_\_  
 Sampler Phone: \_\_\_\_\_  
 Sample Origin State: \_\_\_\_\_  
 EPA/State Compliance:  Yes  No

**Matrix Codes**  
 A - Air  
 W - Water  
 S - Solids  
 V - Vegetation  
 B - Bioassay  
 O - Other  
 DW - Drinking Water

**Analysis Requested**  
 Filter (0.45µm)  
 DOC  
 Dissolved metals  
 See Attached

All turnaround times are standard unless marked as RUSH.  
 Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling - See Instructions Page

Sample Identification (Name, Location, Interval, etc.)	Collection		Matrix (See Codes Above)	Number of Containers	Date	Time	Signature	Date/Time
	Date	Time						
F1	11/12/18	11am	W	2			<i>[Signature]</i>	11/12/18 12:00
F2								
F3								
R1								
R3								
R5								
R6								

**Custody Record MUST be signed**

Requisitioned by (print): Gerrit Egniew  
 Requisitioned by (print): \_\_\_\_\_  
 Date/Time: 11/12/18 12:00  
 Date/Time: \_\_\_\_\_

Signature: *[Signature]*  
 Signature: \_\_\_\_\_

Received by (print): MOANA SUGANIGANO  
 Date/Time: 11/15/18 12:35  
 Date/Time: \_\_\_\_\_

Shipped By: \_\_\_\_\_  
 Cooler ID(s): \_\_\_\_\_  
 Custody Seals: Y N C B  
 Intact: Y N  
 Receipt Temp: \_\_\_\_\_ °C  
 Temp Blank: Y N  
 On Ice: Y N  
 Payment Type: CC Cash Check  
 Amount: \$ \_\_\_\_\_  
 Receipt Number (cash/check only): \_\_\_\_\_

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

## **Appendix H2 – Phase II Lab Reports**





# ANALYTICAL SUMMARY REPORT

November 26, 2018

Enviromin Inc  
524 Professional Dr  
Bozeman, MT 59718

Work Order: B18110814      Quote ID: B4093 - Enviromin Lab

Project Name: Not Indicated

Energy Laboratories Inc Billings MT received the following 15 samples for Enviromin Inc on 11/9/2018 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B18110814-001	bF1	11/08/18 11:00	11/09/18	Aqueous	Selenium By CVAA, Total Selenium IV, Total Selenium-VI, Total
B18110814-002	bR1	11/08/18 11:00	11/09/18	Aqueous	Same As Above
B18110814-003	E1	11/08/18 11:00	11/09/18	Aqueous	Same As Above
B18110814-004	bF2	11/08/18 11:00	11/09/18	Aqueous	Same As Above
B18110814-005	bR2	11/08/18 11:00	11/09/18	Aqueous	Same As Above
B18110814-006	E2	11/08/18 11:00	11/09/18	Aqueous	Same As Above
B18110814-007	bF3	11/08/18 11:00	11/09/18	Aqueous	Same As Above
B18110814-008	bR3	11/08/18 11:00	11/09/18	Aqueous	Same As Above
B18110814-009	E3	11/08/18 11:00	11/09/18	Aqueous	Same As Above
B18110814-010	bF4	11/08/18 11:00	11/09/18	Aqueous	Same As Above
B18110814-011	bR4	11/08/18 11:00	11/09/18	Aqueous	Same As Above
B18110814-012	E4	11/08/18 11:00	11/09/18	Aqueous	Same As Above
B18110814-013	bF5	11/08/18 11:00	11/09/18	Aqueous	Same As Above
B18110814-014	bR5	11/08/18 11:00	11/09/18	Aqueous	Same As Above
B18110814-015	E5	11/08/18 11:00	11/09/18	Aqueous	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:



**CLIENT:** Enviromin Inc  
**Project:** Not Indicated  
**Work Order:** B18110814

**Report Date:** 11/26/18

## CASE NARRATIVE

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Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 East Lyndale Ave, Helena, MT, EPA Number MT00945.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18110814-001  
**Client Sample ID:** bF1

**Report Date:** 11/26/18  
**Collection Date:** 11/08/18 11:00  
**DateReceived:** 11/09/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, TOTAL</b>							
Selenium	0.185	mg/L	D	0.006		A3114 C	11/20/18 12:59 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.006		A3114 C	11/19/18 12:38 / eli-h
Selenium-VI	0.185	mg/L	D	0.003		A3114 C	11/21/18 17:06 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18110814-002  
**Client Sample ID:** bR1

**Report Date:** 11/26/18  
**Collection Date:** 11/08/18 11:00  
**DateReceived:** 11/09/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, TOTAL</b>							
Selenium	0.140	mg/L	D	0.003		A3114 C	11/20/18 13:04 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	11/19/18 12:43 / eli-h
Selenium-VI	0.140	mg/L	D	0.003		A3114 C	11/21/18 17:06 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18110814-003  
**Client Sample ID:** E1

**Report Date:** 11/26/18  
**Collection Date:** 11/08/18 11:00  
**DateReceived:** 11/09/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, TOTAL</b>							
Selenium	0.017	mg/L	D	0.003		A3114 C	11/20/18 13:06 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	11/19/18 12:44 / eli-h
Selenium-VI	0.017	mg/L	D	0.003		A3114 C	11/21/18 17:06 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18110814-004  
**Client Sample ID:** bF2

**Report Date:** 11/26/18  
**Collection Date:** 11/08/18 11:00  
**DateReceived:** 11/09/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, TOTAL</b>							
Selenium	0.180	mg/L	D	0.003		A3114 C	11/20/18 13:08 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	11/19/18 12:46 / eli-h
Selenium-VI	0.180	mg/L	D	0.003		A3114 C	11/21/18 17:06 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18110814-005  
**Client Sample ID:** bR2

**Report Date:** 11/26/18  
**Collection Date:** 11/08/18 11:00  
**DateReceived:** 11/09/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, TOTAL</b>							
Selenium	0.137	mg/L	D	0.003		A3114 C	11/20/18 13:09 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	11/19/18 12:48 / eli-h
Selenium-VI	0.137	mg/L	D	0.003		A3114 C	11/21/18 17:06 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18110814-006  
**Client Sample ID:** E2

**Report Date:** 11/26/18  
**Collection Date:** 11/08/18 11:00  
**DateReceived:** 11/09/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, TOTAL</b>							
Selenium	0.015	mg/L	D	0.003		A3114 C	11/20/18 13:12 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	11/19/18 12:50 / eli-h
Selenium-VI	0.015	mg/L	D	0.003		A3114 C	11/21/18 17:06 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.





### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18110814-007  
**Client Sample ID:** bF3

**Report Date:** 11/26/18  
**Collection Date:** 11/08/18 11:00  
**DateReceived:** 11/09/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, TOTAL</b>							
Selenium	0.176	mg/L	D	0.003		A3114 C	11/20/18 13:14 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	11/19/18 12:51 / eli-h
Selenium-VI	0.176	mg/L	D	0.003		A3114 C	11/21/18 17:06 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18110814-008  
**Client Sample ID:** bR3

**Report Date:** 11/26/18  
**Collection Date:** 11/08/18 11:00  
**DateReceived:** 11/09/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, TOTAL</b>							
Selenium	0.179	mg/L	D	0.003		A3114 C	11/20/18 13:15 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	11/19/18 12:54 / eli-h
Selenium-VI	0.179	mg/L	D	0.003		A3114 C	11/21/18 17:06 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18110814-009  
**Client Sample ID:** E3

**Report Date:** 11/26/18  
**Collection Date:** 11/08/18 11:00  
**DateReceived:** 11/09/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, TOTAL</b>							
Selenium	0.010	mg/L	D	0.003		A3114 C	11/20/18 13:17 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	11/19/18 12:55 / eli-h
Selenium-VI	0.010	mg/L	D	0.003		A3114 C	11/21/18 17:06 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18110814-010  
**Client Sample ID:** bF4

**Report Date:** 11/26/18  
**Collection Date:** 11/08/18 11:00  
**DateReceived:** 11/09/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, TOTAL</b>							
Selenium	0.159	mg/L	D	0.003		A3114 C	11/20/18 13:19 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.006	mg/L	D	0.003		A3114 C	11/19/18 12:57 / eli-h
Selenium-VI	0.153	mg/L	D	0.003		A3114 C	11/21/18 17:06 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18110814-011  
**Client Sample ID:** bR4

**Report Date:** 11/26/18  
**Collection Date:** 11/08/18 11:00  
**DateReceived:** 11/09/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, TOTAL</b>							
Selenium	0.134	mg/L	D	0.003		A3114 C	11/20/18 13:23 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	11/19/18 13:02 / eli-h
Selenium-VI	0.134	mg/L	D	0.003		A3114 C	11/21/18 17:06 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18110814-012  
**Client Sample ID:** E4

**Report Date:** 11/26/18  
**Collection Date:** 11/08/18 11:00  
**DateReceived:** 11/09/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, TOTAL</b>							
Selenium	0.013	mg/L	D	0.006		A3114 C	11/20/18 13:25 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.006		A3114 C	11/19/18 13:04 / eli-h
Selenium-VI	0.013	mg/L	D	0.003		A3114 C	11/21/18 17:06 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18110814-013  
**Client Sample ID:** bF5

**Report Date:** 11/26/18  
**Collection Date:** 11/08/18 11:00  
**DateReceived:** 11/09/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, TOTAL</b>							
Selenium	0.195	mg/L	D	0.003		A3114 C	11/20/18 13:30 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.003		A3114 C	11/19/18 13:09 / eli-h
Selenium-VI	0.195	mg/L	D	0.003		A3114 C	11/21/18 17:06 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18110814-014  
**Client Sample ID:** bR5

**Report Date:** 11/26/18  
**Collection Date:** 11/08/18 11:00  
**DateReceived:** 11/09/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, TOTAL</b>							
Selenium	0.145	mg/L	D	0.003		A3114 C	11/20/18 13:32 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.006	mg/L	D	0.003		A3114 C	11/19/18 13:11 / eli-h
Selenium-VI	0.139	mg/L	D	0.003		A3114 C	11/21/18 17:06 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.





### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18110814-015  
**Client Sample ID:** E5

**Report Date:** 11/26/18  
**Collection Date:** 11/08/18 11:00  
**DateReceived:** 11/09/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, TOTAL</b>							
Selenium	0.050	mg/L	D	0.006		A3114 C	11/20/18 13:33 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.011	mg/L	D	0.006		A3114 C	11/19/18 13:13 / eli-h
Selenium-VI	0.039	mg/L	D	0.003		A3114 C	11/21/18 17:06 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc

**Report Date:** 11/26/18

**Project:** Not Indicated

**Work Order:** B18110814

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A3114 C									ritical Run: SELENIUM PSA MILLENIUM_181119A
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard								11/19/18 12:28
Selenium-IV	0.0202	mg/L	0.0010	101	90	110			
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								11/19/18 12:30
Selenium-IV	0.0193	mg/L	0.0010	96	90	110			
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								11/19/18 13:01
Selenium-IV	0.0185	mg/L	0.0010	92	90	110			
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard								11/19/18 14:23
Selenium-IV	0.0189	mg/L	0.0010	95	90	110			
<b>Method:</b> A3114 C									Batch: 43843
<b>Lab ID:</b> MB-43843	Method Blank								Run: SELENIUM PSA MILLENIUM_ 11/19/18 12:33
Selenium-IV	ND	mg/L	0.0006						
<b>Lab ID:</b> LCS-43843	Laboratory Control Sample								Run: SELENIUM PSA MILLENIUM_ 11/19/18 12:35
Selenium-IV	0.0199	mg/L	0.0010	100	90	110			
<b>Lab ID:</b> LFB-43843	Laboratory Fortified Blank								Run: SELENIUM PSA MILLENIUM_ 11/19/18 12:36
Selenium-IV	0.0188	mg/L	0.0010	94	85	115			
<b>Lab ID:</b> B18110814-001BMS	Sample Matrix Spike								Run: SELENIUM PSA MILLENIUM_ 11/19/18 12:40
Selenium-IV	0.0905	mg/L	0.0060	75	70	130			
<b>Lab ID:</b> B18110814-001BMSD	Sample Matrix Spike Duplicate								Run: SELENIUM PSA MILLENIUM_ 11/19/18 12:41
Selenium-IV	0.0963	mg/L	0.0060	80	70	130	6.2	20	
<b>Lab ID:</b> B18110814-012BMS	Sample Matrix Spike								Run: SELENIUM PSA MILLENIUM_ 11/19/18 13:06
Selenium-IV	0.110	mg/L	0.0060	92	70	130			
<b>Lab ID:</b> B18110814-012BMSD	Sample Matrix Spike Duplicate								Run: SELENIUM PSA MILLENIUM_ 11/19/18 13:08
Selenium-IV	0.106	mg/L	0.0060	88	70	130	4.0	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc

**Report Date:** 11/26/18

**Project:** Not Indicated

**Work Order:** B18110814

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A3114 C									tical Run: SELENIUM PSA MILLENIUM_181120B
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard								11/20/18 12:49
Selenium	0.101	mg/L	0.0010	94	90	110			
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								11/20/18 12:51
Selenium	0.0213	mg/L	0.0010	107	90	110			
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								11/20/18 13:22
Selenium	0.0204	mg/L	0.0010	102	90	110			
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard								11/20/18 14:08
Selenium	0.101	mg/L	0.0010	94	90	110			
<b>Method:</b> A3114 C									Batch: 43874
<b>Lab ID:</b> MB-43874	Method Blank								Run: SELENIUM PSA MILLENIUM_ 11/20/18 12:54
Selenium	ND	mg/L	0.0002						
<b>Lab ID:</b> LCS-43874	Laboratory Control Sample								Run: SELENIUM PSA MILLENIUM_ 11/20/18 12:56
Selenium	0.101	mg/L	0.0010	93	90	110			
<b>Lab ID:</b> LFB-43874	Laboratory Fortified Blank								Run: SELENIUM PSA MILLENIUM_ 11/20/18 12:57
Selenium	0.0366	mg/L	0.0010	92	85	115			
<b>Lab ID:</b> B18110814-001BMS	Sample Matrix Spike								Run: SELENIUM PSA MILLENIUM_ 11/20/18 13:01
Selenium	0.407	mg/L	0.0060	92	70	130			
<b>Lab ID:</b> B18110814-001BMSD	Sample Matrix Spike Duplicate								Run: SELENIUM PSA MILLENIUM_ 11/20/18 13:03
Selenium	0.404	mg/L	0.0060	91	70	130	0.6	20	
<b>Lab ID:</b> B18110814-012BMS	Sample Matrix Spike								Run: SELENIUM PSA MILLENIUM_ 11/20/18 13:27
Selenium	0.235	mg/L	0.0060	92	70	130			
<b>Lab ID:</b> B18110814-012BMSD	Sample Matrix Spike Duplicate								Run: SELENIUM PSA MILLENIUM_ 11/20/18 13:28
Selenium	0.231	mg/L	0.0060	91	70	130	1.9	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# Work Order Receipt Checklist

Enviromin Inc

B18110814

Login completed by: Tabitha Edwards

Date Received: 11/9/2018

Reviewed by: BL2000\raschim

Received by: slm

Reviewed Date: 11/12/2018

Carrier name: Return-UPS Ground N/C

- Shipping container/cooler in good condition? Yes  No  Not Present
- Custody seals intact on all shipping container(s)/cooler(s)? Yes  No  Not Present
- Custody seals intact on all sample bottles? Yes  No  Not Present
- Chain of custody present? Yes  No
- Chain of custody signed when relinquished and received? Yes  No
- Chain of custody agrees with sample labels? Yes  No
- Samples in proper container/bottle? Yes  No
- Sample containers intact? Yes  No
- Sufficient sample volume for indicated test? Yes  No
- All samples received within holding time?  
(Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.) Yes  No
- Temp Blank received in all shipping container(s)/cooler(s)? Yes  No  Not Applicable
- Container/Temp Blank temperature: 0.8°C Blue Ice
- Water - VOA vials have zero headspace? Yes  No  No VOA vials submitted
- Water - pH acceptable upon receipt? Yes  No  Not Applicable

## Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

## Contact and Corrective Action Comments:

All samples for dissolved metals and dissolved organic carbon were received as non filtered and preserved to a pH <2. Cancelled the dissolved metals and dissolved organic carbon on all samples per Wynn Pippin, Energy Laboratories Project Manager.

# Chain of Custody & Analytical Request Record

www.energylab.com

## Account Information (Billing Information)

Company Name: Environment, Inc.  
 Contact: Geoffrey Brown  
 Phone: 208-285-4218  
 Mailing Address: 500 Professional Drive  
 City, State, Zip: Bozeman, MT 59718  
 Email: geoffreybrown@environmentinc.com  
 Receive Invoice  Hard Copy  Email   
 Purchase Order: 4093 Bottle Order

## Report Information (if different than Account Information)

Company Name: \_\_\_\_\_  
 Contact: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_  
 City, State, Zip: \_\_\_\_\_  
 Email: \_\_\_\_\_  
 Receive Report  Hard Copy  Email   
 Special Report Format:  LEVEL IV  MELAC  EDD/EDT (contact laboratory)  Other

Comments

## Project Information

Project Name, PWSID, Permit, etc.: \_\_\_\_\_  
 Sampler Name: \_\_\_\_\_ Sampler Phone: \_\_\_\_\_  
 EPA/State Compliance:  Yes  No  
 Sample Origin State: \_\_\_\_\_  
 MINEING CLIENTS, please indicate sample type.  
 Byproduct 11 (e/2 material)  Unprocessed ore (NOT ground or refined)\*

Matrix Codes

- A - Air
- W - Water
- S - Solids
- V - Vegetation
- B - Bioassay
- O - Other
- DW - Water

Analysis Requested	Filter DOC samples	DOC	Filter metals samples	Dissolved metals + Se Protocol A	Se specification
	X	X	X	X	X

All turnaround times are standard unless marked as RUSH.  
 Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling - See Instructions Page

Sample Identification (Name, Location, Interval, etc.)	Collection		Matrix (See Codes Above)	Number of Containers
	Date	Time		
1 bF1	11/8/18	11am	W	3
2 bR1				
3 E1				
4 bF2				
5 bR2				
6 E2				
7 bF3				
8 bR3				
9 E3				
10 bF4				

RUSH	TAT
	6/8/18/18/4 - 001
	002
	003
	004
	005
	006
	007
	008
	009
	010

Custody Record MUST be signed by (print) Glen Fegrew Date/TIME 11/18/18 16:00  
 Relinquished by (print) \_\_\_\_\_ Date/TIME \_\_\_\_\_  
 Relinquished by (print) \_\_\_\_\_ Date/TIME \_\_\_\_\_  
 Shipped By: \_\_\_\_\_ Cooler ID(s): \_\_\_\_\_ Custody Seals: Y N C B Intact: Y N Receipt Temp: \_\_\_\_\_ °C Temp Blank: Y N On Ice: Y N Payment Type: CC Cash Check Amount: \$ \_\_\_\_\_ Receipt Number (last/checkbox only): \_\_\_\_\_

Received by (print) SPAIN-INCERVAL 9 Date/TIME 11/18/18 930  
 Signature: [Signature]  
 Signature: [Signature]  
 Receipt Number (last/checkbox only): 0

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

# Chain of Custody & Analytical Request Record

www.energylab.com

**Account Information** (filling information)

Company Name: Environia, Inc.  
 Contact: Genet Bowen  
 Phone: 208-318-4218  
 Mailing Address: 524 Professional Drive  
 City, State, Zip: Bozeman, MT 59718  
 Email: genet@environia.com  
 Receive Invoice:  Hard Copy  Email  
 Purchase Order:  Quote

**Report Information** (fill different than Account Information)

Company Name: \_\_\_\_\_  
 Contact: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_  
 City, State, Zip: \_\_\_\_\_  
 Email: \_\_\_\_\_  
 Receive Report:  Hard Copy  Email  
 Special Report/Format:  LEVEL IV  NELAC  EDD/EDT (contact laboratory)  Other

**Project Information**

Project Name, PWSID, Permit, etc.: \_\_\_\_\_  
 Sampler Name: \_\_\_\_\_  
 Sampler Phone: \_\_\_\_\_  
 Sample Origin State: \_\_\_\_\_  
 EPA/State Compliance:  Yes  No  
 \*If ore has been processed or refined, call before sending.  
 Byproduct 11 (e)2 material  Unprocessed ore (NOT ground or refined)\*

All turnaround times are standard unless marked as RUSH.  
 Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling - See Instructions Page

**Analysis Requested**

See Attached									
--------------	--	--	--	--	--	--	--	--	--

Matrix Codes	Number of Containers	Matrix Codes (See Codes Above)
A - Air		
W - Water		
S - Solids		
V - Vegetation		
B - Bioassay		
O - Other		
DW - Drinking Water		

Sample Identification (Name, Location, Interval, etc.)	Date	Time	Collection	Number of Containers	Matrix Codes (See Codes Above)
1 BR4	11/8/18	11 am	↓	3	W
2 E4	↓	↓	↓	↓	↓
3 bFS	↓	↓	↓	↓	↓
4 BR5	11/8/18	11 am	↓	1	W
5 E5					
6					
7					
8					
9					
10					

**Signature** \_\_\_\_\_

**Date/Time** \_\_\_\_\_

**Received by (print)** Genet Bowen

**Signature** \_\_\_\_\_

**Date/Time** 11/8/18 16:00

**Receipt Temp °C** \_\_\_\_\_

**Intact**  Y  N

**Custody Seals**  Y  N  C  B

**Cocker ID(s)** \_\_\_\_\_

**Shipped By** \_\_\_\_\_

**Amount** \$ \_\_\_\_\_

**Payment Type**  Cash  Check

**Receipt Number (edit/check only)** \_\_\_\_\_

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.



## ANALYTICAL SUMMARY REPORT

January 02, 2019

Enviromin Inc  
524 Professional Dr  
Bozeman, MT 59718

Work Order: B18110980 Quote ID: B4093 - Enviromin Lab

Project Name: NWP Phase II

Energy Laboratories Inc Billings MT received the following 15 samples for Enviromin Inc on 11/13/2018 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B18110980-001	F1-2	11/12/18 11:00	11/13/18	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Dissolved Carbon, Dissolved Organic Metals Digestion by E200.2 Preparation, Dissolved Filtration for DOC MCAWW Preparation, Dissolved Filtration MCAWW
B18110980-002	R1-2	11/12/18 11:00	11/13/18	Aqueous	Same As Above
B18110980-003	E1	11/12/18 11:00	11/13/18	Aqueous	Metals by ICP/ICPMS, Dissolved Carbon, Dissolved Organic Preparation, Dissolved Filtration for DOC MCAWW Preparation, Dissolved Filtration MCAWW
B18110980-004	F2-2	11/12/18 11:00	11/13/18	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Dissolved Carbon, Dissolved Organic Metals Digestion by E200.2 Preparation, Dissolved Filtration for DOC MCAWW Preparation, Dissolved Filtration MCAWW
B18110980-005	R2-2	11/12/18 11:00	11/13/18	Aqueous	Same As Above
B18110980-006	E2	11/12/18 11:00	11/13/18	Aqueous	Same As Above
B18110980-007	F3-2	11/12/18 11:00	11/13/18	Aqueous	Same As Above
B18110980-008	R3-2	11/12/18 11:00	11/13/18	Aqueous	Same As Above
B18110980-009	E3	11/12/18 11:00	11/13/18	Aqueous	Metals by ICP/ICPMS, Dissolved Carbon, Dissolved Organic Preparation, Dissolved Filtration for DOC MCAWW Preparation, Dissolved Filtration MCAWW
B18110980-010	F4-2	11/12/18 11:00	11/13/18	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Dissolved Carbon, Dissolved Organic Metals Digestion by E200.2 Preparation, Dissolved Filtration for DOC MCAWW Preparation, Dissolved Filtration MCAWW
B18110980-011	R4-2	11/12/18 11:00	11/13/18	Aqueous	Same As Above



## ANALYTICAL SUMMARY REPORT

B18110980-012	E4	11/12/18 11:00	11/13/18	Aqueous	Metals by ICP/ICPMS, Dissolved Carbon, Dissolved Organic Preparation, Dissolved Filtration for DOC MCAWW Preparation, Dissolved Filtration MCAWW
B18110980-013	F5-2	11/12/18 11:00	11/13/18	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Dissolved Carbon, Dissolved Organic Metals Digestion by E200.2 Preparation, Dissolved Filtration for DOC MCAWW Preparation, Dissolved Filtration MCAWW
B18110980-014	R5-2	11/12/18 11:00	11/13/18	Aqueous	Same As Above
B18110980-015	E5	11/12/18 11:00	11/13/18	Aqueous	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:





**CLIENT:** Enviromin Inc  
**Project:** NWP Phase II  
**Work Order:** B18110980

**Revised Date:** 01/02/19

**Report Date:** 12/04/18

## CASE NARRATIVE

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Tests associated with analyst identified as ELI-CA were subcontracted to Energy Laboratories, PO Box 247, Casper, WY, EPA Number WY00002.

Revised 1/2/2019:

Samples submitted for Dissolved metals were filtered through 0.45 um filters, preserved and analyzed, per standard procedure. It was observed the samples contained fine sediment which passed through the filter and likely contributed to varying results upon analysis.

After discussion with the client the Dissolved samples were then digested and analyzed.\* Per client request, all results from the original Dissolved and later Digested Dissolved analytical runs that have variance between analyses have been reported.

\*The following Dissolved samples were not digested due to insufficient sample volume:

E1 (B18110980-003)  
E3 (B18110980-009)  
E4 (B18110980-012)

The report has been revised and replaces any previously issued report in its entirety.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B18110980-001  
**Client Sample ID:** F1-2

**Revised Date:** 01/02/19  
**Report Date:** 12/04/18  
**Collection Date:** 11/12/18 11:00  
**Date Received:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	6	mg/L	D	4		A5310 C	11/20/18 05:16 / eli-ca
<b>METALS, DIGESTED DISSOLVED</b>							
Aluminum	11.2	mg/L		0.03		E200.7	12/06/18 13:50 / rlh
Aluminum	9.20	mg/L		0.03		E200.8	12/06/18 18:52 / by
Aluminum	70.2	mg/L		0.03		E200.8	12/12/18 23:20 / car
Antimony	ND	mg/L	D	0.002		E200.8	12/06/18 18:52 / by
Arsenic	0.003	mg/L		0.001		E200.8	12/06/18 18:52 / by
Arsenic	0.008	mg/L		0.001		E200.8	12/12/18 23:20 / car
Barium	0.28	mg/L		0.05		E200.7	12/06/18 13:50 / rlh
Barium	0.25	mg/L		0.05		E200.8	12/06/18 18:52 / by
Barium	0.49	mg/L		0.05		E200.8	12/12/18 23:20 / car
Beryllium	ND	mg/L		0.001		E200.8	12/06/18 18:52 / by
Beryllium	0.002	mg/L		0.001		E200.8	12/12/18 23:20 / car
Boron	0.15	mg/L	D	0.09		E200.7	12/06/18 13:50 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/06/18 18:52 / by
Calcium	11	mg/L		1		E200.7	12/06/18 13:50 / rlh
Chromium	0.011	mg/L		0.005		E200.8	12/06/18 18:52 / by
Chromium	0.080	mg/L		0.005		E200.8	12/12/18 23:20 / car
Cobalt	0.005	mg/L		0.005		E200.8	12/06/18 18:52 / by
Copper	0.015	mg/L		0.005		E200.8	12/12/18 23:20 / car
Iron	9.17	mg/L	D	0.04		E200.7	12/06/18 13:50 / rlh
Iron	17.1	mg/L		0.02		E200.8	12/12/18 23:20 / car
Lead	0.007	mg/L		0.001		E200.8	12/06/18 18:52 / by
Lead	0.010	mg/L		0.001		E200.8	12/12/18 23:20 / car
Lithium	ND	mg/L		0.1		E200.7	12/06/18 13:50 / rlh
Magnesium	3	mg/L		1		E200.7	12/06/18 13:50 / rlh
Manganese	0.035	mg/L		0.001		E200.8	12/06/18 18:52 / by
Manganese	0.047	mg/L		0.001		E200.8	12/12/18 23:20 / car
Molybdenum	0.003	mg/L		0.001		E200.8	12/06/18 18:52 / by
Molybdenum	ND	mg/L		0.001		E200.8	12/08/18 04:06 / by
Molybdenum	0.001	mg/L		0.001		E200.8	12/12/18 23:20 / car
Nickel	0.030	mg/L		0.005		E200.8	12/06/18 18:52 / by
Nickel	0.023	mg/L		0.005		E200.8	12/08/18 04:06 / by
Potassium	5	mg/L		1		E200.7	12/06/18 13:50 / rlh
Potassium	2	mg/L		1		E200.8	12/06/18 18:52 / by
Selenium	0.167	mg/L		0.001		E200.8	12/06/18 18:52 / by
Selenium	0.181	mg/L		0.001		E200.8	12/08/18 04:06 / by
Selenium	0.192	mg/L		0.001		E200.8	12/12/18 23:20 / car
Silicon	16.3	mg/L		0.1		E200.7	12/06/18 13:50 / rlh
Silicon	87.6	mg/L		0.1		E200.8	12/12/18 23:20 / car
Silver	ND	mg/L		0.001		E200.8	12/06/18 18:52 / by
Sodium	21	mg/L		1		E200.7	12/06/18 13:50 / rlh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B18110980-001  
**Client Sample ID:** F1-2

**Revised Date:** 01/02/19  
**Report Date:** 12/04/18  
**Collection Date:** 11/12/18 11:00  
**Date Received:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DIGESTED DISSOLVED</b>							
Sodium	16	mg/L		1		E200.8	12/08/18 04:06 / by
Strontium	0.04	mg/L		0.01		E200.7	12/06/18 13:50 / rlh
Strontium	0.08	mg/L		0.01		E200.8	12/12/18 23:20 / car
Thallium	0.0009	mg/L		0.0005		E200.8	12/08/18 04:06 / by
Thallium	0.0017	mg/L		0.0005		E200.8	12/12/18 23:20 / car
Tin	ND	mg/L		0.01		E200.8	12/06/18 18:52 / by
Titanium	0.040	mg/L		0.005		E200.8	12/06/18 18:52 / by
Titanium	1.15	mg/L		0.005		E200.8	12/12/18 23:20 / car
Uranium	0.0004	mg/L		0.0003		E200.8	12/06/18 18:52 / by
Uranium	0.0017	mg/L		0.0003		E200.8	12/12/18 23:20 / car
Vanadium	0.14	mg/L		0.01		E200.8	12/12/18 23:20 / car
Zinc	0.12	mg/L	D	0.02		E200.8	12/06/18 18:52 / by
Zinc	0.17	mg/L	D	0.02		E200.8	12/12/18 23:20 / car
<b>METALS, DISSOLVED</b>							
Aluminum	4.4	mg/L	D	0.1		E200.7	11/15/18 21:48 / rlh
Aluminum	3.90	mg/L	D	0.07		E200.7	11/16/18 18:30 / rlh
Aluminum	12.1	mg/L	D	0.2		E200.7	11/19/18 13:58 / rlh
Aluminum	51.1	mg/L	D	0.2		E200.7	11/28/18 11:00 / rlh
Antimony	ND	mg/L	D	0.002		E200.8	11/15/18 19:15 / by
Arsenic	0.004	mg/L		0.001		E200.8	11/15/18 19:15 / by
Barium	0.29	mg/L		0.05		E200.8	11/15/18 19:15 / by
Barium	0.42	mg/L		0.05		E200.7	11/28/18 11:00 / rlh
Beryllium	ND	mg/L		0.001		E200.8	11/15/18 19:15 / by
Boron	ND	mg/L		0.05		E200.7	11/15/18 21:48 / rlh
Boron	0.11	mg/L		0.05		E200.7	11/28/18 11:00 / rlh
Cadmium	ND	mg/L		0.001		E200.8	11/15/18 19:15 / by
Calcium	11	mg/L		1		E200.7	11/15/18 21:48 / rlh
Chromium	0.028	mg/L		0.005		E200.8	11/15/18 19:15 / by
Cobalt	ND	mg/L		0.005		E200.8	11/15/18 19:15 / by
Copper	0.011	mg/L		0.005		E200.8	11/15/18 19:15 / by
Iron	5.90	mg/L		0.02		E200.8	11/15/18 19:15 / by
Iron	1.95	mg/L	D	0.03		E200.7	11/16/18 18:30 / rlh
Iron	4.63	mg/L	D	0.08		E200.7	11/19/18 13:58 / rlh
Iron	14.6	mg/L	D	0.08		E200.7	11/28/18 11:00 / rlh
Lead	0.006	mg/L		0.001		E200.8	11/15/18 19:15 / by
Lithium	ND	mg/L		0.1		E200.7	11/15/18 21:48 / rlh
Magnesium	3	mg/L		1		E200.7	11/15/18 21:48 / rlh
Magnesium	6	mg/L		1		E200.7	11/28/18 11:00 / rlh
Manganese	0.023	mg/L		0.001		E200.8	11/15/18 19:15 / by
Manganese	0.013	mg/L	D	0.004		E200.7	11/15/18 21:48 / rlh
Manganese	0.016	mg/L	D	0.004		E200.7	11/16/18 18:30 / rlh
Molybdenum	0.001	mg/L		0.001		E200.8	11/15/18 19:15 / by

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B18110980-001  
**Client Sample ID:** F1-2

**Revised Date:** 01/02/19  
**Report Date:** 12/04/18  
**Collection Date:** 11/12/18 11:00  
**Date Received:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Nickel	0.016	mg/L		0.005		E200.8	11/15/18 19:15 / by
Potassium	8	mg/L		1		E200.8	11/15/18 19:15 / by
Potassium	2	mg/L		1		E200.7	11/15/18 21:48 / rlh
Potassium	2	mg/L		1		E200.7	11/16/18 18:30 / rlh
Potassium	4	mg/L		1		E200.7	11/19/18 13:58 / rlh
Potassium	20	mg/L		1		E200.7	11/28/18 11:00 / rlh
Potassium	4	mg/L	D	2		E200.8	11/29/18 04:23 / by
Selenium	0.191	mg/L	D	0.002		E200.8	11/15/18 19:15 / by
Silicon	28.3	mg/L		0.1		E200.8	11/15/18 19:15 / by
Silicon	8.6	mg/L		0.1		E200.7	11/15/18 21:48 / rlh
Silicon	6.1	mg/L		0.1		E200.7	11/16/18 18:30 / rlh
Silicon	18.5	mg/L	D	0.3		E200.7	11/19/18 13:58 / rlh
Silicon	74.7	mg/L	D	0.3		E200.7	11/28/18 11:00 / rlh
Silver	ND	mg/L		0.001		E200.8	11/15/18 19:15 / by
Sodium	19	mg/L		1		E200.7	11/19/18 13:58 / rlh
Strontium	0.05	mg/L		0.01		E200.8	11/15/18 19:15 / by
Thallium	0.0008	mg/L		0.0005		E200.8	11/15/18 19:15 / by
Tin	ND	mg/L		0.01		E200.8	11/15/18 19:15 / by
Titanium	0.297	mg/L		0.005		E200.8	11/15/18 19:15 / by
Titanium	0.07	mg/L	D	0.01		E200.7	11/15/18 21:48 / rlh
Titanium	0.04	mg/L	D	0.01		E200.7	11/16/18 18:30 / rlh
Titanium	0.16	mg/L	D	0.03		E200.7	11/19/18 13:58 / rlh
Titanium	0.72	mg/L	D	0.03		E200.7	11/28/18 11:00 / rlh
Uranium	0.0008	mg/L		0.0003		E200.8	11/15/18 19:15 / by
Vanadium	0.05	mg/L		0.01		E200.8	11/15/18 19:15 / by
Vanadium	0.12	mg/L	D	0.09		E200.7	11/28/18 11:00 / rlh
Zinc	0.09	mg/L		0.01		E200.8	11/15/18 19:15 / by
Zinc	0.06	mg/L		0.01		E200.7	11/15/18 21:48 / rlh
Zinc	0.07	mg/L		0.01		E200.7	11/16/18 18:30 / rlh
Zinc	0.09	mg/L		0.01		E200.7	11/19/18 13:58 / rlh
Zinc	0.14	mg/L		0.01		E200.7	11/28/18 11:00 / rlh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B18110980-002  
**Client Sample ID:** R1-2

**Revised Date:** 01/02/19  
**Report Date:** 12/04/18  
**Collection Date:** 11/12/18 11:00  
**Date Received:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	26	mg/L	D	4		A5310 C	11/20/18 05:32 / eli-ca
<b>METALS, DIGESTED DISSOLVED</b>							
Aluminum	8.41	mg/L			0.03	E200.7	12/06/18 13:54 / rlh
Aluminum	6.96	mg/L			0.03	E200.8	12/06/18 19:13 / by
Aluminum	22.7	mg/L			0.03	E200.8	12/12/18 23:24 / car
Antimony	ND	mg/L	D		0.002	E200.8	12/06/18 19:13 / by
Arsenic	0.003	mg/L			0.001	E200.8	12/06/18 19:13 / by
Arsenic	0.005	mg/L			0.001	E200.8	12/08/18 04:10 / by
Arsenic	0.005	mg/L			0.001	E200.8	12/12/18 23:24 / car
Barium	0.21	mg/L			0.05	E200.7	12/06/18 13:54 / rlh
Beryllium	ND	mg/L			0.001	E200.8	12/06/18 19:13 / by
Boron	0.17	mg/L	D		0.09	E200.7	12/06/18 13:54 / rlh
Cadmium	ND	mg/L			0.001	E200.8	12/06/18 19:13 / by
Calcium	9	mg/L			1	E200.7	12/06/18 13:54 / rlh
Chromium	0.009	mg/L			0.005	E200.8	12/06/18 19:13 / by
Chromium	0.043	mg/L			0.005	E200.8	12/12/18 23:24 / car
Cobalt	0.006	mg/L			0.005	E200.8	12/06/18 19:13 / by
Cobalt	ND	mg/L			0.005	E200.8	12/08/18 04:10 / by
Cobalt	ND	mg/L			0.005	E200.8	12/12/18 23:24 / car
Copper	0.101	mg/L			0.005	E200.8	12/12/18 23:24 / car
Iron	6.46	mg/L	D		0.04	E200.7	12/06/18 13:54 / rlh
Iron	6.28	mg/L			0.02	E200.8	12/06/18 19:13 / by
Iron	5.74	mg/L			0.02	E200.8	12/08/18 04:10 / by
Iron	8.93	mg/L			0.02	E200.8	12/12/18 23:24 / car
Lead	0.006	mg/L			0.001	E200.8	12/06/18 19:13 / by
Lithium	ND	mg/L			0.1	E200.7	12/06/18 13:54 / rlh
Magnesium	3	mg/L			1	E200.7	12/06/18 13:54 / rlh
Manganese	0.055	mg/L			0.001	E200.8	12/06/18 19:13 / by
Molybdenum	0.003	mg/L			0.001	E200.8	12/06/18 19:13 / by
Molybdenum	ND	mg/L			0.001	E200.8	12/08/18 04:10 / by
Molybdenum	ND	mg/L			0.001	E200.8	12/12/18 23:24 / car
Nickel	0.027	mg/L			0.005	E200.8	12/06/18 19:13 / by
Nickel	0.021	mg/L			0.005	E200.8	12/08/18 04:10 / by
Nickel	0.021	mg/L			0.005	E200.8	12/12/18 23:24 / car
Potassium	4	mg/L			1	E200.7	12/06/18 13:54 / rlh
Potassium	1	mg/L			1	E200.8	12/06/18 19:13 / by
Selenium	0.046	mg/L			0.001	E200.8	12/06/18 19:13 / by
Silicon	15.9	mg/L			0.1	E200.7	12/06/18 13:54 / rlh
Silicon	42.1	mg/L			0.1	E200.8	12/12/18 23:24 / car
Silver	ND	mg/L			0.001	E200.8	12/06/18 19:13 / by
Sodium	14	mg/L			1	E200.7	12/06/18 13:54 / rlh
Strontium	0.03	mg/L			0.01	E200.7	12/06/18 13:54 / rlh

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B18110980-002  
**Client Sample ID:** R1-2

**Revised Date:** 01/02/19  
**Report Date:** 12/04/18  
**Collection Date:** 11/12/18 11:00  
**Date Received:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DIGESTED DISSOLVED</b>							
Thallium	0.0006	mg/L		0.0005		E200.8	12/08/18 04:10 / by
Tin	ND	mg/L		0.01		E200.8	12/06/18 19:13 / by
Titanium	0.044	mg/L		0.005		E200.8	12/06/18 19:13 / by
Titanium	0.345	mg/L		0.005		E200.8	12/12/18 23:24 / car
Uranium	ND	mg/L		0.0003		E200.8	12/06/18 19:13 / by
Vanadium	0.08	mg/L		0.01		E200.8	12/12/18 23:24 / car
Zinc	0.30	mg/L	D	0.02		E200.8	12/06/18 19:13 / by
<b>METALS, DISSOLVED</b>							
Aluminum	4.1	mg/L	D	0.1		E200.7	11/15/18 22:03 / rlh
Aluminum	44.3	mg/L	D	0.2		E200.7	11/28/18 11:04 / rlh
Antimony	ND	mg/L	D	0.002		E200.8	11/15/18 19:19 / by
Arsenic	0.005	mg/L		0.001		E200.8	11/15/18 19:19 / by
Barium	0.24	mg/L		0.05		E200.8	11/15/18 19:19 / by
Barium	0.22	mg/L		0.05		E200.7	11/15/18 22:03 / rlh
Barium	0.33	mg/L		0.05		E200.7	11/28/18 11:04 / rlh
Beryllium	ND	mg/L		0.001		E200.8	11/15/18 19:19 / by
Boron	0.05	mg/L		0.05		E200.7	11/15/18 22:03 / rlh
Boron	0.12	mg/L		0.05		E200.7	11/28/18 11:04 / rlh
Cadmium	ND	mg/L		0.001		E200.8	11/15/18 19:19 / by
Calcium	9	mg/L		1		E200.8	11/15/18 19:19 / by
Chromium	0.037	mg/L		0.005		E200.8	11/15/18 19:19 / by
Cobalt	ND	mg/L		0.005		E200.8	11/15/18 19:19 / by
Copper	0.119	mg/L		0.005		E200.8	11/15/18 19:19 / by
Iron	6.88	mg/L		0.02		E200.8	11/15/18 19:19 / by
Iron	11.6	mg/L	D	0.08		E200.7	11/28/18 11:04 / rlh
Lead	0.006	mg/L		0.001		E200.8	11/15/18 19:19 / by
Lithium	ND	mg/L		0.1		E200.7	11/15/18 22:03 / rlh
Magnesium	4	mg/L		1		E200.8	11/15/18 19:19 / by
Manganese	0.051	mg/L		0.001		E200.8	11/15/18 19:19 / by
Molybdenum	0.001	mg/L		0.001		E200.8	11/15/18 19:19 / by
Nickel	0.021	mg/L		0.005		E200.8	11/15/18 19:19 / by
Potassium	10	mg/L		1		E200.8	11/15/18 19:19 / by
Potassium	3	mg/L		1		E200.7	11/15/18 22:03 / rlh
Potassium	18	mg/L		1		E200.7	11/28/18 11:04 / rlh
Selenium	0.053	mg/L	D	0.002		E200.8	11/15/18 19:19 / by
Silicon	38.2	mg/L		0.1		E200.8	11/15/18 19:19 / by
Silicon	13.8	mg/L		0.1		E200.7	11/15/18 22:03 / rlh
Silicon	68.0	mg/L	D	0.3		E200.7	11/28/18 11:04 / rlh
Silver	0.001	mg/L		0.001		E200.8	11/15/18 19:19 / by
Sodium	14	mg/L		1		E200.8	11/15/18 19:19 / by
Strontium	0.04	mg/L		0.01		E200.8	11/15/18 19:19 / by
Thallium	0.0008	mg/L		0.0005		E200.8	11/15/18 19:19 / by

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B18110980-002  
**Client Sample ID:** R1-2

**Revised Date:** 01/02/19  
**Report Date:** 12/04/18  
**Collection Date:** 11/12/18 11:00  
**DateReceived:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Tin	ND	mg/L		0.01		E200.8	11/15/18 19:19 / by
Titanium	0.360	mg/L		0.005		E200.8	11/15/18 19:19 / by
Titanium	0.09	mg/L	D	0.01		E200.7	11/15/18 22:03 / rlh
Titanium	0.68	mg/L	D	0.03		E200.7	11/28/18 11:04 / rlh
Uranium	0.0007	mg/L		0.0003		E200.8	11/15/18 19:19 / by
Vanadium	0.07	mg/L		0.01		E200.8	11/15/18 19:19 / by
Zinc	0.29	mg/L		0.01		E200.8	11/15/18 19:19 / by

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B18110980-003  
**Client Sample ID:** E1

**Revised Date:** 01/02/19  
**Report Date:** 12/04/18  
**Collection Date:** 11/12/18 11:00  
**Date Received:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	14	mg/L	D	10		A5310 C	11/20/18 05:47 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.22	mg/L		0.03		E200.7	11/14/18 15:48 / rlh
Antimony	ND	mg/L	D	0.002		E200.8	11/16/18 20:38 / by
Arsenic	ND	mg/L	D	0.004		E200.8	11/20/18 23:38 / by
Barium	0.07	mg/L		0.05		E200.7	11/14/18 15:48 / rlh
Beryllium	ND	mg/L		0.001		E200.7	11/14/18 15:48 / rlh
Boron	ND	mg/L		0.05		E200.7	11/14/18 15:48 / rlh
Cadmium	ND	mg/L		0.001		E200.8	11/16/18 20:38 / by
Calcium	39	mg/L		1		E200.7	11/14/18 15:48 / rlh
Chromium	ND	mg/L		0.005		E200.8	11/16/18 20:38 / by
Cobalt	ND	mg/L		0.005		E200.8	11/16/18 20:38 / by
Copper	0.006	mg/L		0.005		E200.7	11/14/18 15:48 / rlh
Iron	0.09	mg/L		0.02		E200.7	11/14/18 15:48 / rlh
Lead	ND	mg/L		0.001		E200.8	11/16/18 20:38 / by
Lithium	ND	mg/L		0.1		E200.7	11/14/18 15:48 / rlh
Magnesium	33	mg/L		1		E200.7	11/14/18 15:48 / rlh
Manganese	0.006	mg/L		0.001		E200.8	11/16/18 20:38 / by
Molybdenum	0.014	mg/L		0.001		E200.8	11/16/18 20:38 / by
Nickel	ND	mg/L		0.005		E200.7	11/14/18 15:48 / rlh
Potassium	2	mg/L		1		E200.7	11/14/18 15:48 / rlh
Selenium	0.028	mg/L	D	0.002		E200.8	11/16/18 20:38 / by
Silicon	2.1	mg/L		0.1		E200.7	11/14/18 15:48 / rlh
Silver	ND	mg/L		0.001		E200.8	11/16/18 20:38 / by
Sodium	6	mg/L		1		E200.7	11/14/18 15:48 / rlh
Strontium	0.21	mg/L		0.01		E200.7	11/14/18 15:48 / rlh
Thallium	ND	mg/L	D	0.001		E200.8	11/26/18 19:14 / rlh
Tin	ND	mg/L		0.01		E200.8	11/16/18 20:38 / by
Titanium	0.008	mg/L		0.005		E200.7	11/14/18 15:48 / rlh
Uranium	0.0053	mg/L		0.0003		E200.8	11/16/18 20:38 / by
Vanadium	ND	mg/L	D	0.02		E200.8	11/26/18 19:14 / rlh
Zinc	0.02	mg/L		0.01		E200.7	11/14/18 15:48 / rlh

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.





### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B18110980-004  
**Client Sample ID:** F2-2

**Revised Date:** 01/02/19  
**Report Date:** 12/04/18  
**Collection Date:** 11/12/18 11:00  
**Date Received:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	8	mg/L	D	4		A5310 C	11/20/18 06:05 / eli-ca
<b>METALS, DIGESTED DISSOLVED</b>							
Aluminum	9.23	mg/L		0.03		E200.7	12/06/18 13:58 / rlh
Aluminum	7.75	mg/L		0.03		E200.8	12/06/18 19:17 / by
Aluminum	21.1	mg/L		0.03		E200.8	12/12/18 23:27 / car
Antimony	ND	mg/L	D	0.002		E200.8	12/06/18 19:17 / by
Arsenic	0.004	mg/L		0.001		E200.8	12/06/18 19:17 / by
Barium	0.25	mg/L		0.05		E200.7	12/06/18 13:58 / rlh
Beryllium	ND	mg/L		0.001		E200.8	12/06/18 19:17 / by
Boron	0.13	mg/L	D	0.09		E200.7	12/06/18 13:58 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/06/18 19:17 / by
Calcium	11	mg/L		1		E200.7	12/06/18 13:58 / rlh
Chromium	0.008	mg/L		0.005		E200.8	12/06/18 19:17 / by
Chromium	0.043	mg/L		0.005		E200.8	12/12/18 23:27 / car
Cobalt	ND	mg/L		0.005		E200.8	12/06/18 19:17 / by
Copper	0.015	mg/L		0.005		E200.8	12/12/18 23:27 / car
Iron	7.59	mg/L	D	0.04		E200.7	12/06/18 13:58 / rlh
Lead	0.006	mg/L		0.001		E200.8	12/06/18 19:17 / by
Lithium	ND	mg/L		0.1		E200.7	12/06/18 13:58 / rlh
Magnesium	3	mg/L		1		E200.7	12/06/18 13:58 / rlh
Manganese	0.034	mg/L		0.001		E200.8	12/06/18 19:17 / by
Molybdenum	0.002	mg/L		0.001		E200.8	12/06/18 19:17 / by
Nickel	0.027	mg/L		0.005		E200.8	12/06/18 19:17 / by
Nickel	0.019	mg/L		0.005		E200.8	12/08/18 04:14 / by
Nickel	0.019	mg/L		0.005		E200.8	12/12/18 23:27 / car
Potassium	4	mg/L		1		E200.7	12/06/18 13:58 / rlh
Potassium	1	mg/L		1		E200.8	12/06/18 19:17 / by
Selenium	0.195	mg/L		0.001		E200.8	12/06/18 19:17 / by
Silicon	13.6	mg/L		0.1		E200.7	12/06/18 13:58 / rlh
Silicon	38.0	mg/L		0.1		E200.8	12/12/18 23:27 / car
Silver	ND	mg/L		0.001		E200.8	12/06/18 19:17 / by
Sodium	22	mg/L		1		E200.7	12/06/18 13:58 / rlh
Strontium	0.05	mg/L		0.01		E200.7	12/06/18 13:58 / rlh
Thallium	0.0007	mg/L		0.0005		E200.8	12/08/18 04:14 / by
Tin	ND	mg/L		0.01		E200.8	12/06/18 19:17 / by
Titanium	0.037	mg/L		0.005		E200.8	12/06/18 19:17 / by
Titanium	0.256	mg/L		0.005		E200.8	12/12/18 23:27 / car
Uranium	ND	mg/L		0.0003		E200.8	12/06/18 19:17 / by
Uranium	0.0008	mg/L		0.0003		E200.8	12/12/18 23:27 / car
Vanadium	0.08	mg/L		0.01		E200.8	12/12/18 23:27 / car
Zinc	0.11	mg/L	D	0.02		E200.8	12/06/18 19:17 / by

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B18110980-004  
**Client Sample ID:** F2-2

**Revised Date:** 01/02/19  
**Report Date:** 12/04/18  
**Collection Date:** 11/12/18 11:00  
**Date Received:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Aluminum	4.6	mg/L	D	0.1		E200.7	11/15/18 22:06 / rlh
Aluminum	42.8	mg/L	D	0.2		E200.7	11/28/18 11:23 / rlh
Aluminum	14.8	mg/L		0.03		E200.8	11/29/18 04:35 / by
Antimony	ND	mg/L	D	0.002		E200.8	11/15/18 19:23 / by
Arsenic	0.004	mg/L		0.001		E200.8	11/15/18 19:23 / by
Barium	0.25	mg/L		0.05		E200.8	11/15/18 19:23 / by
Beryllium	ND	mg/L		0.001		E200.8	11/15/18 19:23 / by
Boron	ND	mg/L		0.05		E200.7	11/15/18 22:06 / rlh
Cadmium	ND	mg/L		0.001		E200.8	11/15/18 19:23 / by
Calcium	11	mg/L		1		E200.8	11/15/18 19:23 / by
Chromium	0.028	mg/L		0.005		E200.8	11/15/18 19:23 / by
Cobalt	ND	mg/L		0.005		E200.8	11/15/18 19:23 / by
Copper	0.010	mg/L		0.005		E200.8	11/15/18 19:23 / by
Copper	0.153	mg/L		0.005		E200.8	11/29/18 04:35 / by
Iron	5.57	mg/L		0.02		E200.8	11/15/18 19:23 / by
Iron	12.1	mg/L	D	0.08		E200.7	11/28/18 11:23 / rlh
Iron	4.44	mg/L		0.02		E200.8	11/29/18 04:35 / by
Lead	0.005	mg/L		0.001		E200.8	11/15/18 19:23 / by
Lithium	ND	mg/L		0.1		E200.7	11/15/18 22:06 / rlh
Magnesium	4	mg/L		1		E200.8	11/15/18 19:23 / by
Manganese	0.020	mg/L		0.001		E200.8	11/15/18 19:23 / by
Molybdenum	0.001	mg/L		0.001		E200.8	11/15/18 19:23 / by
Nickel	0.017	mg/L		0.005		E200.8	11/15/18 19:23 / by
Potassium	7	mg/L		1		E200.8	11/15/18 19:23 / by
Potassium	2	mg/L		1		E200.7	11/15/18 22:06 / rlh
Potassium	17	mg/L		1		E200.7	11/28/18 11:23 / rlh
Potassium	5	mg/L	D	2		E200.8	11/29/18 04:35 / by
Selenium	0.202	mg/L	D	0.002		E200.8	11/15/18 19:23 / by
Silicon	27.6	mg/L		0.1		E200.8	11/15/18 19:23 / by
Silicon	8.8	mg/L		0.1		E200.7	11/15/18 22:06 / rlh
Silicon	62.8	mg/L	D	0.3		E200.7	11/28/18 11:23 / rlh
Silicon	25.0	mg/L	D	0.2		E200.8	11/29/18 04:35 / by
Silver	ND	mg/L		0.001		E200.8	11/15/18 19:23 / by
Sodium	21	mg/L		1		E200.8	11/15/18 19:23 / by
Strontium	0.05	mg/L		0.01		E200.8	11/15/18 19:23 / by
Thallium	0.0007	mg/L		0.0005		E200.8	11/15/18 19:23 / by
Tin	ND	mg/L		0.01		E200.8	11/15/18 19:23 / by
Titanium	0.270	mg/L		0.005		E200.8	11/15/18 19:23 / by
Titanium	0.07	mg/L	D	0.01		E200.7	11/15/18 22:06 / rlh
Titanium	0.61	mg/L	D	0.03		E200.7	11/28/18 11:23 / rlh
Titanium	0.205	mg/L		0.005		E200.8	11/29/18 04:35 / by
Uranium	0.0006	mg/L		0.0003		E200.8	11/15/18 19:23 / by
Vanadium	0.05	mg/L		0.01		E200.8	11/15/18 19:23 / by

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B18110980-004  
**Client Sample ID:** F2-2

**Revised Date:** 01/02/19  
**Report Date:** 12/04/18  
**Collection Date:** 11/12/18 11:00  
**DateReceived:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Zinc	0.07	mg/L		0.01		E200.8	11/15/18 19:23 / by
Zinc	0.05	mg/L		0.01		E200.7	11/15/18 22:06 / rlh
Zinc	0.12	mg/L		0.01		E200.7	11/28/18 11:23 / rlh

**Report Definitions:** RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B18110980-005  
**Client Sample ID:** R2-2

**Revised Date:** 01/02/19  
**Report Date:** 12/04/18  
**Collection Date:** 11/12/18 11:00  
**Date Received:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	20	mg/L	D	4		A5310 C	11/20/18 06:21 / eli-ca
<b>METALS, DIGESTED DISSOLVED</b>							
Aluminum	6.17	mg/L				E200.7	12/06/18 14:01 / rlh
Antimony	ND	mg/L	D			E200.8	12/06/18 19:21 / by
Arsenic	0.002	mg/L				E200.8	12/06/18 19:21 / by
Barium	0.15	mg/L				E200.7	12/06/18 14:01 / rlh
Beryllium	ND	mg/L				E200.8	12/06/18 19:21 / by
Boron	0.15	mg/L	D			E200.7	12/06/18 14:01 / rlh
Cadmium	ND	mg/L				E200.8	12/06/18 19:21 / by
Calcium	7	mg/L				E200.7	12/06/18 14:01 / rlh
Chromium	0.007	mg/L				E200.8	12/06/18 19:21 / by
Cobalt	ND	mg/L				E200.8	12/06/18 19:21 / by
Copper	0.108	mg/L				E200.8	12/12/18 23:31 / car
Iron	4.10	mg/L	D			E200.7	12/06/18 14:01 / rlh
Lead	0.004	mg/L				E200.8	12/06/18 19:21 / by
Lithium	ND	mg/L				E200.7	12/06/18 14:01 / rlh
Magnesium	3	mg/L				E200.7	12/06/18 14:01 / rlh
Manganese	0.037	mg/L				E200.8	12/06/18 19:21 / by
Molybdenum	0.002	mg/L				E200.8	12/06/18 19:21 / by
Nickel	0.021	mg/L				E200.8	12/06/18 19:21 / by
Potassium	3	mg/L				E200.7	12/06/18 14:01 / rlh
Selenium	0.055	mg/L				E200.8	12/06/18 19:21 / by
Silicon	12.6	mg/L				E200.7	12/06/18 14:01 / rlh
Silver	ND	mg/L				E200.8	12/06/18 19:21 / by
Sodium	13	mg/L				E200.7	12/06/18 14:01 / rlh
Strontium	0.03	mg/L				E200.7	12/06/18 14:01 / rlh
Thallium	ND	mg/L				E200.8	12/08/18 04:19 / by
Tin	ND	mg/L				E200.8	12/06/18 19:21 / by
Titanium	0.035	mg/L				E200.8	12/06/18 19:21 / by
Uranium	ND	mg/L				E200.8	12/06/18 19:21 / by
Vanadium	0.05	mg/L				E200.8	12/12/18 23:31 / car
Zinc	0.22	mg/L	D			E200.8	12/06/18 19:21 / by
<b>METALS, DISSOLVED</b>							
Aluminum	7.2	mg/L	D			E200.7	11/15/18 22:10 / rlh
Aluminum	3.74	mg/L	D			E200.7	11/16/18 18:34 / rlh
Aluminum	16.8	mg/L	D			E200.7	11/19/18 14:02 / rlh
Aluminum	24.7	mg/L	D			E200.7	11/28/18 11:27 / rlh
Aluminum	14.7	mg/L				E200.8	11/29/18 04:56 / by
Antimony	ND	mg/L	D			E200.8	11/15/18 19:27 / by
Arsenic	0.005	mg/L				E200.8	11/15/18 19:27 / by
Barium	0.20	mg/L				E200.8	11/15/18 19:27 / by

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B18110980-005  
**Client Sample ID:** R2-2

**Revised Date:** 01/02/19  
**Report Date:** 12/04/18  
**Collection Date:** 11/12/18 11:00  
**Date Received:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Beryllium	ND	mg/L		0.001		E200.8	11/15/18 19:27 / by
Boron	ND	mg/L		0.05		E200.7	11/15/18 22:10 / rlh
Boron	0.07	mg/L		0.05		E200.7	11/28/18 11:27 / rlh
Cadmium	ND	mg/L		0.001		E200.8	11/15/18 19:27 / by
Calcium	8	mg/L		1		E200.7	11/15/18 22:10 / rlh
Chromium	0.035	mg/L		0.005		E200.8	11/15/18 19:27 / by
Chromium	0.021	mg/L		0.005		E200.8	11/29/18 04:56 / by
Cobalt	ND	mg/L		0.005		E200.8	11/15/18 19:27 / by
Copper	0.129	mg/L		0.005		E200.8	11/15/18 19:27 / by
Iron	7.14	mg/L		0.02		E200.8	11/15/18 19:27 / by
Iron	1.35	mg/L	D	0.03		E200.7	11/16/18 18:34 / rlh
Iron	4.88	mg/L	D	0.08		E200.7	11/19/18 14:02 / rlh
Iron	6.76	mg/L	D	0.08		E200.7	11/28/18 11:27 / rlh
Iron	4.37	mg/L		0.02		E200.8	11/29/18 04:56 / by
Lead	0.004	mg/L		0.001		E200.8	11/15/18 19:27 / by
Lithium	ND	mg/L		0.1		E200.7	11/15/18 22:10 / rlh
Magnesium	3	mg/L		1		E200.7	11/15/18 22:10 / rlh
Manganese	0.035	mg/L		0.001		E200.8	11/15/18 19:27 / by
Manganese	0.446	mg/L	D	0.003		E200.8	11/29/18 04:56 / by
Molybdenum	ND	mg/L		0.001		E200.8	11/15/18 19:27 / by
Nickel	0.019	mg/L		0.005		E200.8	11/15/18 19:27 / by
Potassium	9	mg/L		1		E200.8	11/15/18 19:27 / by
Potassium	2	mg/L		1		E200.7	11/15/18 22:10 / rlh
Potassium	2	mg/L		1		E200.7	11/16/18 18:34 / rlh
Potassium	6	mg/L		1		E200.7	11/19/18 14:02 / rlh
Potassium	10	mg/L		1		E200.7	11/28/18 11:27 / rlh
Potassium	5	mg/L	D	2		E200.8	11/29/18 04:56 / by
Selenium	0.066	mg/L	D	0.002		E200.8	11/15/18 19:27 / by
Selenium	0.045	mg/L	D	0.006		E200.8	11/29/18 04:56 / by
Silicon	40.3	mg/L		0.1		E200.8	11/15/18 19:27 / by
Silicon	11.4	mg/L		0.1		E200.7	11/15/18 22:10 / rlh
Silicon	9.9	mg/L		0.1		E200.7	11/16/18 18:34 / rlh
Silicon	29.5	mg/L	D	0.3		E200.7	11/19/18 14:02 / rlh
Silicon	40.3	mg/L	D	0.3		E200.7	11/28/18 11:27 / rlh
Silicon	23.6	mg/L	D	0.2		E200.8	11/29/18 04:56 / by
Silver	ND	mg/L		0.001		E200.8	11/15/18 19:27 / by
Sodium	13	mg/L		1		E200.7	11/19/18 14:02 / rlh
Strontium	0.04	mg/L		0.01		E200.8	11/15/18 19:27 / by
Thallium	0.0007	mg/L		0.0005		E200.8	11/15/18 19:27 / by
Tin	ND	mg/L		0.01		E200.8	11/15/18 19:27 / by
Titanium	0.346	mg/L		0.005		E200.8	11/15/18 19:27 / by
Titanium	0.07	mg/L	D	0.01		E200.7	11/15/18 22:10 / rlh
Titanium	0.05	mg/L	D	0.01		E200.7	11/16/18 18:34 / rlh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B18110980-005  
**Client Sample ID:** R2-2

**Revised Date:** 01/02/19  
**Report Date:** 12/04/18  
**Collection Date:** 11/12/18 11:00  
**DateReceived:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Titanium	0.26	mg/L	D	0.03		E200.7	11/19/18 14:02 / rlh
Titanium	0.38	mg/L	D	0.03		E200.7	11/28/18 11:27 / rlh
Titanium	0.223	mg/L		0.005		E200.8	11/29/18 04:56 / by
Uranium	0.0004	mg/L		0.0003		E200.8	11/15/18 19:27 / by
Vanadium	0.06	mg/L		0.01		E200.8	11/15/18 19:27 / by
Zinc	0.23	mg/L		0.01		E200.8	11/15/18 19:27 / by

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B18110980-006  
**Client Sample ID:** E2

**Revised Date:** 01/02/19  
**Report Date:** 12/04/18  
**Collection Date:** 11/12/18 11:00  
**Date Received:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	19	mg/L	D	4		A5310 C	11/20/18 06:37 / eli-ca
<b>METALS, DIGESTED DISSOLVED</b>							
Aluminum	0.09	mg/L	D	0.06		E200.7	12/06/18 14:05 / rlh
Aluminum	0.33	mg/L		0.03		E200.8	12/06/18 19:25 / by
Aluminum	0.09	mg/L		0.03		E200.8	12/12/18 23:35 / car
Antimony	ND	mg/L	D	0.004		E200.8	12/06/18 19:25 / by
Arsenic	ND	mg/L		0.001		E200.8	12/06/18 19:25 / by
Barium	0.06	mg/L		0.05		E200.8	12/06/18 19:25 / by
Beryllium	ND	mg/L		0.001		E200.8	12/06/18 19:25 / by
Boron	0.3	mg/L	D	0.2		E200.7	12/06/18 14:05 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/06/18 19:25 / by
Calcium	55	mg/L		1		E200.7	12/06/18 14:05 / rlh
Chromium	ND	mg/L		0.005		E200.8	12/06/18 19:25 / by
Cobalt	0.005	mg/L		0.005		E200.8	12/06/18 19:25 / by
Cobalt	ND	mg/L		0.005		E200.8	12/08/18 04:23 / by
Copper	ND	mg/L	D	0.009		E200.8	12/12/18 23:35 / car
Iron	0.08	mg/L	D	0.07		E200.7	12/06/18 14:05 / rlh
Iron	0.93	mg/L		0.02		E200.8	12/06/18 19:25 / by
Iron	0.07	mg/L		0.02		E200.8	12/08/18 04:23 / by
Iron	0.08	mg/L	D	0.03		E200.8	12/12/18 23:35 / car
Lead	ND	mg/L		0.001		E200.8	12/06/18 19:25 / by
Lithium	ND	mg/L		0.1		E200.7	12/06/18 14:05 / rlh
Magnesium	41	mg/L		1		E200.7	12/06/18 14:05 / rlh
Manganese	0.025	mg/L		0.001		E200.8	12/06/18 19:25 / by
Manganese	0.003	mg/L		0.001		E200.8	12/12/18 23:35 / car
Molybdenum	0.011	mg/L		0.001		E200.8	12/06/18 19:25 / by
Molybdenum	0.008	mg/L		0.001		E200.8	12/08/18 04:23 / by
Molybdenum	0.006	mg/L		0.001		E200.8	12/12/18 23:35 / car
Nickel	0.024	mg/L	D	0.007		E200.8	12/06/18 19:25 / by
Potassium	2	mg/L		1		E200.7	12/06/18 14:05 / rlh
Selenium	0.022	mg/L	D	0.002		E200.8	12/06/18 19:25 / by
Silicon	1.4	mg/L	D	0.2		E200.7	12/06/18 14:05 / rlh
Silver	ND	mg/L		0.001		E200.8	12/06/18 19:25 / by
Sodium	5	mg/L		1		E200.7	12/06/18 14:05 / rlh
Strontium	0.26	mg/L		0.01		E200.7	12/06/18 14:05 / rlh
Thallium	ND	mg/L		0.0005		E200.8	12/12/18 23:35 / car
Tin	ND	mg/L		0.01		E200.8	12/06/18 19:25 / by
Titanium	ND	mg/L		0.005		E200.8	12/06/18 19:25 / by
Uranium	0.0046	mg/L	D	0.0005		E200.8	12/12/18 23:35 / car
Vanadium	ND	mg/L		0.01		E200.8	12/12/18 23:35 / car
Zinc	ND	mg/L	D	0.04		E200.8	12/06/18 19:25 / by

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B18110980-006  
**Client Sample ID:** E2

**Revised Date:** 01/02/19  
**Report Date:** 12/04/18  
**Collection Date:** 11/12/18 11:00  
**Date Received:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Aluminum	0.10	mg/L		0.03		E200.7	11/14/18 15:52 / rlh
Aluminum	ND	mg/L		0.03		E200.8	11/16/18 20:58 / by
Aluminum	0.07	mg/L		0.03		E200.8	11/20/18 23:42 / by
Aluminum	0.06	mg/L		0.03		E200.8	11/26/18 19:18 / rlh
Antimony	ND	mg/L		0.001		E200.8	11/26/18 19:18 / rlh
Arsenic	ND	mg/L		0.001		E200.8	11/26/18 19:18 / rlh
Barium	0.07	mg/L		0.05		E200.7	11/14/18 15:52 / rlh
Beryllium	ND	mg/L		0.001		E200.7	11/14/18 15:52 / rlh
Boron	ND	mg/L		0.05		E200.7	11/14/18 15:52 / rlh
Boron	0.07	mg/L		0.05		E200.8	11/26/18 19:18 / rlh
Cadmium	ND	mg/L		0.001		E200.8	11/16/18 20:58 / by
Calcium	62	mg/L		1		E200.7	11/14/18 15:52 / rlh
Chromium	ND	mg/L		0.005		E200.8	11/16/18 20:58 / by
Cobalt	ND	mg/L		0.005		E200.8	11/16/18 20:58 / by
Copper	ND	mg/L		0.005		E200.7	11/14/18 15:52 / rlh
Iron	0.04	mg/L		0.02		E200.7	11/14/18 15:52 / rlh
Iron	0.03	mg/L		0.02		E200.8	11/16/18 20:58 / by
Iron	0.06	mg/L		0.02		E200.8	11/26/18 19:18 / rlh
Lead	ND	mg/L		0.001		E200.8	11/16/18 20:58 / by
Lithium	ND	mg/L		0.1		E200.7	11/14/18 15:52 / rlh
Magnesium	47	mg/L		1		E200.7	11/14/18 15:52 / rlh
Manganese	0.003	mg/L		0.001		E200.8	11/16/18 20:58 / by
Molybdenum	0.010	mg/L		0.001		E200.8	11/16/18 20:58 / by
Nickel	ND	mg/L		0.005		E200.7	11/14/18 15:52 / rlh
Potassium	2	mg/L		1		E200.7	11/14/18 15:52 / rlh
Selenium	0.031	mg/L	D	0.002		E200.8	11/16/18 20:58 / by
Silicon	1.7	mg/L		0.1		E200.7	11/14/18 15:52 / rlh
Silver	ND	mg/L		0.001		E200.8	11/16/18 20:58 / by
Sodium	5	mg/L		1		E200.7	11/14/18 15:52 / rlh
Strontium	0.29	mg/L		0.01		E200.7	11/14/18 15:52 / rlh
Thallium	ND	mg/L	D	0.0008		E200.8	11/20/18 23:42 / by
Tin	ND	mg/L		0.01		E200.8	11/16/18 20:58 / by
Titanium	ND	mg/L		0.005		E200.8	11/16/18 20:58 / by
Uranium	0.0066	mg/L		0.0003		E200.8	11/16/18 20:58 / by
Vanadium	ND	mg/L		0.01		E200.8	11/26/18 19:18 / rlh
Zinc	0.01	mg/L		0.01		E200.7	11/14/18 15:52 / rlh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.





### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B18110980-007  
**Client Sample ID:** F3-2

**Revised Date:** 01/02/19  
**Report Date:** 12/04/18  
**Collection Date:** 11/12/18 11:00  
**Date Received:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	53	mg/L	D	4		A5310 C	11/20/18 06:59 / eli-ca
<b>METALS, DIGESTED DISSOLVED</b>							
Aluminum	9.56	mg/L		0.03		E200.7	12/06/18 15:18 / rlh
Aluminum	8.73	mg/L		0.03		E200.8	12/07/18 19:58 / by
Aluminum	7.33	mg/L		0.03		E200.8	12/13/18 01:40 / car
Antimony	ND	mg/L	D	0.002		E200.8	12/07/18 19:58 / by
Arsenic	0.005	mg/L		0.001		E200.8	12/07/18 19:58 / by
Barium	0.25	mg/L		0.05		E200.7	12/06/18 15:18 / rlh
Beryllium	ND	mg/L		0.001		E200.8	12/07/18 19:58 / by
Boron	0.13	mg/L	D	0.09		E200.7	12/06/18 15:18 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/07/18 19:58 / by
Calcium	10	mg/L		1		E200.7	12/06/18 15:18 / rlh
Chromium	0.009	mg/L		0.005		E200.8	12/07/18 19:58 / by
Cobalt	ND	mg/L		0.005		E200.8	12/07/18 19:58 / by
Copper	0.012	mg/L		0.005		E200.8	12/13/18 01:40 / car
Iron	7.95	mg/L	D	0.04		E200.7	12/06/18 15:18 / rlh
Lead	0.006	mg/L		0.001		E200.8	12/07/18 19:58 / by
Lithium	ND	mg/L		0.1		E200.7	12/06/18 15:18 / rlh
Magnesium	3	mg/L		1		E200.7	12/06/18 15:18 / rlh
Manganese	0.026	mg/L		0.001		E200.8	12/13/18 01:40 / car
Molybdenum	ND	mg/L		0.001		E200.8	12/07/18 19:58 / by
Nickel	0.019	mg/L		0.005		E200.8	12/07/18 19:58 / by
Potassium	4	mg/L		1		E200.7	12/06/18 15:18 / rlh
Selenium	0.185	mg/L		0.001		E200.8	12/07/18 19:58 / by
Silicon	14.4	mg/L		0.1		E200.7	12/06/18 15:18 / rlh
Silicon	11.0	mg/L		0.1		E200.8	12/13/18 01:40 / car
Silver	ND	mg/L		0.001		E200.8	12/07/18 19:58 / by
Sodium	21	mg/L		1		E200.7	12/06/18 15:18 / rlh
Strontium	0.04	mg/L		0.01		E200.7	12/06/18 15:18 / rlh
Thallium	0.0005	mg/L		0.0005		E200.8	12/07/18 19:58 / by
Tin	ND	mg/L		0.01		E200.8	12/07/18 19:58 / by
Titanium	0.06	mg/L	D	0.03		E200.7	12/06/18 15:18 / rlh
Titanium	0.023	mg/L		0.005		E200.8	12/13/18 01:40 / car
Uranium	0.0006	mg/L		0.0003		E200.8	12/13/18 01:40 / car
Vanadium	0.02	mg/L		0.01		E200.8	12/13/18 01:40 / car
Zinc	0.11	mg/L	D	0.02		E200.8	12/13/18 01:40 / car
<b>METALS, DISSOLVED</b>							
Aluminum	9.3	mg/L	D	0.1		E200.7	11/15/18 22:49 / rlh
Antimony	ND	mg/L	D	0.002		E200.8	11/15/18 19:31 / by
Arsenic	0.005	mg/L		0.001		E200.8	11/15/18 19:31 / by
Barium	0.26	mg/L		0.05		E200.8	11/15/18 19:31 / by

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B18110980-007  
**Client Sample ID:** F3-2

**Revised Date:** 01/02/19  
**Report Date:** 12/04/18  
**Collection Date:** 11/12/18 11:00  
**Date Received:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Beryllium	ND	mg/L		0.001		E200.8	11/15/18 19:31 / by
Boron	ND	mg/L		0.05		E200.7	11/15/18 22:49 / rlh
Cadmium	ND	mg/L		0.001		E200.8	11/15/18 19:31 / by
Calcium	9	mg/L		1		E200.7	11/15/18 22:49 / rlh
Chromium	0.028	mg/L		0.005		E200.8	11/15/18 19:31 / by
Chromium	ND	mg/L	D	0.02		E200.7	11/15/18 22:49 / rlh
Cobalt	ND	mg/L		0.005		E200.8	11/15/18 19:31 / by
Copper	0.010	mg/L		0.005		E200.8	11/15/18 19:31 / by
Iron	5.84	mg/L		0.02		E200.8	11/15/18 19:31 / by
Iron	4.54	mg/L	D	0.03		E200.7	11/15/18 22:49 / rlh
Lead	0.006	mg/L		0.001		E200.8	11/15/18 19:31 / by
Lithium	ND	mg/L		0.1		E200.7	11/15/18 22:49 / rlh
Magnesium	3	mg/L		1		E200.7	11/15/18 22:49 / rlh
Manganese	0.022	mg/L		0.001		E200.8	11/15/18 19:31 / by
Molybdenum	ND	mg/L		0.001		E200.8	11/15/18 19:31 / by
Nickel	0.016	mg/L		0.005		E200.8	11/15/18 19:31 / by
Potassium	7	mg/L		1		E200.8	11/15/18 19:31 / by
Potassium	5	mg/L		1		E200.7	11/15/18 22:49 / rlh
Selenium	0.203	mg/L	D	0.002		E200.8	11/15/18 19:31 / by
Silicon	28.5	mg/L		0.1		E200.8	11/15/18 19:31 / by
Silicon	22.4	mg/L		0.1		E200.7	11/15/18 22:49 / rlh
Silver	ND	mg/L		0.001		E200.8	11/15/18 19:31 / by
Sodium	20	mg/L		1		E200.7	11/15/18 22:49 / rlh
Strontium	0.04	mg/L		0.01		E200.8	11/15/18 19:31 / by
Thallium	0.0008	mg/L		0.0005		E200.8	11/15/18 19:31 / by
Tin	ND	mg/L		0.01		E200.8	11/15/18 19:31 / by
Titanium	0.261	mg/L		0.005		E200.8	11/15/18 19:31 / by
Titanium	0.21	mg/L	D	0.01		E200.7	11/15/18 22:49 / rlh
Uranium	0.0006	mg/L		0.0003		E200.8	11/15/18 19:31 / by
Vanadium	0.05	mg/L		0.01		E200.8	11/15/18 19:31 / by
Zinc	0.08	mg/L		0.01		E200.8	11/15/18 19:31 / by

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B18110980-008  
**Client Sample ID:** R3-2

**Revised Date:** 01/02/19  
**Report Date:** 12/04/18  
**Collection Date:** 11/12/18 11:00  
**Date Received:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	238	mg/L	D	20		A5310 C	11/20/18 10:35 / eli-ca
<b>METALS, DIGESTED DISSOLVED</b>							
Aluminum	9.51	mg/L			0.03	E200.7	12/06/18 15:22 / rlh
Antimony	ND	mg/L	D		0.002	E200.8	12/07/18 20:02 / by
Arsenic	0.008	mg/L			0.001	E200.8	12/07/18 20:02 / by
Barium	0.20	mg/L			0.05	E200.7	12/06/18 15:22 / rlh
Beryllium	ND	mg/L			0.001	E200.8	12/07/18 20:02 / by
Boron	0.15	mg/L	D		0.09	E200.7	12/06/18 15:22 / rlh
Cadmium	ND	mg/L			0.001	E200.8	12/07/18 20:02 / by
Calcium	8	mg/L			1	E200.7	12/06/18 15:22 / rlh
Chromium	0.009	mg/L			0.005	E200.8	12/07/18 20:02 / by
Cobalt	ND	mg/L			0.005	E200.8	12/07/18 20:02 / by
Copper	0.023	mg/L			0.005	E200.8	12/13/18 01:44 / car
Iron	7.33	mg/L	D		0.04	E200.7	12/06/18 15:22 / rlh
Lead	0.006	mg/L			0.001	E200.8	12/07/18 20:02 / by
Lithium	ND	mg/L			0.1	E200.7	12/06/18 15:22 / rlh
Magnesium	3	mg/L			1	E200.7	12/06/18 15:22 / rlh
Manganese	0.032	mg/L			0.001	E200.8	12/13/18 01:44 / car
Molybdenum	ND	mg/L			0.001	E200.8	12/07/18 20:02 / by
Nickel	0.020	mg/L			0.005	E200.8	12/07/18 20:02 / by
Potassium	5	mg/L			1	E200.7	12/06/18 15:22 / rlh
Selenium	0.079	mg/L			0.001	E200.8	12/07/18 20:02 / by
Silicon	15.7	mg/L			0.1	E200.7	12/06/18 15:22 / rlh
Silicon	12.2	mg/L			0.1	E200.8	12/13/18 01:44 / car
Silver	0.002	mg/L			0.001	E200.8	12/07/18 20:02 / by
Sodium	11	mg/L			1	E200.7	12/06/18 15:22 / rlh
Strontium	0.03	mg/L			0.01	E200.7	12/06/18 15:22 / rlh
Thallium	0.0006	mg/L			0.0005	E200.8	12/07/18 20:02 / by
Tin	ND	mg/L			0.01	E200.8	12/07/18 20:02 / by
Titanium	0.021	mg/L			0.005	E200.8	12/13/18 01:44 / car
Uranium	0.0005	mg/L			0.0003	E200.8	12/13/18 01:44 / car
Vanadium	0.02	mg/L			0.01	E200.8	12/13/18 01:44 / car
Zinc	0.23	mg/L	D		0.02	E200.8	12/07/18 20:02 / by
<b>METALS, DISSOLVED</b>							
Aluminum	6.12	mg/L	D		0.07	E200.7	11/15/18 22:52 / rlh
Aluminum	34.5	mg/L	D		0.2	E200.7	11/28/18 11:30 / rlh
Aluminum	11.8	mg/L			0.03	E200.8	11/29/18 05:00 / by
Antimony	ND	mg/L	D		0.002	E200.8	11/15/18 19:52 / by
Arsenic	0.008	mg/L			0.001	E200.8	11/15/18 19:52 / by
Barium	0.19	mg/L			0.05	E200.7	11/15/18 22:52 / rlh
Beryllium	ND	mg/L			0.001	E200.7	11/15/18 22:52 / rlh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B18110980-008  
**Client Sample ID:** R3-2

**Revised Date:** 01/02/19  
**Report Date:** 12/04/18  
**Collection Date:** 11/12/18 11:00  
**DateReceived:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Boron	ND	mg/L		0.05		E200.7	11/15/18 22:52 / rlh
Boron	0.10	mg/L		0.05		E200.7	11/28/18 11:30 / rlh
Cadmium	ND	mg/L		0.001		E200.8	11/15/18 19:52 / by
Calcium	8	mg/L		1		E200.7	11/15/18 22:52 / rlh
Chromium	0.025	mg/L		0.005		E200.8	11/15/18 19:52 / by
Chromium	0.014	mg/L		0.005		E200.8	11/29/18 05:00 / by
Cobalt	ND	mg/L		0.005		E200.8	11/15/18 19:52 / by
Copper	0.020	mg/L		0.005		E200.8	11/15/18 19:52 / by
Iron	2.04	mg/L	D	0.03		E200.7	11/15/18 22:52 / rlh
Iron	4.84	mg/L		0.02		E200.8	11/15/18 19:52 / by
Iron	9.43	mg/L	D	0.08		E200.7	11/28/18 11:30 / rlh
Iron	4.46	mg/L		0.02		E200.8	11/29/18 05:00 / by
Lead	0.005	mg/L		0.001		E200.8	11/15/18 19:52 / by
Lithium	ND	mg/L		0.1		E200.7	11/15/18 22:52 / rlh
Magnesium	3	mg/L		1		E200.7	11/15/18 22:52 / rlh
Manganese	0.021	mg/L	D	0.004		E200.7	11/15/18 22:52 / rlh
Molybdenum	ND	mg/L		0.001		E200.8	11/15/18 19:52 / by
Nickel	0.016	mg/L		0.005		E200.8	11/15/18 19:52 / by
Potassium	3	mg/L		1		E200.7	11/15/18 22:52 / rlh
Potassium	7	mg/L		1		E200.8	11/15/18 19:52 / by
Potassium	14	mg/L		1		E200.7	11/28/18 11:30 / rlh
Potassium	4	mg/L	D	2		E200.8	11/29/18 05:00 / by
Selenium	0.094	mg/L	D	0.002		E200.8	11/15/18 19:52 / by
Silicon	11.6	mg/L		0.1		E200.7	11/15/18 22:52 / rlh
Silicon	27.4	mg/L		0.1		E200.8	11/15/18 19:52 / by
Silicon	52.3	mg/L	D	0.3		E200.7	11/28/18 11:30 / rlh
Silicon	18.4	mg/L	D	0.2		E200.8	11/29/18 05:00 / by
Silver	0.002	mg/L		0.001		E200.8	11/15/18 19:52 / by
Sodium	11	mg/L		1		E200.7	11/15/18 22:52 / rlh
Strontium	0.03	mg/L		0.01		E200.7	11/15/18 22:52 / rlh
Thallium	0.0008	mg/L		0.0005		E200.8	11/15/18 19:52 / by
Tin	ND	mg/L		0.01		E200.8	11/15/18 19:52 / by
Titanium	0.07	mg/L	D	0.01		E200.7	11/15/18 22:52 / rlh
Titanium	0.221	mg/L		0.005		E200.8	11/15/18 19:52 / by
Titanium	0.47	mg/L	D	0.03		E200.7	11/28/18 11:30 / rlh
Titanium	0.135	mg/L		0.005		E200.8	11/29/18 05:00 / by
Uranium	0.0006	mg/L		0.0003		E200.8	11/15/18 19:52 / by
Vanadium	0.06	mg/L		0.01		E200.8	11/15/18 19:52 / by
Zinc	0.20	mg/L		0.01		E200.7	11/15/18 22:52 / rlh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B18110980-009  
**Client Sample ID:** E3

**Revised Date:** 01/02/19  
**Report Date:** 12/04/18  
**Collection Date:** 11/12/18 11:00  
**Date Received:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	16	mg/L	D	4		A5310 C	11/20/18 07:33 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.08	mg/L		0.03		E200.7	11/14/18 15:56 / rlh
Aluminum	ND	mg/L		0.03		E200.8	11/16/18 21:02 / by
Aluminum	0.06	mg/L		0.03		E200.8	11/20/18 23:45 / by
Aluminum	0.06	mg/L		0.03		E200.8	11/26/18 19:22 / rlh
Antimony	ND	mg/L	D	0.002		E200.8	11/16/18 21:02 / by
Arsenic	ND	mg/L	D	0.004		E200.8	11/20/18 23:45 / by
Barium	0.08	mg/L		0.05		E200.7	11/14/18 15:56 / rlh
Beryllium	ND	mg/L		0.001		E200.7	11/14/18 15:56 / rlh
Boron	0.06	mg/L		0.05		E200.7	11/14/18 15:56 / rlh
Boron	0.12	mg/L		0.05		E200.8	11/26/18 19:22 / rlh
Cadmium	ND	mg/L		0.001		E200.8	11/16/18 21:02 / by
Calcium	52	mg/L		1		E200.7	11/14/18 15:56 / rlh
Chromium	ND	mg/L		0.005		E200.8	11/16/18 21:02 / by
Cobalt	ND	mg/L		0.005		E200.8	11/16/18 21:02 / by
Copper	ND	mg/L		0.005		E200.7	11/14/18 15:56 / rlh
Iron	0.03	mg/L		0.02		E200.7	11/14/18 15:56 / rlh
Iron	0.07	mg/L		0.02		E200.8	11/20/18 23:45 / by
Iron	0.05	mg/L		0.02		E200.8	11/26/18 19:22 / rlh
Lead	ND	mg/L		0.001		E200.8	11/16/18 21:02 / by
Lithium	ND	mg/L		0.1		E200.7	11/14/18 15:56 / rlh
Magnesium	51	mg/L		1		E200.7	11/14/18 15:56 / rlh
Manganese	0.002	mg/L		0.001		E200.8	11/16/18 21:02 / by
Molybdenum	0.007	mg/L		0.001		E200.8	11/16/18 21:02 / by
Nickel	ND	mg/L		0.005		E200.7	11/14/18 15:56 / rlh
Potassium	3	mg/L		1		E200.7	11/14/18 15:56 / rlh
Selenium	0.022	mg/L	D	0.002		E200.8	11/16/18 21:02 / by
Silicon	2.2	mg/L		0.1		E200.7	11/14/18 15:56 / rlh
Silver	ND	mg/L		0.001		E200.8	11/16/18 21:02 / by
Sodium	7	mg/L		1		E200.7	11/14/18 15:56 / rlh
Strontium	0.30	mg/L		0.01		E200.7	11/14/18 15:56 / rlh
Thallium	ND	mg/L	D	0.0008		E200.8	11/20/18 23:45 / by
Tin	ND	mg/L		0.01		E200.8	11/16/18 21:02 / by
Titanium	ND	mg/L		0.005		E200.7	11/14/18 15:56 / rlh
Uranium	0.0048	mg/L		0.0003		E200.8	11/16/18 21:02 / by
Vanadium	ND	mg/L		0.01		E200.8	11/26/18 19:22 / rlh
Zinc	ND	mg/L		0.01		E200.7	11/14/18 15:56 / rlh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B18110980-010  
**Client Sample ID:** F4-2

**Revised Date:** 01/02/19  
**Report Date:** 12/04/18  
**Collection Date:** 11/12/18 11:00  
**Date Received:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	7	mg/L	D	4		A5310 C	11/20/18 07:48 / eli-ca
<b>METALS, DIGESTED DISSOLVED</b>							
Aluminum	10.3	mg/L		0.03		E200.7	12/06/18 15:26 / rlh
Aluminum	9.36	mg/L		0.03		E200.8	12/07/18 20:06 / by
Aluminum	7.93	mg/L		0.03		E200.8	12/13/18 01:47 / car
Antimony	ND	mg/L	D	0.002		E200.8	12/07/18 20:06 / by
Arsenic	0.005	mg/L		0.001		E200.8	12/07/18 20:06 / by
Barium	0.27	mg/L		0.05		E200.7	12/06/18 15:26 / rlh
Beryllium	ND	mg/L		0.001		E200.8	12/07/18 20:06 / by
Boron	0.14	mg/L	D	0.09		E200.7	12/06/18 15:26 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/07/18 20:06 / by
Calcium	12	mg/L		1		E200.7	12/06/18 15:26 / rlh
Chromium	0.010	mg/L		0.005		E200.8	12/07/18 20:06 / by
Cobalt	ND	mg/L		0.005		E200.8	12/07/18 20:06 / by
Copper	0.012	mg/L		0.005		E200.8	12/13/18 01:47 / car
Iron	8.64	mg/L	D	0.04		E200.7	12/06/18 15:26 / rlh
Lead	0.007	mg/L		0.001		E200.8	12/07/18 20:06 / by
Lithium	ND	mg/L		0.1		E200.7	12/06/18 15:26 / rlh
Magnesium	3	mg/L		1		E200.7	12/06/18 15:26 / rlh
Manganese	0.028	mg/L		0.001		E200.8	12/13/18 01:47 / car
Molybdenum	ND	mg/L		0.001		E200.8	12/07/18 20:06 / by
Nickel	0.021	mg/L		0.005		E200.8	12/07/18 20:06 / by
Potassium	4	mg/L		1		E200.7	12/06/18 15:26 / rlh
Selenium	0.169	mg/L		0.001		E200.8	12/07/18 20:06 / by
Silicon	15.2	mg/L		0.1		E200.7	12/06/18 15:26 / rlh
Silver	ND	mg/L		0.001		E200.8	12/07/18 20:06 / by
Sodium	20	mg/L		1		E200.7	12/06/18 15:26 / rlh
Strontium	0.04	mg/L		0.01		E200.7	12/06/18 15:26 / rlh
Thallium	0.0007	mg/L		0.0005		E200.8	12/07/18 20:06 / by
Tin	ND	mg/L		0.01		E200.8	12/07/18 20:06 / by
Titanium	0.023	mg/L		0.005		E200.8	12/13/18 01:47 / car
Uranium	0.0006	mg/L		0.0003		E200.8	12/13/18 01:47 / car
Vanadium	0.02	mg/L		0.01		E200.8	12/13/18 01:47 / car
Zinc	0.11	mg/L	D	0.02		E200.8	12/07/18 20:06 / by
<b>METALS, DISSOLVED</b>							
Aluminum	3.54	mg/L	D	0.07		E200.7	11/15/18 22:56 / rlh
Aluminum	31.6	mg/L	D	0.2		E200.7	11/28/18 11:42 / rlh
Aluminum	11.1	mg/L		0.03		E200.8	11/29/18 05:04 / by
Antimony	ND	mg/L	D	0.002		E200.8	11/15/18 19:56 / by
Arsenic	0.003	mg/L		0.001		E200.8	11/15/18 19:56 / by
Barium	0.24	mg/L		0.05		E200.7	11/15/18 22:56 / rlh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B18110980-010  
**Client Sample ID:** F4-2

**Revised Date:** 01/02/19  
**Report Date:** 12/04/18  
**Collection Date:** 11/12/18 11:00  
**DateReceived:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Beryllium	ND	mg/L		0.001		E200.7	11/15/18 22:56 / rlh
Boron	ND	mg/L		0.05		E200.7	11/15/18 22:56 / rlh
Boron	0.07	mg/L		0.05		E200.7	11/28/18 11:42 / rlh
Cadmium	ND	mg/L		0.001		E200.8	11/15/18 19:56 / by
Calcium	10	mg/L		1		E200.7	11/15/18 22:56 / rlh
Chromium	0.021	mg/L		0.005		E200.8	11/15/18 19:56 / by
Chromium	0.013	mg/L		0.005		E200.8	11/29/18 05:04 / by
Cobalt	ND	mg/L		0.005		E200.8	11/15/18 19:56 / by
Copper	0.010	mg/L		0.005		E200.8	11/15/18 19:56 / by
Iron	1.46	mg/L	D	0.03		E200.7	11/15/18 22:56 / rlh
Iron	4.58	mg/L		0.02		E200.8	11/15/18 19:56 / by
Iron	9.68	mg/L	D	0.08		E200.7	11/28/18 11:42 / rlh
Iron	4.65	mg/L		0.02		E200.8	11/29/18 05:04 / by
Lead	0.006	mg/L		0.001		E200.8	11/15/18 19:56 / by
Lithium	ND	mg/L		0.1		E200.7	11/15/18 22:56 / rlh
Magnesium	3	mg/L		1		E200.7	11/15/18 22:56 / rlh
Manganese	0.011	mg/L	D	0.004		E200.7	11/15/18 22:56 / rlh
Molybdenum	ND	mg/L		0.001		E200.8	11/15/18 19:56 / by
Nickel	0.015	mg/L		0.005		E200.8	11/15/18 19:56 / by
Potassium	2	mg/L		1		E200.7	11/15/18 22:56 / rlh
Potassium	6	mg/L		1		E200.8	11/15/18 19:56 / by
Potassium	12	mg/L		1		E200.7	11/28/18 11:42 / rlh
Potassium	4	mg/L	D	2		E200.8	11/29/18 05:04 / by
Selenium	0.189	mg/L	D	0.002		E200.8	11/15/18 19:56 / by
Silicon	5.6	mg/L		0.1		E200.7	11/15/18 22:56 / rlh
Silicon	22.3	mg/L		0.1		E200.8	11/15/18 19:56 / by
Silicon	46.5	mg/L	D	0.3		E200.7	11/28/18 11:42 / rlh
Silicon	15.8	mg/L	D	0.2		E200.8	11/29/18 05:04 / by
Silver	ND	mg/L		0.001		E200.8	11/15/18 19:56 / by
Sodium	20	mg/L		1		E200.7	11/15/18 22:56 / rlh
Strontium	0.04	mg/L		0.01		E200.7	11/15/18 22:56 / rlh
Thallium	0.0008	mg/L		0.0005		E200.8	11/15/18 19:56 / by
Tin	ND	mg/L		0.01		E200.8	11/15/18 19:56 / by
Titanium	0.04	mg/L	D	0.01		E200.7	11/15/18 22:56 / rlh
Titanium	0.242	mg/L		0.005		E200.8	11/15/18 19:56 / by
Titanium	0.46	mg/L	D	0.03		E200.7	11/28/18 11:42 / rlh
Titanium	0.130	mg/L		0.005		E200.8	11/29/18 05:04 / by
Uranium	0.0007	mg/L		0.0003		E200.8	11/15/18 19:56 / by
Vanadium	0.05	mg/L		0.01		E200.8	11/15/18 19:56 / by
Zinc	0.06	mg/L		0.01		E200.7	11/15/18 22:56 / rlh
Zinc	0.08	mg/L		0.01		E200.8	11/15/18 19:56 / by
Zinc	0.12	mg/L		0.01		E200.7	11/28/18 11:42 / rlh
Zinc	0.08	mg/L	D	0.05		E200.8	11/29/18 05:04 / by

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B18110980-011  
**Client Sample ID:** R4-2

**Revised Date:** 01/02/19  
**Report Date:** 12/04/18  
**Collection Date:** 11/12/18 11:00  
**Date Received:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	22	mg/L	D	4		A5310 C	11/20/18 08:51 / eli-ca
<b>METALS, DIGESTED DISSOLVED</b>							
Aluminum	4.40	mg/L			0.03	E200.7	12/06/18 15:30 / rlh
Aluminum	2.60	mg/L			0.03	E200.8	12/07/18 20:10 / by
Aluminum	1.60	mg/L			0.03	E200.8	12/13/18 01:51 / car
Antimony	ND	mg/L	D		0.002	E200.8	12/07/18 20:10 / by
Arsenic	0.001	mg/L			0.001	E200.8	12/07/18 20:10 / by
Barium	0.08	mg/L			0.05	E200.7	12/06/18 15:30 / rlh
Beryllium	ND	mg/L			0.001	E200.8	12/07/18 20:10 / by
Boron	0.15	mg/L	D		0.09	E200.7	12/06/18 15:30 / rlh
Cadmium	ND	mg/L			0.001	E200.8	12/07/18 20:10 / by
Calcium	6	mg/L			1	E200.7	12/06/18 15:30 / rlh
Chromium	ND	mg/L			0.005	E200.8	12/07/18 20:10 / by
Cobalt	ND	mg/L			0.005	E200.8	12/07/18 20:10 / by
Copper	0.019	mg/L			0.005	E200.8	12/13/18 01:51 / car
Iron	2.15	mg/L	D		0.04	E200.7	12/06/18 15:30 / rlh
Lead	0.002	mg/L			0.001	E200.8	12/07/18 20:10 / by
Lithium	ND	mg/L			0.1	E200.7	12/06/18 15:30 / rlh
Magnesium	2	mg/L			1	E200.7	12/06/18 15:30 / rlh
Manganese	0.007	mg/L			0.001	E200.8	12/13/18 01:51 / car
Molybdenum	ND	mg/L			0.001	E200.8	12/07/18 20:10 / by
Nickel	0.009	mg/L			0.005	E200.8	12/07/18 20:10 / by
Potassium	2	mg/L			1	E200.7	12/06/18 15:30 / rlh
Potassium	ND	mg/L			1	E200.8	12/07/18 20:10 / by
Selenium	0.049	mg/L			0.001	E200.8	12/07/18 20:10 / by
Silicon	11.4	mg/L			0.1	E200.7	12/06/18 15:30 / rlh
Silicon	6.7	mg/L			0.1	E200.8	12/13/18 01:51 / car
Silver	ND	mg/L			0.001	E200.8	12/07/18 20:10 / by
Sodium	13	mg/L			1	E200.7	12/06/18 15:30 / rlh
Strontium	0.02	mg/L			0.01	E200.7	12/06/18 15:30 / rlh
Thallium	ND	mg/L			0.0005	E200.8	12/07/18 20:10 / by
Tin	ND	mg/L			0.01	E200.8	12/07/18 20:10 / by
Titanium	0.11	mg/L	D		0.03	E200.7	12/06/18 15:30 / rlh
Titanium	0.013	mg/L			0.005	E200.8	12/13/18 01:51 / car
Uranium	ND	mg/L			0.0003	E200.8	12/13/18 01:51 / car
Vanadium	ND	mg/L			0.01	E200.8	12/13/18 01:51 / car
Zinc	0.04	mg/L	D		0.02	E200.8	12/13/18 01:51 / car
<b>METALS, DISSOLVED</b>							
Aluminum	2.23	mg/L			0.03	E200.7	11/14/18 15:59 / rlh
Aluminum	4.78	mg/L			0.03	E200.8	11/16/18 21:05 / by
Aluminum	4.35	mg/L			0.03	E200.8	11/21/18 00:05 / by

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.





### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B18110980-011  
**Client Sample ID:** R4-2

**Revised Date:** 01/02/19  
**Report Date:** 12/04/18  
**Collection Date:** 11/12/18 11:00  
**Date Received:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Antimony	ND	mg/L	D	0.002		E200.8	11/16/18 21:05 / by
Arsenic	ND	mg/L	D	0.004		E200.8	11/21/18 00:05 / by
Barium	0.06	mg/L		0.05		E200.7	11/14/18 15:59 / rlh
Beryllium	ND	mg/L		0.001		E200.7	11/14/18 15:59 / rlh
Boron	ND	mg/L		0.05		E200.7	11/14/18 15:59 / rlh
Cadmium	ND	mg/L		0.001		E200.8	11/16/18 21:05 / by
Calcium	5	mg/L		1		E200.7	11/14/18 15:59 / rlh
Chromium	0.007	mg/L		0.005		E200.8	11/16/18 21:05 / by
Cobalt	ND	mg/L		0.005		E200.8	11/16/18 21:05 / by
Copper	0.018	mg/L		0.005		E200.7	11/14/18 15:59 / rlh
Iron	0.76	mg/L		0.02		E200.7	11/14/18 15:59 / rlh
Iron	1.55	mg/L		0.02		E200.8	11/16/18 21:05 / by
Iron	1.53	mg/L		0.02		E200.8	11/21/18 00:05 / by
Lead	0.002	mg/L		0.001		E200.8	11/16/18 21:05 / by
Lithium	ND	mg/L		0.1		E200.7	11/14/18 15:59 / rlh
Magnesium	2	mg/L		1		E200.7	11/14/18 15:59 / rlh
Manganese	0.006	mg/L		0.001		E200.8	11/16/18 21:05 / by
Molybdenum	ND	mg/L		0.001		E200.8	11/16/18 21:05 / by
Nickel	0.005	mg/L		0.005		E200.7	11/14/18 15:59 / rlh
Potassium	1	mg/L		1		E200.7	11/14/18 15:59 / rlh
Selenium	0.052	mg/L	D	0.002		E200.8	11/16/18 21:05 / by
Silicon	7.7	mg/L		0.1		E200.7	11/14/18 15:59 / rlh
Silicon	12.2	mg/L		0.1		E200.8	11/16/18 21:05 / by
Silicon	11.5	mg/L	D	0.2		E200.8	11/21/18 00:05 / by
Silver	ND	mg/L		0.001		E200.8	11/16/18 21:05 / by
Sodium	11	mg/L		1		E200.7	11/14/18 15:59 / rlh
Strontium	0.02	mg/L		0.01		E200.7	11/14/18 15:59 / rlh
Thallium	ND	mg/L	D	0.0008		E200.8	11/21/18 00:05 / by
Tin	ND	mg/L		0.01		E200.8	11/16/18 21:05 / by
Titanium	0.059	mg/L		0.005		E200.7	11/14/18 15:59 / rlh
Titanium	0.127	mg/L		0.005		E200.8	11/16/18 21:05 / by
Titanium	0.086	mg/L		0.005		E200.8	11/21/18 00:05 / by
Uranium	ND	mg/L		0.0003		E200.8	11/16/18 21:05 / by
Vanadium	ND	mg/L	D	0.03		E200.8	11/21/18 00:05 / by
Zinc	0.02	mg/L		0.01		E200.7	11/14/18 15:59 / rlh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B18110980-012  
**Client Sample ID:** E4

**Revised Date:** 01/02/19  
**Report Date:** 12/04/18  
**Collection Date:** 11/12/18 11:00  
**Date Received:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	50	mg/L	D	20		A5310 C	11/20/18 09:06 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.16	mg/L	D	0.07		E200.7	11/14/18 16:03 / rlh
Antimony	ND	mg/L	D	0.02		E200.8	11/16/18 21:21 / by
Arsenic	ND	mg/L	D	0.01		E200.8	11/21/18 00:09 / by
Barium	ND	mg/L		0.05		E200.7	11/14/18 16:03 / rlh
Beryllium	ND	mg/L		0.001		E200.7	11/14/18 16:03 / rlh
Boron	0.09	mg/L		0.05		E200.7	11/14/18 16:03 / rlh
Cadmium	ND	mg/L		0.001		E200.8	11/16/18 21:21 / by
Calcium	39	mg/L		1		E200.7	11/14/18 16:03 / rlh
Chromium	ND	mg/L	D	0.03		E200.8	11/16/18 21:21 / by
Cobalt	ND	mg/L		0.005		E200.8	11/16/18 21:21 / by
Copper	ND	mg/L	D	0.02		E200.8	11/16/18 21:21 / by
Iron	0.09	mg/L	D	0.03		E200.7	11/14/18 16:03 / rlh
Lead	ND	mg/L	D	0.003		E200.8	11/16/18 21:21 / by
Lithium	ND	mg/L		0.1		E200.7	11/14/18 16:03 / rlh
Magnesium	60	mg/L		1		E200.7	11/14/18 16:03 / rlh
Manganese	0.008	mg/L	D	0.005		E200.8	11/16/18 21:21 / by
Molybdenum	0.007	mg/L	D	0.002		E200.8	11/16/18 21:21 / by
Nickel	ND	mg/L	D	0.03		E200.8	11/16/18 21:21 / by
Potassium	4	mg/L		1		E200.7	11/14/18 16:03 / rlh
Selenium	0.02	mg/L	D	0.02		E200.8	11/16/18 21:21 / by
Silicon	1.5	mg/L		0.1		E200.7	11/14/18 16:03 / rlh
Silver	ND	mg/L		0.001		E200.8	11/16/18 21:21 / by
Sodium	8	mg/L		1		E200.7	11/14/18 16:03 / rlh
Strontium	0.28	mg/L		0.01		E200.7	11/14/18 16:03 / rlh
Thallium	ND	mg/L	D	0.002		E200.8	11/21/18 00:09 / by
Tin	ND	mg/L	D	0.07		E200.8	11/16/18 21:21 / by
Titanium	ND	mg/L		0.005		E200.8	11/16/18 21:21 / by
Uranium	0.005	mg/L	D	0.003		E200.8	11/16/18 21:21 / by
Vanadium	ND	mg/L	D	0.04		E200.7	11/14/18 16:03 / rlh
Zinc	ND	mg/L		0.01		E200.7	11/14/18 16:03 / rlh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B18110980-013  
**Client Sample ID:** F5-2

**Revised Date:** 01/02/19  
**Report Date:** 12/04/18  
**Collection Date:** 11/12/18 11:00  
**Date Received:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	8	mg/L	D	4		A5310 C	11/20/18 09:53 / eli-ca
<b>METALS, DIGESTED DISSOLVED</b>							
Aluminum	10.3	mg/L	D	0.1		E200.7	12/06/18 15:34 / rlh
Aluminum	6.74	mg/L		0.03		E200.8	12/07/18 20:15 / by
Aluminum	3.50	mg/L		0.03		E200.8	12/13/18 01:55 / car
Antimony	ND	mg/L	D	0.008		E200.8	12/07/18 20:15 / by
Arsenic	ND	mg/L	D	0.002		E200.8	12/07/18 20:15 / by
Barium	0.13	mg/L		0.05		E200.8	12/07/18 20:15 / by
Beryllium	ND	mg/L	D	0.003		E200.8	12/13/18 01:55 / car
Boron	0.5	mg/L	D	0.3		E200.7	12/06/18 15:34 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/07/18 20:15 / by
Calcium	11	mg/L	D	2		E200.7	12/06/18 15:34 / rlh
Chromium	ND	mg/L		0.005		E200.8	12/07/18 20:15 / by
Cobalt	ND	mg/L		0.005		E200.8	12/07/18 20:15 / by
Copper	ND	mg/L	D	0.02		E200.8	12/13/18 01:55 / car
Iron	5.6	mg/L	D	0.1		E200.7	12/06/18 15:34 / rlh
Iron	4.70	mg/L	D	0.05		E200.8	12/07/18 20:15 / by
Iron	4.22	mg/L	D	0.05		E200.8	12/13/18 01:55 / car
Lead	0.004	mg/L	D	0.002		E200.8	12/07/18 20:15 / by
Lithium	ND	mg/L		0.1		E200.7	12/06/18 15:34 / rlh
Magnesium	3	mg/L		1		E200.7	12/06/18 15:34 / rlh
Manganese	0.023	mg/L	D	0.002		E200.8	12/13/18 01:55 / car
Molybdenum	ND	mg/L		0.001		E200.8	12/07/18 20:15 / by
Nickel	ND	mg/L	D	0.01		E200.8	12/07/18 20:15 / by
Potassium	5	mg/L		1		E200.7	12/06/18 15:34 / rlh
Potassium	ND	mg/L		1		E200.8	12/07/18 20:15 / by
Selenium	0.210	mg/L	D	0.005		E200.8	12/07/18 20:15 / by
Silicon	17.6	mg/L	D	0.4		E200.7	12/06/18 15:34 / rlh
Silicon	5.4	mg/L		0.1		E200.8	12/13/18 01:55 / car
Silver	ND	mg/L		0.001		E200.8	12/07/18 20:15 / by
Sodium	25	mg/L	D	3		E200.7	12/06/18 15:34 / rlh
Strontium	0.05	mg/L		0.01		E200.7	12/06/18 15:34 / rlh
Thallium	ND	mg/L	D	0.001		E200.8	12/13/18 01:55 / car
Tin	0.05	mg/L	D	0.03		E200.8	12/07/18 20:15 / by
Titanium	0.3	mg/L	D	0.1		E200.7	12/06/18 15:34 / rlh
Titanium	0.020	mg/L		0.005		E200.8	12/13/18 01:55 / car
Uranium	ND	mg/L	D	0.001		E200.8	12/13/18 01:55 / car
Vanadium	ND	mg/L		0.01		E200.8	12/13/18 01:55 / car
Zinc	0.09	mg/L	D	0.08		E200.8	12/13/18 01:55 / car
<b>METALS, DISSOLVED</b>							
Aluminum	3.47	mg/L		0.03		E200.7	11/14/18 16:07 / rlh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B18110980-013  
**Client Sample ID:** F5-2

**Revised Date:** 01/02/19  
**Report Date:** 12/04/18  
**Collection Date:** 11/12/18 11:00  
**DateReceived:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Aluminum	8.39	mg/L		0.03		E200.8	11/16/18 21:25 / by
Aluminum	15.5	mg/L		0.03		E200.8	11/21/18 00:13 / by
Aluminum	15.1	mg/L	D	0.3		E200.7	11/28/18 11:11 / rlh
Aluminum	5.59	mg/L		0.03		E200.8	11/29/18 05:37 / by
Antimony	ND	mg/L	D	0.002		E200.8	11/16/18 21:25 / by
Arsenic	ND	mg/L	D	0.004		E200.8	11/21/18 00:13 / by
Barium	0.10	mg/L		0.05		E200.7	11/14/18 16:07 / rlh
Beryllium	ND	mg/L		0.001		E200.7	11/14/18 16:07 / rlh
Boron	ND	mg/L		0.05		E200.7	11/14/18 16:07 / rlh
Cadmium	ND	mg/L		0.001		E200.8	11/16/18 21:25 / by
Calcium	9	mg/L		1		E200.7	11/14/18 16:07 / rlh
Chromium	0.009	mg/L		0.005		E200.8	11/21/18 00:13 / by
Cobalt	ND	mg/L		0.005		E200.8	11/16/18 21:25 / by
Copper	0.007	mg/L		0.005		E200.7	11/14/18 16:07 / rlh
Iron	1.33	mg/L		0.02		E200.7	11/14/18 16:07 / rlh
Iron	2.86	mg/L		0.02		E200.8	11/16/18 21:25 / by
Iron	4.39	mg/L		0.02		E200.8	11/21/18 00:13 / by
Iron	5.8	mg/L	D	0.2		E200.7	11/28/18 11:11 / rlh
Iron	3.15	mg/L		0.02		E200.8	11/29/18 05:37 / by
Lead	0.004	mg/L		0.001		E200.8	11/16/18 21:25 / by
Lithium	ND	mg/L		0.1		E200.7	11/14/18 16:07 / rlh
Magnesium	2	mg/L		1		E200.7	11/14/18 16:07 / rlh
Manganese	0.013	mg/L		0.001		E200.8	11/16/18 21:25 / by
Molybdenum	ND	mg/L		0.001		E200.8	11/16/18 21:25 / by
Nickel	0.006	mg/L		0.005		E200.7	11/14/18 16:07 / rlh
Potassium	2	mg/L		1		E200.7	11/14/18 16:07 / rlh
Potassium	6	mg/L		1		E200.7	11/28/18 11:11 / rlh
Potassium	2	mg/L	D	2		E200.8	11/29/18 05:37 / by
Selenium	0.217	mg/L	D	0.002		E200.8	11/16/18 21:25 / by
Silicon	6.7	mg/L		0.1		E200.7	11/14/18 16:07 / rlh
Silicon	15.8	mg/L		0.1		E200.8	11/16/18 21:25 / by
Silicon	17.2	mg/L	D	0.2		E200.8	11/21/18 00:13 / by
Silicon	25.7	mg/L	D	0.6		E200.7	11/28/18 11:11 / rlh
Silicon	10.3	mg/L	D	0.2		E200.8	11/29/18 05:37 / by
Silver	ND	mg/L		0.001		E200.8	11/16/18 21:25 / by
Sodium	21	mg/L		1		E200.7	11/14/18 16:07 / rlh
Strontium	0.04	mg/L		0.01		E200.7	11/14/18 16:07 / rlh
Thallium	ND	mg/L	D	0.0008		E200.8	11/21/18 00:13 / by
Tin	ND	mg/L		0.01		E200.8	11/16/18 21:25 / by
Titanium	0.113	mg/L		0.005		E200.7	11/14/18 16:07 / rlh
Titanium	0.276	mg/L		0.005		E200.8	11/16/18 21:25 / by
Titanium	0.455	mg/L		0.005		E200.8	11/21/18 00:13 / by
Titanium	0.53	mg/L	D	0.06		E200.7	11/28/18 11:11 / rlh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B18110980-013  
**Client Sample ID:** F5-2

**Revised Date:** 01/02/19  
**Report Date:** 12/04/18  
**Collection Date:** 11/12/18 11:00  
**DateReceived:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Titanium	0.233	mg/L		0.005		E200.8	11/29/18 05:37 / by
Uranium	0.0006	mg/L		0.0003		E200.8	11/16/18 21:25 / by
Vanadium	ND	mg/L	D	0.03		E200.8	11/21/18 00:13 / by
Zinc	0.03	mg/L		0.01		E200.7	11/14/18 16:07 / rlh

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B18110980-014  
**Client Sample ID:** R5-2

**Revised Date:** 01/02/19  
**Report Date:** 12/04/18  
**Collection Date:** 11/12/18 11:00  
**Date Received:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	18	mg/L	D	4		A5310 C	11/20/18 10:52 / eli-ca
<b>METALS, DIGESTED DISSOLVED</b>							
Aluminum	17.1	mg/L	D	0.06		E200.7	12/06/18 15:38 / rlh
Aluminum	14.2	mg/L		0.03		E200.8	12/07/18 20:19 / by
Aluminum	12.0	mg/L		0.03		E200.8	12/13/18 01:59 / car
Antimony	ND	mg/L	D	0.004		E200.8	12/07/18 20:19 / by
Arsenic	0.011	mg/L		0.001		E200.8	12/07/18 20:19 / by
Barium	0.25	mg/L		0.05		E200.8	12/07/18 20:19 / by
Beryllium	ND	mg/L		0.001		E200.8	12/07/18 20:19 / by
Boron	0.3	mg/L	D	0.2		E200.7	12/06/18 15:38 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/07/18 20:19 / by
Calcium	7	mg/L		1		E200.7	12/06/18 15:38 / rlh
Chromium	0.014	mg/L		0.005		E200.8	12/07/18 20:19 / by
Cobalt	0.007	mg/L		0.005		E200.8	12/07/18 20:19 / by
Copper	0.026	mg/L	D	0.008		E200.8	12/13/18 01:59 / car
Iron	17.7	mg/L	D	0.07		E200.7	12/06/18 15:38 / rlh
Iron	16.6	mg/L		0.02		E200.8	12/07/18 20:19 / by
Iron	15.6	mg/L	D	0.03		E200.8	12/13/18 01:59 / car
Lead	0.017	mg/L		0.001		E200.8	12/07/18 20:19 / by
Lithium	ND	mg/L		0.1		E200.7	12/06/18 15:38 / rlh
Magnesium	3	mg/L		1		E200.7	12/06/18 15:38 / rlh
Manganese	0.052	mg/L		0.001		E200.8	12/13/18 01:59 / car
Molybdenum	ND	mg/L		0.001		E200.8	12/07/18 20:19 / by
Nickel	0.035	mg/L	D	0.007		E200.8	12/07/18 20:19 / by
Potassium	9	mg/L		1		E200.7	12/06/18 15:38 / rlh
Potassium	5	mg/L		1		E200.8	12/07/18 20:19 / by
Selenium	0.038	mg/L	D	0.002		E200.8	12/07/18 20:19 / by
Silicon	26.0	mg/L	D	0.2		E200.7	12/06/18 15:38 / rlh
Silicon	17.0	mg/L		0.1		E200.8	12/13/18 01:59 / car
Silver	0.002	mg/L		0.001		E200.8	12/07/18 20:19 / by
Sodium	12	mg/L		1		E200.7	12/06/18 15:38 / rlh
Strontium	0.03	mg/L		0.01		E200.7	12/06/18 15:38 / rlh
Thallium	0.0010	mg/L		0.0005		E200.8	12/07/18 20:19 / by
Tin	ND	mg/L		0.01		E200.8	12/07/18 20:19 / by
Titanium	0.19	mg/L	D	0.05		E200.7	12/06/18 15:38 / rlh
Titanium	0.037	mg/L		0.005		E200.8	12/13/18 01:59 / car
Uranium	0.0013	mg/L	D	0.0005		E200.8	12/13/18 01:59 / car
Vanadium	0.03	mg/L		0.01		E200.8	12/13/18 01:59 / car
Zinc	0.22	mg/L	D	0.04		E200.8	12/07/18 20:19 / by
<b>METALS, DISSOLVED</b>							
Aluminum	5.46	mg/L		0.03		E200.7	11/14/18 16:22 / rlh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B18110980-014  
**Client Sample ID:** R5-2

**Revised Date:** 01/02/19  
**Report Date:** 12/04/18  
**Collection Date:** 11/12/18 11:00  
**Date Received:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Aluminum	8.79	mg/L		0.03		E200.8	11/16/18 21:29 / by
Aluminum	94.4	mg/L		0.03		E200.8	11/21/18 00:17 / by
Aluminum	94.9	mg/L	D	0.3		E200.7	11/28/18 11:15 / rlh
Aluminum	18.1	mg/L		0.03		E200.8	11/29/18 05:41 / by
Antimony	ND	mg/L	D	0.002		E200.8	11/16/18 21:29 / by
Arsenic	0.024	mg/L	D	0.004		E200.8	11/21/18 00:17 / by
Arsenic	0.007	mg/L	D	0.004		E200.8	11/29/18 05:41 / by
Barium	0.05	mg/L		0.05		E200.7	11/14/18 16:22 / rlh
Barium	0.19	mg/L		0.05		E200.8	11/16/18 21:29 / by
Barium	0.51	mg/L		0.05		E200.8	11/21/18 00:17 / by
Barium	0.54	mg/L		0.05		E200.7	11/28/18 11:15 / rlh
Barium	0.23	mg/L		0.05		E200.8	11/29/18 05:41 / by
Beryllium	ND	mg/L		0.001		E200.7	11/14/18 16:22 / rlh
Boron	ND	mg/L		0.05		E200.7	11/14/18 16:22 / rlh
Boron	0.2	mg/L	D	0.1		E200.8	11/21/18 00:17 / by
Boron	0.2	mg/L	D	0.1		E200.7	11/28/18 11:15 / rlh
Boron	ND	mg/L	D	0.1		E200.8	11/29/18 05:41 / by
Cadmium	ND	mg/L		0.001		E200.8	11/16/18 21:29 / by
Calcium	5	mg/L		1		E200.7	11/14/18 16:22 / rlh
Calcium	6	mg/L		1		E200.8	11/16/18 21:29 / by
Calcium	6	mg/L		1		E200.8	11/21/18 00:17 / by
Calcium	6	mg/L		1		E200.7	11/28/18 11:15 / rlh
Calcium	6	mg/L		1		E200.8	11/29/18 05:41 / by
Chromium	0.009	mg/L		0.005		E200.8	11/16/18 21:29 / by
Chromium	0.184	mg/L		0.005		E200.8	11/21/18 00:17 / by
Chromium	0.023	mg/L		0.005		E200.8	11/29/18 05:41 / by
Cobalt	ND	mg/L		0.005		E200.8	11/16/18 21:29 / by
Copper	0.013	mg/L		0.005		E200.7	11/14/18 16:22 / rlh
Copper	0.041	mg/L		0.005		E200.8	11/21/18 00:17 / by
Copper	0.019	mg/L	D	0.005		E200.8	11/29/18 05:41 / by
Iron	1.78	mg/L		0.02		E200.7	11/14/18 16:22 / rlh
Iron	3.69	mg/L		0.02		E200.8	11/16/18 21:29 / by
Iron	38.5	mg/L		0.02		E200.8	11/21/18 00:17 / by
Iron	29.6	mg/L	D	0.2		E200.7	11/28/18 11:15 / rlh
Iron	6.54	mg/L		0.02		E200.8	11/29/18 05:41 / by
Lead	0.010	mg/L		0.001		E200.8	11/29/18 05:41 / by
Lithium	ND	mg/L		0.1		E200.7	11/14/18 16:22 / rlh
Magnesium	9	mg/L		1		E200.8	11/21/18 00:17 / by
Magnesium	6	mg/L		1		E200.7	11/28/18 11:15 / rlh
Magnesium	2	mg/L		1		E200.8	11/29/18 05:41 / by
Manganese	0.023	mg/L	L	0.002		E200.7	11/14/18 16:22 / rlh
Manganese	0.09	mg/L	D	0.02		E200.7	11/28/18 11:15 / rlh
Manganese	0.047	mg/L	D	0.003		E200.8	11/29/18 05:41 / by

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 L - Lowest available reporting limit for the analytical method used.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B18110980-014  
**Client Sample ID:** R5-2

**Revised Date:** 01/02/19  
**Report Date:** 12/04/18  
**Collection Date:** 11/12/18 11:00  
**Date Received:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Molybdenum	ND	mg/L		0.001		E200.8	11/16/18 21:29 / by
Nickel	0.011	mg/L		0.005		E200.7	11/14/18 16:22 / rlh
Potassium	3	mg/L		1		E200.7	11/14/18 16:22 / rlh
Potassium	37	mg/L		1		E200.7	11/28/18 11:15 / rlh
Potassium	7	mg/L	D	2		E200.8	11/29/18 05:41 / by
Selenium	0.042	mg/L	D	0.002		E200.8	11/16/18 21:29 / by
Silicon	11.2	mg/L		0.1		E200.7	11/14/18 16:22 / rlh
Silicon	16.3	mg/L		0.1		E200.8	11/16/18 21:29 / by
Silicon	194	mg/L	D	0.2		E200.8	11/21/18 00:17 / by
Silicon	143	mg/L	D	0.6		E200.7	11/28/18 11:15 / rlh
Silicon	26.8	mg/L	D	0.2		E200.8	11/29/18 05:41 / by
Silver	0.002	mg/L		0.001		E200.8	11/16/18 21:29 / by
Sodium	11	mg/L		1		E200.7	11/14/18 16:22 / rlh
Strontium	0.02	mg/L		0.01		E200.7	11/14/18 16:22 / rlh
Strontium	0.03	mg/L		0.01		E200.8	11/16/18 21:29 / by
Strontium	0.14	mg/L		0.01		E200.8	11/21/18 00:17 / by
Strontium	0.10	mg/L		0.01		E200.7	11/28/18 11:15 / rlh
Strontium	0.03	mg/L		0.01		E200.8	11/29/18 05:41 / by
Thallium	0.003	mg/L	D	0.001		E200.8	11/21/18 00:17 / by
Tin	ND	mg/L		0.01		E200.8	11/16/18 21:29 / by
Titanium	0.143	mg/L		0.005		E200.7	11/14/18 16:22 / rlh
Titanium	0.184	mg/L		0.005		E200.8	11/16/18 21:29 / by
Titanium	2.62	mg/L		0.005		E200.8	11/21/18 00:17 / by
Titanium	2.66	mg/L	D	0.06		E200.7	11/28/18 11:15 / rlh
Titanium	0.458	mg/L		0.005		E200.8	11/29/18 05:41 / by
Uranium	0.0013	mg/L		0.0003		E200.8	11/16/18 21:29 / by
Vanadium	0.2	mg/L	D	0.2		E200.7	11/28/18 11:15 / rlh
Zinc	0.07	mg/L		0.01		E200.7	11/14/18 16:22 / rlh
Zinc	0.09	mg/L		0.01		E200.8	11/16/18 21:29 / by
Zinc	0.41	mg/L	D	0.05		E200.8	11/21/18 00:17 / by
Zinc	0.26	mg/L	D	0.02		E200.7	11/28/18 11:15 / rlh
Zinc	0.14	mg/L	D	0.05		E200.8	11/29/18 05:41 / by

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.





### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B18110980-015  
**Client Sample ID:** E5

**Revised Date:** 01/02/19  
**Report Date:** 12/04/18  
**Collection Date:** 11/12/18 11:00  
**Date Received:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	14	mg/L	D	4		A5310 C	11/20/18 11:09 / eli-ca
<b>METALS, DIGESTED DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.7	12/06/18 15:42 / rlh
Antimony	ND	mg/L	D	0.002		E200.8	12/07/18 20:23 / by
Arsenic	ND	mg/L		0.001		E200.8	12/07/18 20:23 / by
Barium	ND	mg/L		0.05		E200.7	12/06/18 15:42 / rlh
Beryllium	ND	mg/L		0.001		E200.8	12/07/18 20:23 / by
Boron	0.18	mg/L	D	0.09		E200.7	12/06/18 15:42 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/07/18 20:23 / by
Calcium	54	mg/L		1		E200.7	12/06/18 15:42 / rlh
Chromium	ND	mg/L		0.005		E200.8	12/07/18 20:23 / by
Cobalt	ND	mg/L		0.005		E200.8	12/07/18 20:23 / by
Copper	ND	mg/L		0.005		E200.8	12/13/18 02:03 / car
Iron	ND	mg/L		0.02		E200.8	12/07/18 20:23 / by
Lead	ND	mg/L		0.001		E200.8	12/07/18 20:23 / by
Lithium	ND	mg/L		0.1		E200.7	12/06/18 15:42 / rlh
Magnesium	50	mg/L		1		E200.7	12/06/18 15:42 / rlh
Manganese	0.003	mg/L		0.001		E200.8	12/13/18 02:03 / car
Molybdenum	0.077	mg/L		0.001		E200.8	12/07/18 20:23 / by
Nickel	ND	mg/L		0.005		E200.8	12/07/18 20:23 / by
Potassium	3	mg/L		1		E200.7	12/06/18 15:42 / rlh
Selenium	0.022	mg/L		0.001		E200.8	12/07/18 20:23 / by
Silicon	1.6	mg/L		0.1		E200.7	12/06/18 15:42 / rlh
Silver	ND	mg/L		0.001		E200.8	12/07/18 20:23 / by
Sodium	6	mg/L		1		E200.7	12/06/18 15:42 / rlh
Strontium	0.27	mg/L		0.01		E200.7	12/06/18 15:42 / rlh
Thallium	ND	mg/L		0.0005		E200.8	12/07/18 20:23 / by
Tin	0.02	mg/L		0.01		E200.8	12/07/18 20:23 / by
Titanium	ND	mg/L		0.005		E200.8	12/13/18 02:03 / car
Uranium	0.0046	mg/L		0.0003		E200.8	12/13/18 02:03 / car
Vanadium	ND	mg/L		0.01		E200.8	12/13/18 02:03 / car
Zinc	ND	mg/L	D	0.02		E200.8	12/07/18 20:23 / by
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.7	11/15/18 20:38 / rlh
Antimony	ND	mg/L	D	0.002		E200.8	11/16/18 21:33 / by
Arsenic	ND	mg/L	D	0.004		E200.8	11/21/18 00:21 / by
Barium	0.05	mg/L		0.05		E200.7	11/15/18 20:38 / rlh
Beryllium	ND	mg/L		0.001		E200.7	11/15/18 20:38 / rlh
Boron	0.08	mg/L		0.05		E200.7	11/15/18 20:38 / rlh
Cadmium	ND	mg/L		0.001		E200.8	11/16/18 21:33 / by
Calcium	56	mg/L		1		E200.7	11/15/18 20:38 / rlh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B18110980-015  
**Client Sample ID:** E5

**Revised Date:** 01/02/19  
**Report Date:** 12/04/18  
**Collection Date:** 11/12/18 11:00  
**Date Received:** 11/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Chromium	ND	mg/L		0.005	E200.8		11/16/18 21:33 / by
Cobalt	ND	mg/L		0.005	E200.8		11/16/18 21:33 / by
Copper	ND	mg/L		0.005	E200.7		11/15/18 20:38 / rlh
Iron	ND	mg/L		0.02	E200.7		11/15/18 20:38 / rlh
Lead	ND	mg/L		0.001	E200.8		11/16/18 21:33 / by
Lithium	ND	mg/L		0.1	E200.7		11/15/18 20:38 / rlh
Magnesium	60	mg/L		1	E200.7		11/15/18 20:38 / rlh
Manganese	0.003	mg/L		0.001	E200.8		11/16/18 21:33 / by
Molybdenum	0.082	mg/L		0.001	E200.8		11/16/18 21:33 / by
Nickel	ND	mg/L		0.005	E200.8		11/16/18 21:33 / by
Potassium	3	mg/L		1	E200.7		11/15/18 20:38 / rlh
Selenium	0.027	mg/L	D	0.002	E200.8		11/16/18 21:33 / by
Silicon	1.9	mg/L		0.1	E200.7		11/15/18 20:38 / rlh
Silver	ND	mg/L		0.001	E200.8		11/16/18 21:33 / by
Sodium	6	mg/L		1	E200.7		11/15/18 20:38 / rlh
Strontium	0.32	mg/L		0.01	E200.7		11/15/18 20:38 / rlh
Thallium	ND	mg/L	D	0.0008	E200.8		11/21/18 00:21 / by
Tin	0.02	mg/L		0.01	E200.8		11/16/18 21:33 / by
Titanium	ND	mg/L		0.005	E200.7		11/15/18 20:38 / rlh
Uranium	0.0058	mg/L		0.0003	E200.8		11/16/18 21:33 / by
Vanadium	ND	mg/L	L	0.02	E200.7		11/15/18 20:38 / rlh
Zinc	ND	mg/L		0.01	E200.7		11/15/18 20:38 / rlh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 L - Lowest available reporting limit for the analytical method used.



## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** Enviromin Inc

**Report Date:** 11/26/18

**Project:** NWP Phase II

**Work Order:** B18110980

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: A5310 C</b>							Analytical Run: TOC3-C_181119A		
<b>Lab ID: CCV-10292</b>	Continuing Calibration Verification Standard						11/20/18 04:41		
Organic Carbon, Dissolved (DOC)	5.06	mg/L	0.50	101	90	110			
<b>Method: A5310 C</b>							Batch: R241890		
<b>Lab ID: LCS-10553</b>	Laboratory Control Sample						Run: TOC3-C_181119A 11/20/18 00:23		
Organic Carbon, Dissolved (DOC)	5.03	mg/L	0.50	101	90	110			
<b>Lab ID: MBLK</b>	Method Blank						Run: TOC3-C_181119A 11/20/18 00:39		
Organic Carbon, Dissolved (DOC)	ND	mg/L	0.5						
<b>Lab ID: C18110384-001EMS</b>	Sample Matrix Spike						Run: TOC3-C_181119A 11/20/18 01:29		
Organic Carbon, Dissolved (DOC)	9.00	mg/L	0.50	106	85	115			
<b>Lab ID: C18110384-001EMSD</b>	Sample Matrix Spike Duplicate						Run: TOC3-C_181119A 11/20/18 01:45		
Organic Carbon, Dissolved (DOC)	9.00	mg/L	0.50	106	85	115	0.1	20	
<b>Lab ID: B18110980-012DMS</b>	Sample Matrix Spike						Run: TOC3-C_181119A 11/20/18 09:22		
Organic Carbon, Dissolved (DOC)	247	mg/L	20	98	85	115			
<b>Lab ID: B18110980-012DMSD</b>	Sample Matrix Spike Duplicate						Run: TOC3-C_181119A 11/20/18 09:38		
Organic Carbon, Dissolved (DOC)	253	mg/L	20	101	85	115	2.5	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II

**Report Date:** 12/04/18  
**Work Order:** B18110980

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.7</b>										Analytical Run: ICP204-B_181114A	
<b>Lab ID: ICV</b>	18 Continuing Calibration Verification Standard									11/14/18 09:51	
Aluminum		2.52	mg/L	0.10	101	95	105				
Barium		2.47	mg/L	0.10	99	95	105				
Beryllium		1.23	mg/L	0.010	98	95	105				
Boron		2.45	mg/L	0.10	98	95	105				
Calcium		25.5	mg/L	1.0	102	95	105				
Copper		2.43	mg/L	0.010	97	95	105				
Iron		2.52	mg/L	0.020	101	95	105				
Lithium		1.25	mg/L	0.10	100	95	105				
Magnesium		25.2	mg/L	1.0	101	95	105				
Manganese		2.43	mg/L	0.010	97	95	105				
Nickel		2.47	mg/L	0.050	99	95	105				
Potassium		24.9	mg/L	1.0	100	95	105				
Silicon		4.93	mg/L	0.10	99	95	105				
Sodium		24.9	mg/L	1.0	100	95	105				
Strontium		2.47	mg/L	0.10	99	95	105				
Titanium		2.46	mg/L	0.010	98	95	105				
Vanadium		2.45	mg/L	0.10	98	95	105				
Zinc		2.43	mg/L	0.010	97	95	105				

<b>Method: E200.7</b>										Batch: R310971	
<b>Lab ID: MB-7400DIS181114A</b>	18 Method Blank									Run: ICP204-B_181114A	11/14/18 09:59
Aluminum		ND	mg/L	0.03							
Barium		ND	mg/L	0.0010							
Beryllium		ND	mg/L	0.0005							
Boron		ND	mg/L	0.01							
Calcium		ND	mg/L	0.07							
Copper		ND	mg/L	0.004							
Iron		0.02	mg/L	0.02							
Lithium		ND	mg/L	0.02							
Magnesium		ND	mg/L	0.02							
Manganese		ND	mg/L	0.002							
Nickel		ND	mg/L	0.004							
Potassium		ND	mg/L	0.1							
Silicon		ND	mg/L	0.07							
Sodium		ND	mg/L	0.1							
Strontium		ND	mg/L	0.001							
Titanium		ND	mg/L	0.006							
Vanadium		ND	mg/L	0.02							
Zinc		ND	mg/L	0.002							

<b>Lab ID: LFB-7400DIS181114A</b>	18 Laboratory Fortified Blank									Run: ICP204-B_181114A	11/14/18 10:06
Aluminum		5.05	mg/L	0.10	101	85	115				
Barium		0.988	mg/L	0.10	99	85	115				
Beryllium		0.490	mg/L	0.010	98	85	115				

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 12/04/18

**Project:** NWP Phase II

**Work Order:** B18110980

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>								Batch: R310971		
<b>Lab ID:</b>	<b>LFB-7400DIS181114A</b>	18 Laboratory Fortified Blank			Run: ICP204-B_181114A			11/14/18 10:06		
Boron		0.993	mg/L	0.10	99	85	115			
Calcium		51.2	mg/L	1.0	102	85	115			
Copper		0.970	mg/L	0.010	97	85	115			
Iron		5.06	mg/L	0.020	101	85	115			
Lithium		1.01	mg/L	0.10	101	85	115			
Magnesium		50.8	mg/L	1.0	102	85	115			
Manganese		4.88	mg/L	0.010	98	85	115			
Nickel		0.978	mg/L	0.050	98	85	115			
Potassium		50.5	mg/L	1.0	101	85	115			
Silicon		9.84	mg/L	0.10	98	85	115			
Sodium		50.2	mg/L	1.0	100	85	115			
Strontium		0.989	mg/L	0.10	99	85	115			
Titanium		0.997	mg/L	0.010	100	85	115			
Vanadium		0.987	mg/L	0.10	99	85	115			
Zinc		0.973	mg/L	0.010	97	85	115			
<b>Lab ID:</b>	<b>MB2-127570</b>	18 Method Blank			Run: ICP204-B_181114A			11/14/18 14:47		
Aluminum		ND	mg/L	0.03						
Barium		ND	mg/L	0.0010						
Beryllium		ND	mg/L	0.0005						
Boron		0.03	mg/L	0.01						
Calcium		ND	mg/L	0.07						
Copper		ND	mg/L	0.004						
Iron		ND	mg/L	0.02						
Lithium		ND	mg/L	0.02						
Magnesium		ND	mg/L	0.02						
Manganese		ND	mg/L	0.002						
Nickel		ND	mg/L	0.004						
Potassium		ND	mg/L	0.1						
Silicon		ND	mg/L	0.07						
Sodium		ND	mg/L	0.1						
Strontium		ND	mg/L	0.001						
Titanium		ND	mg/L	0.006						
Vanadium		ND	mg/L	0.02						
Zinc		ND	mg/L	0.002						
<b>Lab ID:</b>	<b>B18110979-002BMS2</b>	18 Sample Matrix Spike			Run: ICP204-B_181114A			11/14/18 15:22		
Aluminum		8.90	mg/L	0.036	114	70	130			
Barium		1.12	mg/L	0.050	98	70	130			
Beryllium		0.470	mg/L	0.0010	94	70	130			
Boron		0.979	mg/L	0.050	98	70	130			
Calcium		57.4	mg/L	1.0	99	70	130			
Copper		0.969	mg/L	0.0050	96	70	130			
Iron		6.14	mg/L	0.020	101	70	130			
Lithium		1.02	mg/L	0.10	102	70	130			

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 12/04/18

**Project:** NWP Phase II

**Work Order:** B18110980

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>										
Batch: R310971										
<b>Lab ID:</b>	<b>B18110979-002BMS2</b>	18 Sample Matrix Spike								
										Run: ICP204-B_181114A
										11/14/18 15:22
Magnesium		51.6	mg/L	1.0	98	70	130			
Manganese		4.74	mg/L	0.0022	95	70	130			
Nickel		0.947	mg/L	0.0050	94	70	130			
Potassium		51.9	mg/L	1.0	101	70	130			
Silicon		17.0	mg/L	0.10	107	70	130			
Sodium		218	mg/L	1.0	102	70	130			
Strontium		1.01	mg/L	0.010	98	70	130			
Titanium		1.01	mg/L	0.0066	95	70	130			
Vanadium		0.975	mg/L	0.019	97	70	130			
Zinc		1.00	mg/L	0.010	97	70	130			
<b>Lab ID:</b>	<b>B18110979-002BMSD</b>	18 Sample Matrix Spike Duplicate								
										Run: ICP204-B_181114A
										11/14/18 15:25
Aluminum		8.55	mg/L	0.036	107	70	130	4.0	20	
Barium		1.11	mg/L	0.050	96	70	130	1.4	20	
Beryllium		0.465	mg/L	0.0010	93	70	130	1.1	20	
Boron		0.969	mg/L	0.050	97	70	130	1.0	20	
Calcium		57.2	mg/L	1.0	98	70	130	0.4	20	
Copper		0.953	mg/L	0.0050	95	70	130	1.7	20	
Iron		6.02	mg/L	0.020	99	70	130	1.9	20	
Lithium		1.00	mg/L	0.10	100	70	130	1.7	20	
Magnesium		51.5	mg/L	1.0	98	70	130	0.2	20	
Manganese		4.70	mg/L	0.0022	94	70	130	0.8	20	
Nickel		0.946	mg/L	0.0050	94	70	130	0.1	20	
Potassium		51.0	mg/L	1.0	99	70	130	1.6	20	
Silicon		16.5	mg/L	0.10	102	70	130	2.6	20	
Sodium		214	mg/L	1.0	93	70	130	2.0	20	
Strontium		0.992	mg/L	0.010	96	70	130	1.7	20	
Titanium		0.994	mg/L	0.0066	93	70	130	1.7	20	
Vanadium		0.962	mg/L	0.019	96	70	130	1.3	20	
Zinc		1.000	mg/L	0.010	97	70	130	0.1	20	
<b>Lab ID:</b>	<b>B18110980-013BMS2</b>	18 Sample Matrix Spike								
										Run: ICP204-B_181114A
										11/14/18 16:15
Aluminum		8.74	mg/L	0.036	105	70	130			
Barium		1.10	mg/L	0.050	100	70	130			
Beryllium		0.473	mg/L	0.0010	95	70	130			
Boron		0.989	mg/L	0.050	99	70	130			
Calcium		58.5	mg/L	1.0	99	70	130			
Copper		0.978	mg/L	0.0050	97	70	130			
Iron		6.32	mg/L	0.020	100	70	130			
Lithium		1.04	mg/L	0.10	104	70	130			
Magnesium		51.9	mg/L	1.0	99	70	130			
Manganese		4.78	mg/L	0.0022	95	70	130			
Nickel		0.943	mg/L	0.0050	94	70	130			
Potassium		52.7	mg/L	1.0	102	70	130			
Silicon		16.6	mg/L	0.10	99	70	130			

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 12/04/18

**Project:** NWP Phase II

**Work Order:** B18110980

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>										
Batch: R310971										
<b>Lab ID:</b>	<b>B18110980-013BMS2</b>	18	Sample Matrix Spike							
										Run: ICP204-B_181114A
										11/14/18 16:15
Sodium		71.6	mg/L	1.0	102	70	130			
Strontium		1.03	mg/L	0.010	99	70	130			
Titanium		1.08	mg/L	0.0066	97	70	130			
Vanadium		0.984	mg/L	0.019	98	70	130			
Zinc		0.994	mg/L	0.010	97	70	130			
<b>Lab ID:</b>	<b>B18110980-013BMSD</b>	18	Sample Matrix Spike Duplicate							
										Run: ICP204-B_181114A
										11/14/18 16:18
Aluminum		9.05	mg/L	0.036	112	70	130	3.5	20	
Barium		1.09	mg/L	0.050	99	70	130	1.4	20	
Beryllium		0.467	mg/L	0.0010	93	70	130	1.3	20	
Boron		0.978	mg/L	0.050	98	70	130	1.1	20	
Calcium		58.2	mg/L	1.0	98	70	130	0.7	20	
Copper		0.962	mg/L	0.0050	95	70	130	1.7	20	
Iron		6.41	mg/L	0.020	102	70	130	1.5	20	
Lithium		1.02	mg/L	0.10	102	70	130	1.9	20	
Magnesium		51.6	mg/L	1.0	99	70	130	0.5	20	
Manganese		4.73	mg/L	0.0022	95	70	130	0.9	20	
Nickel		0.944	mg/L	0.0050	94	70	130	0.2	20	
Potassium		51.9	mg/L	1.0	101	70	130	1.6	20	
Silicon		17.2	mg/L	0.10	105	70	130	3.4	20	
Sodium		69.6	mg/L	1.0	98	70	130	2.9	20	
Strontium		1.01	mg/L	0.010	98	70	130	1.8	20	
Titanium		1.08	mg/L	0.0066	97	70	130	0.3	20	
Vanadium		0.972	mg/L	0.019	97	70	130	1.2	20	
Zinc		0.989	mg/L	0.010	96	70	130	0.5	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II

**Report Date:** 12/04/18  
**Work Order:** B18110980

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method:</b> E200.7										Analytical Run: ICP204-B_181115A	
<b>Lab ID:</b> ICV	17 Continuing Calibration Verification Standard									11/15/18 09:47	
Aluminum		2.46	mg/L	0.10	99	95	105				
Barium		2.45	mg/L	0.10	98	95	105				
Beryllium		1.23	mg/L	0.010	99	95	105				
Boron		2.47	mg/L	0.10	99	95	105				
Calcium		25.6	mg/L	1.0	102	95	105				
Copper		2.43	mg/L	0.010	97	95	105				
Iron		2.52	mg/L	0.020	101	95	105				
Lithium		1.29	mg/L	0.10	103	95	105				
Magnesium		25.9	mg/L	1.0	104	95	105				
Manganese		2.46	mg/L	0.010	98	95	105				
Potassium		25.7	mg/L	1.0	103	95	105				
Silicon		5.02	mg/L	0.10	100	95	105				
Sodium		25.4	mg/L	1.0	101	95	105				
Strontium		2.48	mg/L	0.10	99	95	105				
Titanium		2.49	mg/L	0.010	100	95	105				
Vanadium		2.46	mg/L	0.10	99	95	105				
Zinc		2.45	mg/L	0.010	98	95	105				

<b>Method:</b> E200.7										Batch: R311046	
<b>Lab ID:</b> MB-7400DIS181115A	17 Method Blank									Run: ICP204-B_181115A	11/15/18 09:55
Aluminum		ND	mg/L	0.03							
Barium		ND	mg/L	0.0010							
Beryllium		ND	mg/L	0.0005							
Boron		ND	mg/L	0.01							
Calcium		ND	mg/L	0.07							
Copper		ND	mg/L	0.004							
Iron		ND	mg/L	0.02							
Lithium		ND	mg/L	0.02							
Magnesium		ND	mg/L	0.02							
Manganese		ND	mg/L	0.002							
Potassium		ND	mg/L	0.1							
Silicon		ND	mg/L	0.07							
Sodium		ND	mg/L	0.1							
Strontium		ND	mg/L	0.001							
Titanium		ND	mg/L	0.006							
Vanadium		ND	mg/L	0.02							
Zinc		ND	mg/L	0.002							

<b>Lab ID:</b> LFB-7400DIS181115A	17 Laboratory Fortified Blank									Run: ICP204-B_181115A	11/15/18 10:02
Aluminum		4.85	mg/L	0.10	97	85	115				
Barium		0.958	mg/L	0.10	96	85	115				
Beryllium		0.482	mg/L	0.010	96	85	115				
Boron		0.977	mg/L	0.10	98	85	115				
Calcium		50.9	mg/L	1.0	102	85	115				

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 12/04/18

**Project:** NWP Phase II

**Work Order:** B18110980

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>								Batch: R311046		
<b>Lab ID: LFB-7400DIS181115A</b>	17	Laboratory Fortified Blank						Run: ICP204-B_181115A		11/15/18 10:02
Copper		0.959	mg/L	0.010	96	85	115			
Iron		4.91	mg/L	0.020	98	85	115			
Lithium		1.02	mg/L	0.10	102	85	115			
Magnesium		52.0	mg/L	1.0	104	85	115			
Manganese		4.87	mg/L	0.010	97	85	115			
Potassium		51.1	mg/L	1.0	102	85	115			
Silicon		10.0	mg/L	0.10	100	85	115			
Sodium		49.8	mg/L	1.0	100	85	115			
Strontium		0.969	mg/L	0.10	97	85	115			
Titanium		0.996	mg/L	0.010	100	85	115			
Vanadium		0.978	mg/L	0.10	98	85	115			
Zinc		0.981	mg/L	0.010	98	85	115			
<b>Lab ID: MB-127570</b>	17	Method Blank						Run: ICP204-B_181115A		11/15/18 20:27
Aluminum		ND	mg/L	0.03						
Barium		ND	mg/L	0.0010						
Beryllium		ND	mg/L	0.0005						
Boron		0.03	mg/L	0.01						
Calcium		ND	mg/L	0.07						
Copper		ND	mg/L	0.004						
Iron		ND	mg/L	0.02						
Lithium		ND	mg/L	0.02						
Magnesium		ND	mg/L	0.02						
Manganese		ND	mg/L	0.002						
Potassium		ND	mg/L	0.1						
Silicon		ND	mg/L	0.07						
Sodium		ND	mg/L	0.1						
Strontium		ND	mg/L	0.001						
Titanium		ND	mg/L	0.006						
Vanadium		ND	mg/L	0.02						
Zinc		ND	mg/L	0.002						
<b>Lab ID: MB-127649</b>	17	Method Blank						Run: ICP204-B_181115A		11/15/18 21:40
Aluminum		ND	mg/L	0.03						
Barium		ND	mg/L	0.0010						
Beryllium		ND	mg/L	0.0005						
Boron		ND	mg/L	0.01						
Calcium		ND	mg/L	0.07						
Copper		0.005	mg/L	0.004						
Iron		ND	mg/L	0.02						
Lithium		ND	mg/L	0.02						
Magnesium		ND	mg/L	0.02						
Manganese		ND	mg/L	0.002						
Potassium		ND	mg/L	0.1						
Silicon		ND	mg/L	0.07						

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 12/04/18

**Project:** NWP Phase II

**Work Order:** B18110980

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>										
Batch: R311046										
<b>Lab ID: MB-127649</b>	17	Method Blank					Run: ICP204-B_181115A		11/15/18 21:40	
Sodium		ND	mg/L	0.1						
Strontium		ND	mg/L	0.001						
Titanium		ND	mg/L	0.006						
Vanadium		ND	mg/L	0.02						
Zinc		0.004	mg/L	0.002						
<b>Lab ID: B18110980-001BMS2</b>	17	Sample Matrix Spike					Run: ICP204-B_181115A		11/15/18 21:56	
Aluminum		17.2	mg/L	0.072	128	70	130			
Barium		2.47	mg/L	0.050	110	70	130			
Beryllium		1.06	mg/L	0.0010	106	70	130			
Boron		2.18	mg/L	0.050	109	70	130			
Calcium		111	mg/L	1.0	101	70	130			
Copper		2.00	mg/L	0.0075	100	70	130			
Iron		13.3	mg/L	0.034	112	70	130			
Lithium		2.23	mg/L	0.10	112	70	130			
Magnesium		113	mg/L	1.0	110	70	130			
Manganese		10.0	mg/L	0.0045	100	70	130			
Potassium		109	mg/L	1.0	106	70	130			
Silicon		28.9	mg/L	0.15	101	70	130			
Sodium		136	mg/L	1.0	113	70	130			
Strontium		2.30	mg/L	0.010	113	70	130			
Titanium		2.22	mg/L	0.013	108	70	130			
Vanadium		2.14	mg/L	0.039	107	70	130			
Zinc		2.08	mg/L	0.010	101	70	130			
<b>Lab ID: B18110980-001BMSD</b>	17	Sample Matrix Spike Duplicate					Run: ICP204-B_181115A		11/15/18 21:59	
Aluminum		19.1	mg/L	0.072	147	70	130	11	20	S
Barium		2.56	mg/L	0.050	114	70	130	3.4	20	
Beryllium		1.10	mg/L	0.0010	110	70	130	3.4	20	
Boron		2.26	mg/L	0.050	113	70	130	3.9	20	
Calcium		114	mg/L	1.0	104	70	130	2.7	20	
Copper		2.08	mg/L	0.0075	104	70	130	3.8	20	
Iron		14.0	mg/L	0.034	119	70	130	5.4	20	
Lithium		2.32	mg/L	0.10	116	70	130	3.8	20	
Magnesium		116	mg/L	1.0	113	70	130	3.0	20	
Manganese		10.4	mg/L	0.0045	104	70	130	3.4	20	
Potassium		113	mg/L	1.0	111	70	130	4.0	20	
Silicon		31.6	mg/L	0.15	115	70	130	8.9	20	
Sodium		139	mg/L	1.0	117	70	130	2.5	20	
Strontium		2.39	mg/L	0.010	117	70	130	3.6	20	
Titanium		2.32	mg/L	0.013	113	70	130	4.4	20	
Vanadium		2.22	mg/L	0.039	111	70	130	3.6	20	
Zinc		2.14	mg/L	0.010	104	70	130	2.5	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II

**Report Date:** 12/04/18  
**Work Order:** B18110980

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>										
Batch: R311046										
<b>Lab ID:</b>	<b>B18111044-001BMS2</b>	17 Sample Matrix Spike			Run: ICP204-B_181115A				11/15/18 23:16	
Aluminum		5.11	mg/L	0.036	102	70	130			
Barium		1.23	mg/L	0.050	98	70	130			
Beryllium		0.471	mg/L	0.0010	94	70	130			
Boron		1.36	mg/L	0.050	98	70	130			
Calcium		96.0	mg/L	1.0	96	70	130			
Copper		0.978	mg/L	0.0050	97	70	130			
Iron		4.98	mg/L	0.020	100	70	130			
Lithium		1.08	mg/L	0.10	105	70	130			
Magnesium		55.1	mg/L	1.0	99	70	130			
Manganese		4.72	mg/L	0.0022	94	70	130			
Potassium		78.5	mg/L	1.0	102	70	130			
Silicon		29.2	mg/L	0.10	99	70	130			
Sodium		91.8	mg/L	1.0	100	70	130			
Strontium		1.15	mg/L	0.010	98	70	130			
Titanium		0.989	mg/L	0.0066	99	70	130			
Vanadium		0.978	mg/L	0.019	98	70	130			
Zinc		0.975	mg/L	0.010	97	70	130			
<b>Lab ID:</b>	<b>B18111044-001BMSD</b>	17 Sample Matrix Spike Duplicate			Run: ICP204-B_181115A				11/15/18 23:19	
Aluminum		5.10	mg/L	0.036	102	70	130	0.1	20	
Barium		1.22	mg/L	0.050	97	70	130	0.4	20	
Beryllium		0.469	mg/L	0.0010	94	70	130	0.3	20	
Boron		1.36	mg/L	0.050	98	70	130	0.2	20	
Calcium		95.7	mg/L	1.0	95	70	130	0.3	20	
Copper		0.968	mg/L	0.0050	96	70	130	1.0	20	
Iron		4.97	mg/L	0.020	99	70	130	0.3	20	
Lithium		1.07	mg/L	0.10	104	70	130	0.5	20	
Magnesium		54.9	mg/L	1.0	98	70	130	0.4	20	
Manganese		4.70	mg/L	0.0022	94	70	130	0.3	20	
Potassium		78.3	mg/L	1.0	101	70	130	0.3	20	
Silicon		29.1	mg/L	0.10	98	70	130	0.2	20	
Sodium		92.0	mg/L	1.0	101	70	130	0.2	20	
Strontium		1.15	mg/L	0.010	98	70	130	0.2	20	
Titanium		0.984	mg/L	0.0066	98	70	130	0.4	20	
Vanadium		0.974	mg/L	0.019	97	70	130	0.4	20	
Zinc		0.969	mg/L	0.010	97	70	130	0.6	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 12/04/18

**Project:** NWP Phase II

**Work Order:** B18110980

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method:</b> E200.7										Analytical Run: ICP204-B_181116B	
<b>Lab ID:</b> ICV		Continuing Calibration Verification Standard								11/16/18 11:25	
Iron		2.54	mg/L	0.020	102	95	105				
<b>Method:</b> E200.7										Batch: R311149	
<b>Lab ID:</b> MB-7400DIS181116B		Method Blank								Run: ICP204-B_181116B	11/16/18 11:33
Iron		ND	mg/L	0.02							
<b>Lab ID:</b> LFB-7400DIS181116B		Laboratory Fortified Blank								Run: ICP204-B_181116B	11/16/18 11:40
Iron		5.10	mg/L	0.020	102	85	115				
<b>Lab ID:</b> B18111320-003BMS2		Sample Matrix Spike								Run: ICP204-B_181116B	11/16/18 16:46
Iron		25.7	mg/L	0.086	101	70	130				
<b>Lab ID:</b> B18111320-003BMSD		Sample Matrix Spike Duplicate								Run: ICP204-B_181116B	11/16/18 16:50
Iron		25.8	mg/L	0.086	102	70	130	0.2	20		
<b>Lab ID:</b> MB-127649		Method Blank								Run: ICP204-B_181116B	11/16/18 18:23
Iron		ND	mg/L	0.02							

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 12/04/18

**Project:** NWP Phase II

**Work Order:** B18110980

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.7</b>								Analytical Run: ICP204-B_181119A			
<b>Lab ID: ICV</b>	4	Continuing Calibration Verification Standard									11/19/18 09:33
Aluminum		2.47	mg/L	0.10	99	95	105				
Silicon		4.93	mg/L	0.10	99	95	105				
Sodium		24.4	mg/L	1.0	97	95	105				
Titanium		2.45	mg/L	0.010	98	95	105				
<b>Method: E200.7</b>								Batch: R311210			
<b>Lab ID: MB-7400DIS1811119A</b>	4	Method Blank						Run: ICP204-B_181119A			11/19/18 10:42
Aluminum		ND	mg/L	0.03							
Silicon		ND	mg/L	0.07							
Sodium		ND	mg/L	0.1							
Titanium		ND	mg/L	0.006							
<b>Lab ID: LFB-7400DIS181119A</b>	4	Laboratory Fortified Blank						Run: ICP204-B_181119A			11/19/18 10:50
Aluminum		5.03	mg/L	0.10	101	85	115				
Silicon		9.91	mg/L	0.10	99	85	115				
Sodium		49.5	mg/L	1.0	99	85	115				
Titanium		0.995	mg/L	0.010	99	85	115				
<b>Lab ID: MB-127649</b>	4	Method Blank						Run: ICP204-B_181119A			11/19/18 13:32
Aluminum		ND	mg/L	0.03							
Silicon		0.09	mg/L	0.07							
Sodium		ND	mg/L	0.1							
Titanium		ND	mg/L	0.006							
<b>Lab ID: B18110979-006BMS2</b>	4	Sample Matrix Spike						Run: ICP204-B_181119A			11/19/18 13:51
Aluminum		39.0	mg/L	0.18	101	70	130				
Silicon		78.5	mg/L	0.38	108	70	130				
Sodium		258	mg/L	1.0	101	70	130				
Titanium		5.22	mg/L	0.033	100	70	130				
<b>Lab ID: B18110979-006BMSD</b>	4	Sample Matrix Spike Duplicate						Run: ICP204-B_181119A			11/19/18 13:55
Aluminum		38.7	mg/L	0.18	100	70	130	0.6	20		
Silicon		78.8	mg/L	0.38	108	70	130	0.4	20		
Sodium		258	mg/L	1.0	100	70	130	0.1	20		
Titanium		5.26	mg/L	0.033	101	70	130	0.8	20		

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 12/04/18

**Project:** NWP Phase II

**Work Order:** B18110980

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.7</b>								Analytical Run: ICP204-B_181128A			
<b>Lab ID: ICV</b>	2	Continuing Calibration Verification Standard								11/28/18 09:31	
Vanadium		2.48	mg/L	0.10	99	95	105				
Zinc		2.46	mg/L	0.010	98	95	105				
<b>Method: E200.7</b>								Batch: R311631			
<b>Lab ID: MB-7400DIS181128A</b>	2	Method Blank						Run: ICP204-B_181128A		11/28/18 09:39	
Vanadium		ND	mg/L	0.02							
Zinc		ND	mg/L	0.002							
<b>Lab ID: LFB-7400DIS181128A</b>	2	Laboratory Fortified Blank						Run: ICP204-B_181128A		11/28/18 09:46	
Vanadium		0.967	mg/L	0.10	97	85	115				
Zinc		0.965	mg/L	0.010	97	85	115				
<b>Lab ID: MB-127570</b>	2	Method Blank						Run: ICP204-B_181128A		11/28/18 10:56	
Vanadium		ND	mg/L	0.02							
Zinc		ND	mg/L	0.002							
<b>Lab ID: B18112062-001CMS2</b>	2	Sample Matrix Spike						Run: ICP204-B_181128A		11/28/18 12:17	
Vanadium		1.91	mg/L	0.039	96	70	130				
Zinc		1.91	mg/L	0.010	95	70	130				
<b>Lab ID: B18112062-001CMSD</b>	2	Sample Matrix Spike Duplicate						Run: ICP204-B_181128A		11/28/18 12:29	
Vanadium		1.91	mg/L	0.039	95	70	130	0.1	20		
Zinc		1.91	mg/L	0.010	96	70	130	0.2	20		

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# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 12/04/18

**Project:** NWP Phase II

**Work Order:** B18110980

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.8</b>										Analytical Run: ICPMS206-B_181115A	
<b>Lab ID: QCS</b>	27	Initial Calibration Verification Standard							11/15/18 16:28		
Antimony		0.0477	mg/L	0.050	95	90	110				
Arsenic		0.0492	mg/L	0.0050	99	90	110				
Barium		0.0478	mg/L	0.10	96	90	110				
Beryllium		0.0246	mg/L	0.0010	98	90	110				
Cadmium		0.0242	mg/L	0.0010	97	90	110				
Calcium		2.48	mg/L	0.50	99	90	110				
Chromium		0.0502	mg/L	0.010	100	90	110				
Cobalt		0.0493	mg/L	0.010	99	90	110				
Copper		0.0522	mg/L	0.010	104	90	110				
Iron		0.257	mg/L	0.020	103	90	110				
Lead		0.0503	mg/L	0.010	101	90	110				
Magnesium		2.54	mg/L	0.50	101	90	110				
Manganese		0.249	mg/L	0.010	100	90	110				
Molybdenum		0.0476	mg/L	0.0050	95	90	110				
Nickel		0.0513	mg/L	0.010	103	90	110				
Potassium		2.46	mg/L	0.50	99	90	110				
Selenium		0.0482	mg/L	0.0050	96	90	110				
Silicon		0.487	mg/L	0.10	97	90	110				
Silver		0.0248	mg/L	0.0050	99	90	110				
Sodium		2.54	mg/L	0.50	102	90	110				
Strontium		0.0482	mg/L	0.10	96	90	110				
Thallium		0.0495	mg/L	0.10	99	90	110				
Tin		0.0485	mg/L	0.10	97	90	110				
Titanium		0.0485	mg/L	0.010	97	90	110				
Uranium		0.0191	mg/L	0.00030	96	90	110				
Vanadium		0.0512	mg/L	0.10	102	90	110				
Zinc		0.0491	mg/L	0.010	98	90	110				

<b>Method: E200.8</b>										Batch: R311108	
<b>Lab ID: LRB</b>	27	Method Blank							Run: ICPMS206-B_181115A		11/15/18 16:45
Antimony		ND	mg/L	0.0004							
Arsenic		ND	mg/L	0.0002							
Barium		ND	mg/L	0.00004							
Beryllium		ND	mg/L	0.0001							
Cadmium		ND	mg/L	0.00003							
Calcium		ND	mg/L	0.06							
Chromium		ND	mg/L	0.0002							
Cobalt		ND	mg/L	0.00004							
Copper		ND	mg/L	0.0003							
Iron		ND	mg/L	0.001							
Lead		ND	mg/L	0.00005							
Magnesium		ND	mg/L	0.006							
Manganese		ND	mg/L	0.00010							
Molybdenum		ND	mg/L	0.00005							

**Qualifiers:**

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## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 12/04/18

**Project:** NWP Phase II

**Work Order:** B18110980

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>										
Batch: R311108										
<b>Lab ID: LRB</b>	27	Method Blank								
Run: ICPMS206-B_181115A 11/15/18 16:45										
Nickel		ND	mg/L	0.0006						
Potassium		ND	mg/L	0.08						
Selenium		ND	mg/L	0.0003						
Silicon		ND	mg/L	0.01						
Silver		ND	mg/L	0.00002						
Sodium		ND	mg/L	0.02						
Strontium		ND	mg/L	0.0001						
Thallium		ND	mg/L	0.00007						
Tin		ND	mg/L	0.001						
Titanium		ND	mg/L	0.0001						
Uranium		ND	mg/L	0.00005						
Vanadium		0.002	mg/L	0.001						
Zinc		ND	mg/L	0.003						
<b>Lab ID: LFB</b>	27	Laboratory Fortified Blank								
Run: ICPMS206-B_181115A 11/15/18 16:53										
Antimony		0.0460	mg/L	0.050	92	85	115			
Arsenic		0.0487	mg/L	0.0050	97	85	115			
Barium		0.0486	mg/L	0.10	97	85	115			
Beryllium		0.0492	mg/L	0.0010	98	85	115			
Cadmium		0.0480	mg/L	0.0010	96	85	115			
Calcium		48.6	mg/L	0.50	97	85	115			
Chromium		0.0492	mg/L	0.010	98	85	115			
Cobalt		0.0484	mg/L	0.010	97	85	115			
Copper		0.0480	mg/L	0.010	96	85	115			
Iron		4.88	mg/L	0.020	98	85	115			
Lead		0.0487	mg/L	0.010	97	85	115			
Magnesium		48.7	mg/L	0.50	97	85	115			
Manganese		0.0488	mg/L	0.010	98	85	115			
Molybdenum		0.0486	mg/L	0.0050	97	85	115			
Nickel		0.0476	mg/L	0.010	95	85	115			
Potassium		48.1	mg/L	0.50	96	85	115			
Selenium		0.0490	mg/L	0.0050	98	85	115			
Silicon		0.204	mg/L	0.10	102	85	115			
Silver		0.0193	mg/L	0.0050	97	85	115			
Sodium		48.7	mg/L	0.50	97	85	115			
Strontium		0.0484	mg/L	0.10	97	85	115			
Thallium		0.0490	mg/L	0.10	98	85	115			
Tin		0.0485	mg/L	0.10	97	85	115			
Titanium		0.0543	mg/L	0.010	109	85	115			
Uranium		0.0488	mg/L	0.00030	98	85	115			
Vanadium		0.0491	mg/L	0.10	94	85	115			
Zinc		0.0496	mg/L	0.010	99	85	115			
<b>Lab ID: MB-127649</b>	27	Method Blank								
Run: ICPMS206-B_181115A 11/15/18 17:27										
Antimony		ND	mg/L	0.0004						

**Qualifiers:**

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# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 12/04/18

**Project:** NWP Phase II

**Work Order:** B18110980

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>										
Batch: R311108										
<b>Lab ID: MB-127649</b>	27	Method Blank								
						Run: ICPMS206-B_181115A				11/15/18 17:27
Arsenic		ND	mg/L	0.0002						
Barium		0.0001	mg/L	0.00004						
Beryllium		ND	mg/L	0.0001						
Cadmium		ND	mg/L	0.00003						
Calcium		ND	mg/L	0.06						
Chromium		ND	mg/L	0.0002						
Cobalt		ND	mg/L	0.00004						
Copper		0.004	mg/L	0.0003						
Iron		0.003	mg/L	0.001						
Lead		0.0001	mg/L	0.00005						
Magnesium		ND	mg/L	0.006						
Manganese		ND	mg/L	0.0002						
Molybdenum		ND	mg/L	0.00010						
Nickel		0.0010	mg/L	0.0006						
Potassium		ND	mg/L	0.08						
Selenium		ND	mg/L	0.0003						
Silicon		0.02	mg/L	0.01						
Silver		ND	mg/L	0.00002						
Sodium		0.06	mg/L	0.02						
Strontium		ND	mg/L	0.0001						
Thallium		ND	mg/L	0.00007						
Tin		ND	mg/L	0.003						
Titanium		ND	mg/L	0.0001						
Uranium		ND	mg/L	0.00005						
Vanadium		ND	mg/L	0.001						
Zinc		0.004	mg/L	0.003						
<b>Lab ID: B18111196-001BMS</b>	27	Sample Matrix Spike								
						Run: ICPMS206-B_181115A				11/15/18 17:35
Antimony		0.0492	mg/L	0.0010	98	70	130			
Arsenic		0.0506	mg/L	0.0010	100	70	130			
Barium		0.0935	mg/L	0.050	103	70	130			
Beryllium		0.0501	mg/L	0.0010	100	70	130			
Cadmium		0.0514	mg/L	0.0010	103	70	130			
Calcium		70.6	mg/L	1.0	89	70	130			
Chromium		0.0504	mg/L	0.0050	101	70	130			
Cobalt		0.0488	mg/L	0.0050	97	70	130			
Copper		0.0516	mg/L	0.0050	98	70	130			
Iron		4.82	mg/L	0.020	96	70	130			
Lead		0.0516	mg/L	0.0010	103	70	130			
Magnesium		57.4	mg/L	1.0	99	70	130			
Manganese		0.0493	mg/L	0.0010	96	70	130			
Molybdenum		0.0529	mg/L	0.0010	105	70	130			
Nickel		0.0491	mg/L	0.0050	98	70	130			
Potassium		50.1	mg/L	1.0	97	70	130			

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II

**Report Date:** 12/04/18  
**Work Order:** B18110980

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.8</b>										Batch: R311108	
<b>Lab ID: B18111196-001BMS</b>	27	Sample Matrix Spike			Run: ICPMS206-B_181115A				11/15/18 17:35		
Selenium		0.0495	mg/L	0.0010	99	70	130				
Silicon		7.19	mg/L	0.10		70	130			A	
Silver		0.0202	mg/L	0.0010	101	70	130				
Sodium		56.6	mg/L	1.0	101	70	130				
Strontium		0.126	mg/L	0.010	93	70	130				
Thallium		0.0515	mg/L	0.00050	103	70	130				
Tin		0.0515	mg/L	0.010	103	70	130				
Titanium		0.0575	mg/L	0.0050	113	70	130				
Uranium		0.0514	mg/L	0.00030	103	70	130				
Vanadium		0.0498	mg/L	0.010	100	70	130				
Zinc		0.0553	mg/L	0.010	100	70	130				
<b>Lab ID: B18111196-001BMSD</b>	27	Sample Matrix Spike Duplicate			Run: ICPMS206-B_181115A				11/15/18 17:39		
Antimony		0.0498	mg/L	0.0010	100	70	130	1.2	20		
Arsenic		0.0506	mg/L	0.0010	100	70	130	0.1	20		
Barium		0.0920	mg/L	0.050	100	70	130	1.6	20		
Beryllium		0.0501	mg/L	0.0010	100	70	130	0.1	20		
Cadmium		0.0503	mg/L	0.0010	101	70	130	2.2	20		
Calcium		72.3	mg/L	1.0	93	70	130	2.3	20		
Chromium		0.0495	mg/L	0.0050	99	70	130	1.8	20		
Cobalt		0.0492	mg/L	0.0050	98	70	130	0.7	20		
Copper		0.0515	mg/L	0.0050	98	70	130	0.2	20		
Iron		5.05	mg/L	0.020	101	70	130	4.8	20		
Lead		0.0504	mg/L	0.0010	101	70	130	2.3	20		
Magnesium		58.1	mg/L	1.0	101	70	130	1.2	20		
Manganese		0.0497	mg/L	0.0010	97	70	130	0.7	20		
Molybdenum		0.0529	mg/L	0.0010	105	70	130	0.1	20		
Nickel		0.0491	mg/L	0.0050	98	70	130	0.0	20		
Potassium		50.3	mg/L	1.0	97	70	130	0.3	20		
Selenium		0.0518	mg/L	0.0010	104	70	130	4.6	20		
Silicon		7.53	mg/L	0.10		70	130	4.6	20	A	
Silver		0.0202	mg/L	0.0010	101	70	130	0.1	20		
Sodium		57.2	mg/L	1.0	102	70	130	1.1	20		
Strontium		0.125	mg/L	0.010	91	70	130	0.8	20		
Thallium		0.0511	mg/L	0.00050	102	70	130	0.9	20		
Tin		0.0516	mg/L	0.010	103	70	130	0.1	20		
Titanium		0.0574	mg/L	0.0050	113	70	130	0.3	20		
Uranium		0.0494	mg/L	0.00030	99	70	130	4.0	20		
Vanadium		0.0498	mg/L	0.010	100	70	130	0.0	20		
Zinc		0.0540	mg/L	0.010	97	70	130	2.4	20		
<b>Lab ID: B18111044-011BMS</b>	27	Sample Matrix Spike			Run: ICPMS206-B_181115A				11/15/18 21:07		
Antimony		0.0515	mg/L	0.0010	102	70	130				
Arsenic		0.0560	mg/L	0.0010	101	70	130				
Barium		0.0656	mg/L	0.050	100	70	130				

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 12/04/18

**Project:** NWP Phase II

**Work Order:** B18110980

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>										
Batch: R311108										
<b>Lab ID:</b>	<b>B18111044-011BMS</b>	27	Sample Matrix Spike							
							Run: ICPMS206-B_181115A	11/15/18 21:07		
Beryllium		0.0533	mg/L	0.0010	96	70	130			
Cadmium		0.0553	mg/L	0.0010	97	70	130			
Calcium		213	mg/L	1.0	91	70	130			
Chromium		0.0526	mg/L	0.0050	100	70	130			
Cobalt		0.557	mg/L	0.0050		70	130			A
Copper		0.144	mg/L	0.0050	88	70	130			
Iron		17.2	mg/L	0.020	98	70	130			
Lead		0.0510	mg/L	0.0010	100	70	130			
Magnesium		126	mg/L	1.0	96	70	130			
Manganese		1.72	mg/L	0.0010		70	130			A
Molybdenum		0.0561	mg/L	0.0010	107	70	130			
Nickel		5.88	mg/L	0.0050		70	130			A
Potassium		61.5	mg/L	1.0	101	70	130			
Selenium		0.275	mg/L	0.0010		70	130			A
Silicon		3.00	mg/L	0.10		70	130			A
Silver		0.0150	mg/L	0.0010	75	70	130			
Sodium		81.5	mg/L	1.0	99	70	130			
Strontium		0.320	mg/L	0.010		70	130			A
Thallium		0.0525	mg/L	0.00050	102	70	130			
Tin		0.0525	mg/L	0.010	105	70	130			
Titanium		0.0580	mg/L	0.0050	116	70	130			
Uranium		0.147	mg/L	0.00030	97	70	130			
Vanadium		0.0495	mg/L	0.010	99	70	130			
Zinc		21.3	mg/L	0.010		70	130			A
<b>Lab ID:</b>	<b>B18111044-011BMSD</b>	27	Sample Matrix Spike Duplicate							
							Run: ICPMS206-B_181115A	11/15/18 21:11		
Antimony		0.0521	mg/L	0.0010	103	70	130	1.1	20	
Arsenic		0.0561	mg/L	0.0010	101	70	130	0.3	20	
Barium		0.0649	mg/L	0.050	98	70	130	1.0	20	
Beryllium		0.0529	mg/L	0.0010	96	70	130	0.6	20	
Cadmium		0.0561	mg/L	0.0010	99	70	130	1.4	20	
Calcium		211	mg/L	1.0	87	70	130	0.8	20	
Chromium		0.0525	mg/L	0.0050	100	70	130	0.2	20	
Cobalt		0.567	mg/L	0.0050		70	130	1.7	20	A
Copper		0.145	mg/L	0.0050	91	70	130	1.0	20	
Iron		17.2	mg/L	0.020	98	70	130	0.1	20	
Lead		0.0522	mg/L	0.0010	102	70	130	2.3	20	
Magnesium		123	mg/L	1.0	89	70	130	2.6	20	
Manganese		1.73	mg/L	0.0010		70	130	0.7	20	A
Molybdenum		0.0554	mg/L	0.0010	106	70	130	1.3	20	
Nickel		5.82	mg/L	0.0050		70	130	1.1	20	A
Potassium		60.6	mg/L	1.0	99	70	130	1.5	20	
Selenium		0.269	mg/L	0.0010		70	130	2.2	20	A
Silicon		3.02	mg/L	0.10		70	130	0.8	20	A

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II

**Report Date:** 12/04/18  
**Work Order:** B18110980

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E200.8										Batch: R311108
<b>Lab ID:</b> B18111044-011BMSD	27	Sample Matrix Spike Duplicate								Run: ICPMS206-B_181115A
										11/15/18 21:11
Silver		0.0153	mg/L	0.0010	76	70	130	2.1	20	
Sodium		80.2	mg/L	1.0	96	70	130	1.6	20	
Strontium		0.318	mg/L	0.010		70	130	0.7	20	A
Thallium		0.0524	mg/L	0.00050	102	70	130	0.2	20	
Tin		0.0521	mg/L	0.010	104	70	130	0.8	20	
Titanium		0.0595	mg/L	0.0050	119	70	130	2.5	20	
Uranium		0.149	mg/L	0.00030	102	70	130	1.8	20	
Vanadium		0.0499	mg/L	0.010	100	70	130	0.9	20	
Zinc		21.6	mg/L	0.010		70	130	1.3	20	A

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II

**Report Date:** 12/04/18  
**Work Order:** B18110980

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>								Analytical Run: ICPMS206-B_181126A		
<b>Lab ID: QCS</b>	4	Initial Calibration Verification Standard								11/26/18 12:51
Antimony		0.0477	mg/L	0.050	95	90	110			
Arsenic		0.0495	mg/L	0.0050	99	90	110			
Thallium		0.0493	mg/L	0.10	99	90	110			
Vanadium		0.0509	mg/L	0.10	102	90	110			
<b>Method: E200.8</b>								Batch: R311481		
<b>Lab ID: LRB</b>	4	Method Blank						Run: ICPMS206-B_181126A		11/26/18 13:08
Antimony		ND	mg/L	0.0004						
Arsenic		ND	mg/L	0.0002						
Thallium		ND	mg/L	0.00007						
Vanadium		ND	mg/L	0.001						
<b>Lab ID: LFB</b>	4	Laboratory Fortified Blank						Run: ICPMS206-B_181126A		11/26/18 13:45
Antimony		0.0452	mg/L	0.050	90	85	115			
Arsenic		0.0496	mg/L	0.0050	99	85	115			
Thallium		0.0501	mg/L	0.10	100	85	115			
Vanadium		0.0461	mg/L	0.10	92	85	115			
<b>Lab ID: MB2-127570</b>	4	Method Blank						Run: ICPMS206-B_181126A		11/26/18 18:20
Antimony		ND	mg/L	0.0004						
Arsenic		ND	mg/L	0.0002						
Thallium		ND	mg/L	0.00007						
Vanadium		ND	mg/L	0.001						
<b>Lab ID: B18110979-001BMS</b>	4	Sample Matrix Spike						Run: ICPMS206-B_181126A		11/26/18 18:28
Antimony		0.0929	mg/L	0.0010	93	70	130			
Arsenic		0.107	mg/L	0.0010	105	70	130			
Thallium		0.104	mg/L	0.00050	104	70	130			
Vanadium		0.122	mg/L	0.010	114	70	130			
<b>Lab ID: B18110979-001BMSD</b>	4	Sample Matrix Spike Duplicate						Run: ICPMS206-B_181126A		11/26/18 18:32
Antimony		0.0914	mg/L	0.0010	91	70	130	1.7	20	
Arsenic		0.104	mg/L	0.0010	102	70	130	3.1	20	
Thallium		0.105	mg/L	0.00050	105	70	130	0.5	20	
Vanadium		0.121	mg/L	0.010	113	70	130	1.2	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 12/04/18

**Project:** NWP Phase II

**Work Order:** B18110980

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>								Analytical Run: ICPMS206-B_181128A		
<b>Lab ID: QCS</b>	5	Initial Calibration Verification Standard								11/29/18 00:18
Aluminum		0.252	mg/L	0.10	101	90	110			
Iron		0.255	mg/L	0.020	102	90	110			
Lead		0.0480	mg/L	0.010	96	90	110			
Magnesium		2.47	mg/L	0.50	99	90	110			
Silicon		0.498	mg/L	0.10	100	90	110			
<b>Method: E200.8</b>								Batch: R311693		
<b>Lab ID: LRB</b>	5	Method Blank						Run: ICPMS206-B_181128A		11/28/18 12:34
Aluminum		0.0008	mg/L	0.0008						
Iron		ND	mg/L	0.001						
Lead		ND	mg/L	0.00005						
Magnesium		ND	mg/L	0.006						
Silicon		ND	mg/L	0.01						
<b>Lab ID: LFB</b>	5	Laboratory Fortified Blank						Run: ICPMS206-B_181128A		11/28/18 12:43
Aluminum		0.0504	mg/L	0.10	99	85	115			
Iron		4.81	mg/L	0.020	96	85	115			
Lead		0.0496	mg/L	0.010	99	85	115			
Magnesium		48.8	mg/L	0.50	98	85	115			
Silicon		0.198	mg/L	0.10	99	85	115			
<b>Lab ID: MB-127649</b>	5	Method Blank						Run: ICPMS206-B_181128A		11/29/18 04:18
Aluminum		0.002	mg/L	0.0008						
Iron		0.004	mg/L	0.001						
Lead		ND	mg/L	0.00005						
Magnesium		ND	mg/L	0.006						
Silicon		0.07	mg/L	0.01						
<b>Lab ID: B18112062-001CMS</b>	5	Sample Matrix Spike						Run: ICPMS206-B_181128A		11/29/18 06:23
Aluminum		0.0490	mg/L	0.030	94	70	130			
Iron		5.10	mg/L	0.020	102	70	130			
Lead		0.0490	mg/L	0.0010	98	70	130			
Magnesium		139	mg/L	1.0	90	70	130			
Silicon		1.35	mg/L	0.10		70	130			A

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II

**Report Date:** 12/04/18  
**Work Order:** B18110980

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.8</b>										Analytical Run: ICPMS207-B_181116A	
<b>Lab ID: QCS</b>	17	Initial Calibration Verification Standard							11/16/18 14:48		
Aluminum		0.235	mg/L	0.10	94	90	110				
Antimony		0.0457	mg/L	0.050	91	90	110				
Cadmium		0.0244	mg/L	0.0010	98	90	110				
Chromium		0.0479	mg/L	0.010	96	90	110				
Cobalt		0.0498	mg/L	0.010	100	90	110				
Copper		0.0491	mg/L	0.010	98	90	110				
Iron		0.247	mg/L	0.020	99	90	110				
Lead		0.0503	mg/L	0.010	101	90	110				
Manganese		0.244	mg/L	0.010	97	90	110				
Molybdenum		0.0481	mg/L	0.0050	96	90	110				
Nickel		0.0493	mg/L	0.010	99	90	110				
Selenium		0.0481	mg/L	0.0050	96	90	110				
Silicon		0.485	mg/L	0.10	97	90	110				
Silver		0.0246	mg/L	0.0050	98	90	110				
Tin		0.0487	mg/L	0.10	97	90	110				
Titanium		0.0456	mg/L	0.010	91	90	110				
Uranium		0.0215	mg/L	0.00030	107	90	110				

<b>Method: E200.8</b>										Batch: R311178	
<b>Lab ID: LRB</b>	17	Method Blank							Run: ICPMS207-B_181116A 11/16/18 14:56		
Aluminum		ND	mg/L	0.0009							
Antimony		ND	mg/L	0.0004							
Cadmium		ND	mg/L	0.00002							
Chromium		ND	mg/L	0.0002							
Cobalt		ND	mg/L	0.00004							
Copper		ND	mg/L	0.0003							
Iron		ND	mg/L	0.001							
Lead		ND	mg/L	0.00006							
Manganese		ND	mg/L	0.00010							
Molybdenum		0.00008	mg/L	0.00005							
Nickel		ND	mg/L	0.0006							
Selenium		ND	mg/L	0.0003							
Silicon		ND	mg/L	0.01							
Silver		ND	mg/L	0.00002							
Tin		ND	mg/L	0.001							
Titanium		ND	mg/L	0.00009							
Uranium		ND	mg/L	0.00005							

<b>Lab ID: LFB</b>	17	Laboratory Fortified Blank							Run: ICPMS207-B_181116A 11/16/18 15:04	
Aluminum		0.0476	mg/L	0.10	95	85	115			
Antimony		0.0491	mg/L	0.050	98	85	115			
Cadmium		0.0504	mg/L	0.0010	101	85	115			
Chromium		0.0498	mg/L	0.010	100	85	115			
Cobalt		0.0533	mg/L	0.010	107	85	115			

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 12/04/18

**Project:** NWP Phase II

**Work Order:** B18110980

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>										
Batch: R311178										
<b>Lab ID: LFB</b>	17 Laboratory Fortified Blank				Run: ICPMS207-B_181116A				11/16/18 15:04	
Copper		0.0490	mg/L	0.010	98	85	115			
Iron		4.92	mg/L	0.020	99	85	115			
Lead		0.0536	mg/L	0.010	107	85	115			
Manganese		0.0492	mg/L	0.010	98	85	115			
Molybdenum		0.0515	mg/L	0.0050	103	85	115			
Nickel		0.0492	mg/L	0.010	98	85	115			
Selenium		0.0494	mg/L	0.0050	99	85	115			
Silicon		0.201	mg/L	0.10	100	85	115			
Silver		0.0203	mg/L	0.0050	102	85	115			
Tin		0.0509	mg/L	0.10	102	85	115			
Titanium		0.0531	mg/L	0.010	106	85	115			
Uranium		0.0504	mg/L	0.00030	101	85	115			
<b>Lab ID: MB-127570</b>	17 Method Blank				Run: ICPMS207-B_181116A				11/16/18 19:39	
Aluminum		ND	mg/L	0.0009						
Antimony		ND	mg/L	0.0004						
Cadmium		ND	mg/L	0.00002						
Chromium		ND	mg/L	0.0002						
Cobalt		ND	mg/L	0.00004						
Copper		0.0004	mg/L	0.0003						
Iron		ND	mg/L	0.001						
Lead		ND	mg/L	0.00006						
Manganese		ND	mg/L	0.00010						
Molybdenum		ND	mg/L	0.00005						
Nickel		ND	mg/L	0.0006						
Selenium		ND	mg/L	0.0003						
Silicon		0.07	mg/L	0.01						
Silver		ND	mg/L	0.00002						
Tin		ND	mg/L	0.003						
Titanium		ND	mg/L	0.00009						
Uranium		ND	mg/L	0.00005						
<b>Lab ID: B18110980-011BMS</b>	17 Sample Matrix Spike				Run: ICPMS207-B_181116A				11/16/18 21:09	
Aluminum		4.95	mg/L	0.030		70	130			A
Antimony		0.251	mg/L	0.0021	100	70	130			
Cadmium		0.255	mg/L	0.0010	102	70	130			
Chromium		0.283	mg/L	0.0050	110	70	130			
Cobalt		0.273	mg/L	0.0050	109	70	130			
Copper		0.296	mg/L	0.0050	111	70	130			
Iron		27.6	mg/L	0.020	104	70	130			
Lead		0.276	mg/L	0.0010	110	70	130			
Manganese		0.282	mg/L	0.0010	110	70	130			
Molybdenum		0.256	mg/L	0.0010	102	70	130			
Nickel		0.284	mg/L	0.0050	110	70	130			
Selenium		0.305	mg/L	0.0017	101	70	130			

**Qualifiers:**

RL - Analyte reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

ND - Not detected at the reporting limit.





# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 12/04/18

**Project:** NWP Phase II

**Work Order:** B18110980

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>										
Batch: R311178										
<b>Lab ID:</b>	<b>B18110980-011BMS</b>	17 Sample Matrix Spike					Run: ICPMS207-B_181116A		11/16/18 21:09	
Silicon		13.5	mg/L	0.10		70	130			A
Silver		0.102	mg/L	0.0010	102	70	130			
Tin		0.283	mg/L	0.014	113	70	130			
Titanium		0.370	mg/L	0.0050	97	70	130			
Uranium		0.264	mg/L	0.00030	105	70	130			
<b>Lab ID:</b>	<b>B18110980-011BMSD</b>	17 Sample Matrix Spike Duplicate					Run: ICPMS207-B_181116A		11/16/18 21:13	
Aluminum		5.15	mg/L	0.030		70	130	3.8	20	A
Antimony		0.251	mg/L	0.0021	100	70	130	0.1	20	
Cadmium		0.252	mg/L	0.0010	101	70	130	1.2	20	
Chromium		0.277	mg/L	0.0050	108	70	130	2.0	20	
Cobalt		0.269	mg/L	0.0050	107	70	130	1.3	20	
Copper		0.294	mg/L	0.0050	110	70	130	0.7	20	
Iron		27.2	mg/L	0.020	103	70	130	1.4	20	
Lead		0.278	mg/L	0.0010	110	70	130	0.4	20	
Manganese		0.277	mg/L	0.0010	108	70	130	1.7	20	
Molybdenum		0.258	mg/L	0.0010	103	70	130	0.9	20	
Nickel		0.278	mg/L	0.0050	108	70	130	2.1	20	
Selenium		0.312	mg/L	0.0017	104	70	130	2.3	20	
Silicon		14.7	mg/L	0.10		70	130	8.8	20	A
Silver		0.101	mg/L	0.0010	101	70	130	1.1	20	
Tin		0.285	mg/L	0.014	114	70	130	0.6	20	
Titanium		0.397	mg/L	0.0050	108	70	130	7.1	20	
Uranium		0.265	mg/L	0.00030	106	70	130	0.5	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 12/04/18

**Project:** NWP Phase II

**Work Order:** B18110980

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.8</b>		Analytical Run: ICPMS207-B_181119A									
<b>Lab ID: QCS</b>	6	Initial Calibration Verification Standard							11/20/18 09:12		
Aluminum		0.246	mg/L	0.10	99	90	110				
Arsenic		0.0455	mg/L	0.0050	91	90	110				
Chromium		0.0460	mg/L	0.010	92	90	110				
Iron		0.241	mg/L	0.020	97	90	110				
Thallium		0.0487	mg/L	0.10	97	90	110				
Vanadium		0.0458	mg/L	0.10	92	90	110				
<b>Method: E200.8</b>		Batch: R311230									
<b>Lab ID: LRB</b>	6	Method Blank							Run: ICPMS207-B_181119A		11/19/18 12:08
Aluminum		ND	mg/L	0.0009							
Arsenic		ND	mg/L	0.0002							
Chromium		ND	mg/L	0.0002							
Iron		ND	mg/L	0.001							
Thallium		ND	mg/L	0.00004							
Vanadium		ND	mg/L	0.001							
<b>Lab ID: LFB</b>	6	Laboratory Fortified Blank							Run: ICPMS207-B_181119A		11/19/18 12:12
Aluminum		0.0477	mg/L	0.10	95	85	115				
Arsenic		0.0488	mg/L	0.0050	98	85	115				
Chromium		0.0475	mg/L	0.010	95	85	115				
Iron		4.97	mg/L	0.020	99	85	115				
Thallium		0.0486	mg/L	0.10	97	85	115				
Vanadium		0.0479	mg/L	0.10	96	85	115				
<b>Lab ID: MB-127570</b>	6	Method Blank							Run: ICPMS207-B_181119A		11/20/18 22:47
Aluminum		0.003	mg/L	0.0009							
Arsenic		ND	mg/L	0.0002							
Chromium		ND	mg/L	0.0002							
Iron		0.001	mg/L	0.001							
Thallium		ND	mg/L	0.00006							
Vanadium		ND	mg/L	0.001							
<b>Lab ID: B18110979-007BMS</b>	6	Sample Matrix Spike							Run: ICPMS207-B_181119A		11/20/18 23:30
Aluminum		1.23	mg/L	0.030	117	70	130				
Arsenic		1.19	mg/L	0.0039	116	70	130				
Chromium		1.17	mg/L	0.0050	117	70	130				
Iron		106	mg/L	0.024	106	70	130				
Thallium		1.11	mg/L	0.0013	111	70	130				
Vanadium		1.21	mg/L	0.027	121	70	130				
<b>Lab ID: B18110979-007BMSD</b>	6	Sample Matrix Spike Duplicate							Run: ICPMS207-B_181119A		11/20/18 23:34
Aluminum		1.27	mg/L	0.030	120	70	130	2.6	20		
Arsenic		1.16	mg/L	0.0039	113	70	130	2.2	20		
Chromium		1.15	mg/L	0.0050	115	70	130	1.2	20		
Iron		106	mg/L	0.024	106	70	130	0.1	20		
Thallium		1.10	mg/L	0.0013	110	70	130	1.0	20		

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II

**Report Date:** 12/04/18  
**Work Order:** B18110980

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E200.8										Batch: R311230
<b>Lab ID:</b> B18110979-007BMSD	6	Sample Matrix Spike Duplicate								Run: ICPMS207-B_181119A 11/20/18 23:34
Vanadium		1.19	mg/L	0.027	119	70	130	1.5	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

Revised Date: 12/28/18

Report Date: 12/04/18

Client: Enviromin Inc

Project: NWP Phase II

Work Order: B18110980

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E200.7									Analytical Run: ICP204-B_181206A
<b>Lab ID:</b> ICV	Continuing Calibration Verification Standard								12/06/18 09:07
Aluminum	2.44	mg/L	0.10	98	95	105			
Barium	2.46	mg/L	0.10	99	95	105			
Boron	2.47	mg/L	0.10	99	95	105			
Calcium	25.8	mg/L	1.0	103	95	105			
Iron	2.61	mg/L	0.020	104	95	105			
Lithium	1.29	mg/L	0.10	103	95	105			
Magnesium	25.6	mg/L	1.0	103	95	105			
Potassium	25.7	mg/L	1.0	103	95	105			
Silicon	4.98	mg/L	0.10	100	95	105			
Sodium	25.7	mg/L	1.0	103	95	105			
Strontium	2.43	mg/L	0.10	97	95	105			

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Billings, MT Branch

Revised Date: 12/28/18

Report Date: 12/04/18

Client: Enviromin Inc

Project: NWP Phase II

Work Order: B18110980

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.8</b>							Analytical Run: ICPMS206-B_181205B			
<b>Lab ID: QCS</b>	Initial Calibration Verification Standard							12/06/18 10:25		
Aluminum	0.240	mg/L	0.10	96	90	110				
Antimony	0.0487	mg/L	0.050	97	90	110				
Arsenic	0.0463	mg/L	0.0050	93	90	110				
Barium	0.0456	mg/L	0.10	91	90	110				
Beryllium	0.0240	mg/L	0.0010	96	90	110				
Cadmium	0.0229	mg/L	0.0010	92	90	110				
Chromium	0.0475	mg/L	0.010	95	90	110				
Cobalt	0.0479	mg/L	0.010	96	90	110				
Lead	0.0460	mg/L	0.010	92	90	110				
Manganese	0.240	mg/L	0.010	96	90	110				
Molybdenum	0.0466	mg/L	0.0050	93	90	110				
Nickel	0.0480	mg/L	0.010	96	90	110				
Selenium	0.0465	mg/L	0.0050	93	90	110				
Silver	0.0235	mg/L	0.0050	94	90	110				
Tin	0.0479	mg/L	0.10	96	90	110				
Titanium	0.0469	mg/L	0.010	94	90	110				
Uranium	0.0179	mg/L	0.00030	90	90	110				
Zinc	0.0481	mg/L	0.010	96	90	110				

<b>Method: E200.8</b>							Analytical Run: ICPMS206-B_181207A			
<b>Lab ID: QCS</b>	Initial Calibration Verification Standard							12/08/18 00:11		
Antimony	0.0468	mg/L	0.050	94	90	110				
Arsenic	0.0462	mg/L	0.0050	92	90	110				
Barium	0.0456	mg/L	0.10	91	90	110				
Beryllium	0.0234	mg/L	0.0010	94	90	110				
Cadmium	0.0229	mg/L	0.0010	92	90	110				
Chromium	0.0473	mg/L	0.010	95	90	110				
Cobalt	0.0465	mg/L	0.010	93	90	110				
Iron	0.250	mg/L	0.020	100	90	110				
Lead	0.0458	mg/L	0.010	92	90	110				
Molybdenum	0.0465	mg/L	0.0050	93	90	110				
Nickel	0.0463	mg/L	0.010	93	90	110				
Selenium	0.0464	mg/L	0.0050	93	90	110				
Silver	0.0235	mg/L	0.0050	94	90	110				
Thallium	0.0451	mg/L	0.10	90	90	110				
Tin	0.0472	mg/L	0.10	94	90	110				
Zinc	0.0477	mg/L	0.010	95	90	110				

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

Revised Date: 12/28/18

Report Date: 12/04/18

Client: Enviromin Inc

Project: NWP Phase II

Work Order: B18110980

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method:</b> E200.8							Analytical Run: ICPMS207-B_181212A			
<b>Lab ID:</b> QCS	Initial Calibration Verification Standard						12/12/18 11:12			
Beryllium	0.0230	mg/L	0.0010	92	90	110				
Copper	0.0476	mg/L	0.010	95	90	110				
Manganese	0.232	mg/L	0.010	93	90	110				
Thallium	0.0482	mg/L	0.10	97	90	110				
Titanium	0.0455	mg/L	0.010	91	90	110				
Uranium	0.0470	mg/L	0.00030	94	90	110				
Vanadium	0.0460	mg/L	0.10	92	90	110				
Zinc	0.0478	mg/L	0.010	96	90	110				

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# Work Order Receipt Checklist

Enviromin Inc

B18110980

Login completed by: Richard L. Shular

Date Received: 11/13/2018

Reviewed by: BL2000\raschim

Received by: bgs

Reviewed Date: 11/14/2018

Carrier name: Return-UPS Ground N/C

- Shipping container/cooler in good condition? Yes  No  Not Present
- Custody seals intact on all shipping container(s)/cooler(s)? Yes  No  Not Present
- Custody seals intact on all sample bottles? Yes  No  Not Present
- Chain of custody present? Yes  No
- Chain of custody signed when relinquished and received? Yes  No
- Chain of custody agrees with sample labels? Yes  No
- Samples in proper container/bottle? Yes  No
- Sample containers intact? Yes  No
- Sufficient sample volume for indicated test? Yes  No
- All samples received within holding time?  
(Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.) Yes  No
- Temp Blank received in all shipping container(s)/cooler(s)? Yes  No  Not Applicable
- Container/Temp Blank temperature: 1.6°C On Ice
- Water - VOA vials have zero headspace? Yes  No  No VOA vials submitted
- Water - pH acceptable upon receipt? Yes  No  Not Applicable

## Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

## Contact and Corrective Action Comments:

The samples for Dissolved Organic Carbon were subsampled, filtered and preserved to pH <2 with 0.5 mL of phosphoric acid per 160 mL in the laboratory.

The samples for Dissolved Metals/Hardness were subsampled, filtered and preserved to pH <2 with 2 mL of nitric acid per 250 mL in the laboratory. According to 40CFR136, samples for Dissolved Metals should be filtered and preserved within 15 minutes of collection.

# Chain of Custody & Analytical Request Record

[www.energylab.com](http://www.energylab.com)

### Account Information (Billing Information)

Company/Name: Environment, Inc.  
 Contact: Gerrit Grew  
 Phone: 209-315-4218  
 Mailing Address: 52x Professional Drive  
 City, State, Zip: Bozeman, MT 59718  
 Email: gerritgrew@environmentinc.com  
 Receive Invoice  Hard Copy  Email  Hard Copy  Email  
 Purchase Order: 4093      Bottle Order

### Report Information (If different than Account Information)

Company/Name: \_\_\_\_\_  
 Contact: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_  
 City, State, Zip: \_\_\_\_\_  
 Email: \_\_\_\_\_  
 Receive Report  Hard Copy  Email  
 Special Report/Format:  LEVEL IV  NELAC  EDD/EDT (contact laboratory)  Other \_\_\_\_\_

Comments: These samples are NOT preserved.

### Project Information

Project Name, PWSID, Permit, etc.: NWP Phase II  
 Sampler Name: \_\_\_\_\_      Sampler Phone: \_\_\_\_\_  
 EPA/State Compliance:  Yes  No  
 Sample Origin State: \_\_\_\_\_  
 MINING CLIENTS, please indicate sample type.  
 Byproduct 11 (e)2 material     Unprocessed ore (NOT ground or refined)\*

### Analysis Requested

Matrix Codes:  
 A - Air  
 W - Water  
 S - Solids  
 V - Vegetation  
 B - Bioassay  
 O - Other  
 DW - Drinking Water

Number of Containers: 2      Matrix (See Codes Above): W

Analysis Requested:  
Filter (0.45µm)  
DOC  
Dissolved metals +  
see protocol A

All turnaround times are standard unless marked as RUSH.  
 Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling - See Instructions Page

Sample Identification (Name, Location, Interval, etc.)	Collection		Matrix
	Date	Time	
1 F1-2	11/2/18	11 am	W
2 R1-2			
3 E1			
4 F2-2			
5 R2-2			
6 E2			
7 F3-2			
8 R3-2			
9 E3			
10 F4-2			

Receipt #	TAT
18110980-001	
-002	
-003	
-004	
-005	
-006	
-007	
-008	
-009	
-010	

Received by (print): Gerrit Grew      Date/Time: 11/2/18 12:00  
 Signature: [Signature]  
 Date/Time: 11/13/18 1225  
 Received by Laboratory (print): BOZEMAN SANITATION  
 Signature: [Signature]  
 Date/Time: \_\_\_\_\_  
 Amount: \$ \_\_\_\_\_  
 Payment Type:  Cash  Check  
 Receipt Number (attach only): \_\_\_\_\_

Shipped By: \_\_\_\_\_      Cooler ID(s): \_\_\_\_\_  
 Custody Seals:  Y  N  C  B  
 Intact:  Y  N  
 Receipt Temp: \_\_\_\_\_ °C      Temp Blank:  Y  N  
 On Ice:  Y  N

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.



# Chain of Custody & Analytical Request Record

[www.energylab.com](http://www.energylab.com)

## Account Information (Billing Information)

Company Name Environia, Inc.  
 Contact Geoff Bryan  
 Phone 208-818-4218  
 Mailing Address 5925 Professional Drive  
 City, State, Zip Bozeman, MT 59718  
 Email geoffbryan@environia.com  
 Receive Invoice  Hard Copy  Email  
 Purchase Order  Hard Copy  Email  
 Quote  Bottle Order

## Report Information (If different than Account Information)

Company Name \_\_\_\_\_  
 Contact \_\_\_\_\_  
 Phone \_\_\_\_\_  
 Mailing Address \_\_\_\_\_  
 City, State, Zip \_\_\_\_\_  
 Email \_\_\_\_\_  
 Receive Report  Hard Copy  Email  
 Special Report/Format:  LEVEL IV  NELAC  EDD/EDT (contact laboratory)  Other

Comments

## Project Information

Project Name, PWSID, Permit, etc. \_\_\_\_\_  
 Sampler Name \_\_\_\_\_ Sampler Phone \_\_\_\_\_  
 Sample Origin State \_\_\_\_\_ EPA/State Compliance  Yes  No  
 MINING CLIENTS, please indicate sample type.  
 \*If one has been processed or refined, call before sending.  
 Byproduct 11 (e2 material)  Unprocessed ore (NOT ground or refined)\*

## Analysis Requested

Matrix Codes	Number of Containers	Matrix (See Codes Above)	Analysis Requested
A - Air	2	W	See Attached
W - Water			
S - Solids			
V - Vegetation			
B - Biosassay			
O - Other			
DW - Water			

All turnaround times are standard unless marked as RUSH.  
 Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling - See Instructions Page

Sample Identification (Name, Location, Interval, etc.)	Date	Time	Collection	Number of Containers	Matrix (See Codes Above)	Analysis Requested	Signature	Date/Time	Received by (print)	Payment Type	Amount \$	Receipt Number (cash/check only)
1 R4-2	11/12/18	11am		2	W	DOC	[Signature]	11/13/18 12:35	Received by Laboratory (print) BOZEMAN SAVANNAH	CC		
2 R4												
3 F5-2												
4 R5-2												
5 E5												
6												
7												
8												
9												
10												

Signature: [Signature]  
 Date/Time: 11/13/18 12:35  
 Received by (print): BOZEMAN SAVANNAH  
 Payment Type: CC  
 Amount: \$  
 Receipt Number (cash/check only):

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.



# ANALYTICAL SUMMARY REPORT

January 02, 2019

Enviromin Inc  
524 Professional Dr  
Bozeman, MT 59718

Work Order: B18112127      Quote ID: B4093 - Enviromin Lab

Project Name: Not Indicated

Energy Laboratories Inc Billings MT received the following 15 samples for Enviromin Inc on 11/27/2018 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B18112127-001	F1	11/21/18 11:00	11/27/18	Aqueous	Metals by ICP/ICPMS, Dissolved Carbon, Dissolved Organic Selenium By CVAA, Total Selenium IV, Total Selenium-VI, Total Preparation, Dissolved Filtration for DOC MCAWW Preparation, Dissolved Filtration MCAWW
B18112127-002	R1	11/21/18 11:00	11/27/18	Aqueous	Same As Above
B18112127-003	E1	11/21/18 11:00	11/27/18	Aqueous	Same As Above
B18112127-004	F2	11/21/18 11:00	11/27/18	Aqueous	Same As Above
B18112127-005	R2	11/21/18 11:00	11/27/18	Aqueous	Same As Above
B18112127-006	E2	11/21/18 11:00	11/27/18	Aqueous	Same As Above
B18112127-007	F3	11/21/18 11:00	11/27/18	Aqueous	Same As Above
B18112127-008	R3	11/21/18 11:00	11/27/18	Aqueous	Same As Above
B18112127-009	E3	11/21/18 11:00	11/27/18	Aqueous	Same As Above
B18112127-010	F4	11/21/18 11:00	11/27/18	Aqueous	Same As Above
B18112127-011	R4	11/21/18 11:00	11/27/18	Aqueous	Same As Above
B18112127-012	E4	11/21/18 11:00	11/27/18	Aqueous	Same As Above
B18112127-013	F5	11/21/18 11:00	11/27/18	Aqueous	Same As Above
B18112127-014	R5	11/21/18 11:00	11/27/18	Aqueous	Same As Above
B18112127-015	E5	11/21/18 11:00	11/27/18	Aqueous	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:



**CLIENT:** Enviromin Inc  
**Project:** Not Indicated  
**Work Order:** B18112127

**Report Date:** 01/02/19

## CASE NARRATIVE

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Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 East Lyndale Ave, Helena, MT, EPA Number MT00945.

Tests associated with analyst identified as ELI-CA were subcontracted to Energy Laboratories, PO Box 247, Casper, WY, EPA Number WY00002.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18112127-001  
**Client Sample ID:** F1

**Report Date:** 01/02/19  
**Collection Date:** 11/21/18 11:00  
**Date Received:** 11/27/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	8.6	mg/L		0.5		A5310 C	12/05/18 02:38 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	1.95	mg/L		0.03		E200.8	12/03/18 19:16 / by
Antimony	ND	mg/L	D	0.004		E200.8	12/03/18 19:16 / by
Arsenic	ND	mg/L	D	0.002		E200.8	12/03/18 19:16 / by
Barium	0.08	mg/L		0.05		E200.8	12/03/18 19:16 / by
Beryllium	ND	mg/L		0.001		E200.8	12/03/18 19:16 / by
Boron	ND	mg/L	D	0.06		E200.8	12/03/18 19:16 / by
Cadmium	ND	mg/L		0.001		E200.8	12/03/18 19:16 / by
Calcium	9	mg/L		1		E200.8	12/03/18 19:16 / by
Chromium	ND	mg/L		0.005		E200.8	12/03/18 19:16 / by
Cobalt	ND	mg/L		0.005		E200.8	12/03/18 19:16 / by
Copper	ND	mg/L		0.005		E200.7	12/03/18 18:44 / r/h
Iron	0.74	mg/L		0.02		E200.8	12/03/18 19:16 / by
Lead	ND	mg/L		0.001		E200.8	12/03/18 19:16 / by
Lithium	ND	mg/L		0.1		E200.7	12/03/18 18:44 / r/h
Magnesium	2	mg/L		1		E200.8	12/03/18 19:16 / by
Manganese	0.005	mg/L	D	0.002		E200.8	12/03/18 19:16 / by
Molybdenum	ND	mg/L		0.001		E200.8	12/03/18 19:16 / by
Nickel	ND	mg/L	D	0.006		E200.8	12/03/18 19:16 / by
Potassium	1	mg/L		1		E200.8	12/03/18 19:16 / by
Silicon	3.7	mg/L		0.1		E200.8	12/03/18 19:16 / by
Silver	ND	mg/L		0.001		E200.8	12/03/18 19:16 / by
Sodium	26	mg/L		1		E200.8	12/03/18 19:16 / by
Strontium	0.03	mg/L		0.01		E200.8	12/03/18 19:16 / by
Thallium	ND	mg/L		0.0005		E200.8	12/20/18 15:47 / car
Tin	ND	mg/L	D	0.03		E200.8	12/03/18 19:16 / by
Titanium	0.046	mg/L		0.005		E200.8	12/03/18 19:16 / by
Uranium	0.0006	mg/L	D	0.0005		E200.8	12/03/18 19:16 / by
Vanadium	ND	mg/L		0.01		E200.8	12/03/18 19:16 / by
Zinc	ND	mg/L		0.01		E200.7	12/03/18 18:44 / r/h
<b>METALS, TOTAL</b>							
Selenium	0.207	mg/L	D	0.002		A3114 C	12/04/18 13:54 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.039	mg/L		0.001		A3114 C	12/03/18 12:52 / eli-h
Selenium-VI	0.168	mg/L		0.001		A3114 C	12/05/18 08:29 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18112127-002  
**Client Sample ID:** R1

**Report Date:** 01/02/19  
**Collection Date:** 11/21/18 11:00  
**Date Received:** 11/27/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	39	mg/L	D	2		A5310 C	12/05/18 02:54 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.06	mg/L		0.03		E200.8	12/03/18 19:20 / by
Antimony	ND	mg/L	D	0.004		E200.8	12/03/18 19:20 / by
Arsenic	ND	mg/L	D	0.002		E200.8	12/03/18 19:20 / by
Barium	0.06	mg/L		0.05		E200.8	12/03/18 19:20 / by
Beryllium	ND	mg/L		0.001		E200.8	12/03/18 19:20 / by
Boron	0.05	mg/L		0.05		E200.7	12/03/18 18:48 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/03/18 19:20 / by
Calcium	8	mg/L		1		E200.8	12/03/18 19:20 / by
Chromium	ND	mg/L		0.005		E200.8	12/03/18 19:20 / by
Cobalt	ND	mg/L		0.005		E200.8	12/03/18 19:20 / by
Copper	0.129	mg/L		0.005		E200.7	12/03/18 18:48 / rlh
Iron	0.08	mg/L		0.02		E200.8	12/03/18 19:20 / by
Lead	ND	mg/L		0.001		E200.8	12/03/18 19:20 / by
Lithium	ND	mg/L		0.1		E200.7	12/03/18 18:48 / rlh
Magnesium	3	mg/L		1		E200.8	12/03/18 19:20 / by
Manganese	0.068	mg/L	D	0.002		E200.8	12/03/18 19:20 / by
Molybdenum	ND	mg/L		0.001		E200.8	12/03/18 19:20 / by
Nickel	0.011	mg/L	D	0.006		E200.8	12/03/18 19:20 / by
Potassium	1	mg/L		1		E200.8	12/03/18 19:20 / by
Silicon	3.1	mg/L		0.1		E200.8	12/03/18 19:20 / by
Silver	ND	mg/L		0.001		E200.8	12/03/18 19:20 / by
Sodium	11	mg/L		1		E200.7	12/03/18 18:48 / rlh
Strontium	0.02	mg/L		0.01		E200.8	12/03/18 19:20 / by
Thallium	ND	mg/L	D	0.002		E200.8	12/03/18 19:20 / by
Tin	ND	mg/L	D	0.03		E200.8	12/03/18 19:20 / by
Titanium	ND	mg/L		0.005		E200.8	12/03/18 19:20 / by
Uranium	ND	mg/L	D	0.0005		E200.8	12/03/18 19:20 / by
Vanadium	ND	mg/L		0.01		E200.8	12/03/18 19:20 / by
Zinc	0.26	mg/L	D	0.03		E200.8	12/03/18 19:20 / by
<b>METALS, TOTAL</b>							
Selenium	0.015	mg/L		0.001		A3114 C	12/04/18 13:49 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.009	mg/L		0.001		A3114 C	12/03/18 12:53 / eli-h
Selenium-VI	0.006	mg/L		0.001		A3114 C	12/05/18 08:29 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18112127-003  
**Client Sample ID:** E1

**Report Date:** 01/02/19  
**Collection Date:** 11/21/18 11:00  
**Date Received:** 11/27/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	10	mg/L	D	2		A5310 C	12/05/18 03:10 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.04	mg/L		0.03		E200.8	12/03/18 19:24 / by
Antimony	ND	mg/L	D	0.004		E200.8	12/03/18 19:24 / by
Arsenic	ND	mg/L	D	0.002		E200.8	12/03/18 19:24 / by
Barium	ND	mg/L		0.05		E200.8	12/03/18 19:24 / by
Beryllium	ND	mg/L		0.001		E200.8	12/03/18 19:24 / by
Boron	ND	mg/L		0.05		E200.7	12/03/18 18:59 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/03/18 19:24 / by
Calcium	39	mg/L		1		E200.8	12/03/18 19:24 / by
Chromium	ND	mg/L		0.005		E200.8	12/03/18 19:24 / by
Cobalt	ND	mg/L		0.005		E200.8	12/03/18 19:24 / by
Copper	ND	mg/L		0.005		E200.7	12/03/18 18:59 / rlh
Iron	ND	mg/L		0.02		E200.8	12/03/18 19:24 / by
Lead	ND	mg/L		0.001		E200.8	12/03/18 19:24 / by
Lithium	ND	mg/L		0.1		E200.7	12/03/18 18:59 / rlh
Magnesium	32	mg/L		1		E200.8	12/03/18 19:24 / by
Manganese	0.010	mg/L	D	0.002		E200.8	12/03/18 19:24 / by
Molybdenum	0.014	mg/L		0.001		E200.8	12/03/18 19:24 / by
Nickel	ND	mg/L	D	0.006		E200.8	12/03/18 19:24 / by
Potassium	2	mg/L		1		E200.8	12/03/18 19:24 / by
Silicon	1.3	mg/L		0.1		E200.8	12/03/18 19:24 / by
Silver	ND	mg/L		0.001		E200.8	12/03/18 19:24 / by
Sodium	9	mg/L		1		E200.8	12/03/18 19:24 / by
Strontium	0.19	mg/L		0.01		E200.8	12/03/18 19:24 / by
Thallium	ND	mg/L	D	0.002		E200.8	12/03/18 19:24 / by
Tin	ND	mg/L	D	0.03		E200.8	12/03/18 19:24 / by
Titanium	ND	mg/L		0.005		E200.8	12/03/18 19:24 / by
Uranium	0.0038	mg/L	D	0.0005		E200.8	12/03/18 19:24 / by
Vanadium	ND	mg/L		0.01		E200.8	12/03/18 19:24 / by
Zinc	ND	mg/L	D	0.03		E200.8	12/03/18 19:24 / by
<b>METALS, TOTAL</b>							
Selenium	0.022	mg/L		0.001		A3114 C	12/04/18 13:51 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.004	mg/L		0.001		A3114 C	12/03/18 12:55 / eli-h
Selenium-VI	0.019	mg/L		0.001		A3114 C	12/05/18 08:29 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18112127-004  
**Client Sample ID:** F2

**Report Date:** 01/02/19  
**Collection Date:** 11/21/18 11:00  
**Date Received:** 11/27/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	8.2	mg/L		0.5		A5310 C	12/05/18 03:26 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	21.3	mg/L		0.03		E200.8	12/26/18 19:52 / ped
Antimony	ND	mg/L	D	0.004		E200.8	12/03/18 19:45 / by
Arsenic	ND	mg/L	D	0.002		E200.8	12/03/18 19:45 / by
Barium	0.18	mg/L		0.05		E200.8	12/03/18 19:45 / by
Beryllium	ND	mg/L		0.001		E200.8	12/03/18 19:45 / by
Boron	ND	mg/L		0.05		E200.7	12/03/18 20:33 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/03/18 19:45 / by
Calcium	10	mg/L		1		E200.8	12/03/18 19:45 / by
Chromium	0.010	mg/L		0.005		E200.8	12/03/18 19:45 / by
Cobalt	ND	mg/L		0.005		E200.8	12/03/18 19:45 / by
Copper	0.009	mg/L		0.005		E200.7	12/03/18 20:33 / rlh
Iron	7.17	mg/L		0.02		E200.8	12/26/18 19:52 / ped
Lead	0.004	mg/L		0.001		E200.8	12/03/18 19:45 / by
Lithium	ND	mg/L		0.1		E200.7	12/03/18 20:33 / rlh
Magnesium	3	mg/L		1		E200.8	12/03/18 19:45 / by
Manganese	0.023	mg/L		0.001		E200.8	12/26/18 19:52 / ped
Molybdenum	ND	mg/L		0.001		E200.8	12/03/18 19:45 / by
Nickel	0.015	mg/L		0.005		E200.8	12/26/18 19:52 / ped
Potassium	10	mg/L		1		E200.7	12/24/18 11:15 / rlh
Silicon	40.8	mg/L	D	0.4		E200.7	12/24/18 11:15 / rlh
Silver	ND	mg/L		0.001		E200.8	12/03/18 19:45 / by
Sodium	20	mg/L		1		E200.7	12/03/18 20:33 / rlh
Strontium	0.04	mg/L		0.01		E200.8	12/03/18 19:45 / by
Thallium	0.0021	mg/L	D	0.0007		E200.8	12/03/18 19:45 / by
Tin	ND	mg/L	D	0.03		E200.8	12/03/18 19:45 / by
Titanium	0.120	mg/L		0.005		E200.8	12/03/18 19:45 / by
Uranium	ND	mg/L	D	0.0005		E200.8	12/03/18 19:45 / by
Vanadium	ND	mg/L		0.01		E200.8	12/03/18 19:45 / by
Zinc	0.08	mg/L		0.01		E200.8	12/26/18 19:52 / ped
<b>METALS, TOTAL</b>							
Selenium	0.219	mg/L	D	0.002		A3114 C	12/04/18 13:56 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.006	mg/L		0.001		A3114 C	12/03/18 12:57 / eli-h
Selenium-VI	0.214	mg/L		0.001		A3114 C	12/05/18 08:29 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18112127-005  
**Client Sample ID:** R2

**Report Date:** 01/02/19  
**Collection Date:** 11/21/18 11:00  
**DateReceived:** 11/27/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	35	mg/L	D	2		A5310 C	12/05/18 03:42 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.05	mg/L		0.03		E200.8	12/26/18 19:56 / ped
Antimony	ND	mg/L	D	0.004		E200.8	12/03/18 19:49 / by
Arsenic	ND	mg/L	D	0.002		E200.8	12/03/18 19:49 / by
Barium	0.06	mg/L		0.05		E200.8	12/03/18 19:49 / by
Beryllium	ND	mg/L		0.001		E200.8	12/03/18 19:49 / by
Boron	ND	mg/L		0.05		E200.7	12/03/18 19:03 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/03/18 19:49 / by
Calcium	8	mg/L		1		E200.8	12/03/18 19:49 / by
Chromium	ND	mg/L		0.005		E200.8	12/03/18 19:49 / by
Cobalt	ND	mg/L		0.005		E200.8	12/03/18 19:49 / by
Copper	0.175	mg/L		0.005		E200.7	12/03/18 19:03 / rlh
Iron	0.07	mg/L		0.02		E200.8	12/20/18 15:51 / car
Lead	ND	mg/L		0.001		E200.8	12/03/18 19:49 / by
Lithium	ND	mg/L		0.1		E200.7	12/03/18 19:03 / rlh
Magnesium	2	mg/L		1		E200.8	12/03/18 19:49 / by
Manganese	0.028	mg/L	D	0.002		E200.8	12/03/18 19:49 / by
Molybdenum	ND	mg/L		0.001		E200.8	12/03/18 19:49 / by
Nickel	0.009	mg/L	D	0.006		E200.8	12/03/18 19:49 / by
Potassium	ND	mg/L		1		E200.8	12/03/18 19:49 / by
Silicon	2.1	mg/L		0.1		E200.8	12/03/18 19:49 / by
Silver	ND	mg/L		0.001		E200.8	12/03/18 19:49 / by
Sodium	9	mg/L		1		E200.7	12/03/18 19:03 / rlh
Strontium	0.02	mg/L		0.01		E200.8	12/03/18 19:49 / by
Thallium	ND	mg/L	D	0.002		E200.8	12/03/18 19:49 / by
Tin	ND	mg/L	D	0.03		E200.8	12/03/18 19:49 / by
Titanium	ND	mg/L		0.005		E200.8	12/03/18 19:49 / by
Uranium	ND	mg/L	D	0.0005		E200.8	12/03/18 19:49 / by
Vanadium	ND	mg/L		0.01		E200.8	12/03/18 19:49 / by
Zinc	0.26	mg/L	D	0.03		E200.8	12/03/18 19:49 / by
<b>METALS, TOTAL</b>							
Selenium	0.018	mg/L	D	0.002		A3114 C	12/04/18 14:01 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 C	12/03/18 12:58 / eli-h
Selenium-VI	0.018	mg/L		0.001		A3114 C	12/05/18 08:29 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.





### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18112127-006  
**Client Sample ID:** E2

**Report Date:** 01/02/19  
**Collection Date:** 11/21/18 11:00  
**Date Received:** 11/27/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	4	mg/L	D	2		A5310 C	12/05/18 03:57 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	12/03/18 19:53 / by
Antimony	ND	mg/L	D	0.004		E200.8	12/03/18 19:53 / by
Arsenic	ND	mg/L	D	0.002		E200.8	12/03/18 19:53 / by
Barium	ND	mg/L		0.05		E200.8	12/03/18 19:53 / by
Beryllium	ND	mg/L		0.001		E200.8	12/03/18 19:53 / by
Boron	ND	mg/L		0.05		E200.7	12/03/18 19:07 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/03/18 19:53 / by
Calcium	32	mg/L		1		E200.8	12/03/18 19:53 / by
Chromium	ND	mg/L		0.005		E200.8	12/03/18 19:53 / by
Cobalt	ND	mg/L		0.005		E200.8	12/03/18 19:53 / by
Copper	ND	mg/L		0.005		E200.7	12/03/18 19:07 / rlh
Iron	ND	mg/L		0.02		E200.8	12/03/18 19:53 / by
Lead	ND	mg/L		0.001		E200.8	12/03/18 19:53 / by
Lithium	ND	mg/L		0.1		E200.7	12/03/18 19:07 / rlh
Magnesium	42	mg/L		1		E200.8	12/03/18 19:53 / by
Manganese	0.009	mg/L	D	0.002		E200.8	12/03/18 19:53 / by
Molybdenum	0.010	mg/L		0.001		E200.8	12/03/18 19:53 / by
Nickel	ND	mg/L	D	0.006		E200.8	12/03/18 19:53 / by
Potassium	8	mg/L		1		E200.8	12/03/18 19:53 / by
Silicon	1.8	mg/L		0.1		E200.8	12/03/18 19:53 / by
Silver	ND	mg/L		0.001		E200.8	12/03/18 19:53 / by
Sodium	5	mg/L		1		E200.7	12/03/18 19:07 / rlh
Strontium	0.18	mg/L		0.01		E200.8	12/03/18 19:53 / by
Thallium	ND	mg/L	D	0.002		E200.8	12/03/18 19:53 / by
Tin	ND	mg/L	D	0.03		E200.8	12/03/18 19:53 / by
Titanium	ND	mg/L		0.005		E200.8	12/03/18 19:53 / by
Uranium	0.0039	mg/L	D	0.0005		E200.8	12/03/18 19:53 / by
Vanadium	ND	mg/L		0.01		E200.8	12/03/18 19:53 / by
Zinc	ND	mg/L	D	0.03		E200.8	12/03/18 19:53 / by
<b>METALS, TOTAL</b>							
Selenium	0.029	mg/L		0.001		A3114 C	12/04/18 14:08 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 C	12/03/18 13:03 / eli-h
Selenium-VI	0.028	mg/L		0.001		A3114 C	12/05/18 08:29 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18112127-007  
**Client Sample ID:** F3

**Report Date:** 01/02/19  
**Collection Date:** 11/21/18 11:00  
**Date Received:** 11/27/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	11	mg/L	D	2		A5310 C	12/05/18 04:13 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	38.3	mg/L	D	0.2		E200.7	12/24/18 11:23 / rlh
Antimony	ND	mg/L	D	0.004		E200.8	12/03/18 19:57 / by
Arsenic	0.002	mg/L	D	0.002		E200.8	12/03/18 19:57 / by
Barium	0.29	mg/L		0.05		E200.8	12/03/18 19:57 / by
Beryllium	ND	mg/L		0.001		E200.8	12/03/18 19:57 / by
Boron	ND	mg/L		0.05		E200.7	12/03/18 20:37 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/03/18 19:57 / by
Calcium	11	mg/L		1		E200.8	12/03/18 19:57 / by
Chromium	0.015	mg/L		0.005		E200.8	12/03/18 19:57 / by
Cobalt	ND	mg/L		0.005		E200.8	12/03/18 19:57 / by
Copper	0.009	mg/L		0.005		E200.7	12/03/18 20:37 / rlh
Iron	3.97	mg/L		0.02		E200.8	12/03/18 19:57 / by
Lead	0.007	mg/L		0.001		E200.8	12/03/18 19:57 / by
Lithium	ND	mg/L		0.1		E200.7	12/03/18 20:37 / rlh
Magnesium	3	mg/L		1		E200.8	12/03/18 19:57 / by
Manganese	0.020	mg/L	D	0.002		E200.8	12/03/18 19:57 / by
Molybdenum	ND	mg/L		0.001		E200.8	12/03/18 19:57 / by
Nickel	0.015	mg/L	D	0.006		E200.8	12/03/18 19:57 / by
Potassium	14	mg/L		1		E200.7	12/24/18 11:23 / rlh
Silicon	56.1	mg/L	D	0.4		E200.7	12/24/18 11:23 / rlh
Silver	ND	mg/L		0.001		E200.8	12/03/18 19:57 / by
Sodium	20	mg/L		1		E200.7	12/03/18 20:37 / rlh
Strontium	0.05	mg/L		0.01		E200.8	12/03/18 19:57 / by
Thallium	0.0014	mg/L	D	0.0007		E200.8	12/03/18 19:57 / by
Tin	ND	mg/L	D	0.03		E200.8	12/03/18 19:57 / by
Titanium	0.68	mg/L	D	0.03		E200.7	12/24/18 11:23 / rlh
Uranium	0.0005	mg/L	D	0.0005		E200.8	12/03/18 19:57 / by
Vanadium	ND	mg/L		0.01		E200.8	12/03/18 19:57 / by
Zinc	0.14	mg/L		0.01		E200.7	12/24/18 11:23 / rlh
<b>METALS, TOTAL</b>							
Selenium	0.215	mg/L	D	0.002		A3114 C	12/04/18 14:12 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.003	mg/L	D	0.002		A3114 C	12/03/18 13:06 / eli-h
Selenium-VI	0.212	mg/L		0.001		A3114 C	12/05/18 08:29 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18112127-008  
**Client Sample ID:** R3

**Report Date:** 01/02/19  
**Collection Date:** 11/21/18 11:00  
**Date Received:** 11/27/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	19	mg/L	D	2		A5310 C	12/05/18 04:29 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	11.4	mg/L		0.03		E200.8	12/03/18 20:01 / by
Antimony	ND	mg/L	D	0.004		E200.8	12/03/18 20:01 / by
Arsenic	0.008	mg/L	D	0.002		E200.8	12/03/18 20:01 / by
Barium	0.08	mg/L		0.05		E200.8	12/03/18 20:01 / by
Beryllium	ND	mg/L		0.001		E200.8	12/03/18 20:01 / by
Boron	ND	mg/L		0.05		E200.7	12/03/18 20:41 / r/h
Cadmium	ND	mg/L		0.001		E200.8	12/03/18 20:01 / by
Calcium	3	mg/L		1		E200.8	12/03/18 20:01 / by
Chromium	0.018	mg/L		0.005		E200.8	12/03/18 20:01 / by
Cobalt	ND	mg/L		0.005		E200.8	12/03/18 20:01 / by
Copper	0.032	mg/L		0.005		E200.7	12/03/18 20:41 / r/h
Iron	4.02	mg/L		0.02		E200.8	12/03/18 20:01 / by
Lead	0.003	mg/L		0.001		E200.8	12/03/18 20:01 / by
Lithium	ND	mg/L		0.1		E200.7	12/03/18 20:41 / r/h
Magnesium	2	mg/L		1		E200.8	12/03/18 20:01 / by
Manganese	0.014	mg/L	D	0.002		E200.8	12/03/18 20:01 / by
Molybdenum	ND	mg/L		0.001		E200.8	12/03/18 20:01 / by
Nickel	0.011	mg/L	D	0.006		E200.8	12/03/18 20:01 / by
Potassium	4	mg/L		1		E200.8	12/03/18 20:01 / by
Silicon	17.2	mg/L		0.1		E200.8	12/03/18 20:01 / by
Silver	ND	mg/L		0.001		E200.8	12/03/18 20:01 / by
Sodium	6	mg/L		1		E200.7	12/03/18 20:41 / r/h
Strontium	0.02	mg/L		0.01		E200.8	12/03/18 20:01 / by
Thallium	0.0010	mg/L	D	0.0007		E200.8	12/03/18 20:01 / by
Tin	ND	mg/L	D	0.03		E200.8	12/03/18 20:01 / by
Titanium	0.250	mg/L		0.005		E200.8	12/03/18 20:01 / by
Uranium	ND	mg/L	D	0.0005		E200.8	12/03/18 20:01 / by
Vanadium	ND	mg/L		0.01		E200.8	12/03/18 20:01 / by
Zinc	0.18	mg/L	D	0.03		E200.8	12/03/18 20:01 / by
<b>METALS, TOTAL</b>							
Selenium	0.055	mg/L		0.001		A3114 C	12/04/18 14:11 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 C	12/03/18 13:11 / eli-h
Selenium-VI	0.055	mg/L		0.001		A3114 C	12/05/18 08:29 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18112127-009  
**Client Sample ID:** E3

**Report Date:** 01/02/19  
**Collection Date:** 11/21/18 11:00  
**Date Received:** 11/27/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	5	mg/L	D	2		A5310 C	12/05/18 04:44 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	12/20/18 15:55 / car
Antimony	ND	mg/L	D	0.004		E200.8	12/03/18 20:06 / by
Arsenic	ND	mg/L	D	0.002		E200.8	12/03/18 20:06 / by
Barium	ND	mg/L		0.05		E200.8	12/03/18 20:06 / by
Beryllium	ND	mg/L		0.001		E200.8	12/03/18 20:06 / by
Boron	0.05	mg/L		0.05		E200.7	12/03/18 19:11 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/03/18 20:06 / by
Calcium	26	mg/L		1		E200.8	12/03/18 20:06 / by
Chromium	ND	mg/L		0.005		E200.8	12/03/18 20:06 / by
Cobalt	ND	mg/L		0.005		E200.8	12/03/18 20:06 / by
Copper	ND	mg/L		0.005		E200.7	12/03/18 19:11 / rlh
Iron	ND	mg/L		0.02		E200.8	12/03/18 20:06 / by
Lead	ND	mg/L		0.001		E200.8	12/03/18 20:06 / by
Lithium	ND	mg/L		0.1		E200.7	12/03/18 19:11 / rlh
Magnesium	55	mg/L		1		E200.8	12/03/18 20:06 / by
Manganese	ND	mg/L	D	0.002		E200.8	12/03/18 20:06 / by
Molybdenum	0.005	mg/L		0.001		E200.8	12/03/18 20:06 / by
Nickel	ND	mg/L	D	0.006		E200.8	12/03/18 20:06 / by
Potassium	2	mg/L		1		E200.8	12/03/18 20:06 / by
Silicon	1.7	mg/L		0.1		E200.8	12/03/18 20:06 / by
Silver	ND	mg/L		0.001		E200.8	12/03/18 20:06 / by
Sodium	7	mg/L		1		E200.7	12/03/18 19:11 / rlh
Strontium	0.19	mg/L		0.01		E200.8	12/03/18 20:06 / by
Thallium	ND	mg/L	D	0.0007		E200.8	12/03/18 20:06 / by
Tin	ND	mg/L	D	0.03		E200.8	12/03/18 20:06 / by
Titanium	ND	mg/L		0.005		E200.8	12/03/18 20:06 / by
Uranium	0.0033	mg/L	D	0.0005		E200.8	12/03/18 20:06 / by
Vanadium	ND	mg/L		0.01		E200.8	12/03/18 20:06 / by
Zinc	ND	mg/L	D	0.03		E200.8	12/03/18 20:06 / by
<b>METALS, TOTAL</b>							
Selenium	0.027	mg/L		0.001		A3114 C	12/04/18 14:14 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 C	12/03/18 13:13 / eli-h
Selenium-VI	0.026	mg/L		0.001		A3114 C	12/05/18 08:29 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18112127-010  
**Client Sample ID:** F4

**Report Date:** 01/02/19  
**Collection Date:** 11/21/18 11:00  
**Date Received:** 11/27/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	5	mg/L	D	2		A5310 C	12/05/18 05:36 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	35.6	mg/L		0.03		E200.8	12/28/18 13:44 / car
Antimony	ND	mg/L	D	0.004		E200.8	12/03/18 20:10 / by
Arsenic	ND	mg/L	D	0.002		E200.8	12/03/18 20:10 / by
Barium	0.25	mg/L		0.05		E200.8	12/03/18 20:10 / by
Beryllium	ND	mg/L		0.001		E200.8	12/03/18 20:10 / by
Boron	ND	mg/L		0.05		E200.7	12/03/18 20:45 / r/h
Cadmium	ND	mg/L		0.001		E200.8	12/03/18 20:10 / by
Calcium	10	mg/L		1		E200.8	12/03/18 20:10 / by
Chromium	0.012	mg/L		0.005		E200.8	12/03/18 20:10 / by
Cobalt	ND	mg/L		0.005		E200.8	12/03/18 20:10 / by
Copper	0.009	mg/L		0.005		E200.7	12/03/18 20:45 / r/h
Iron	11.4	mg/L		0.02		E200.8	12/28/18 13:44 / car
Lead	0.006	mg/L		0.001		E200.8	12/03/18 20:10 / by
Lithium	ND	mg/L		0.1		E200.7	12/03/18 20:45 / r/h
Magnesium	3	mg/L		1		E200.8	12/03/18 20:10 / by
Manganese	0.013	mg/L	D	0.002		E200.8	12/03/18 20:10 / by
Molybdenum	ND	mg/L		0.001		E200.8	12/03/18 20:10 / by
Nickel	0.027	mg/L		0.005		E200.8	12/28/18 13:44 / car
Potassium	3	mg/L		1		E200.8	12/03/18 20:10 / by
Silicon	46.8	mg/L	D	0.4		E200.7	12/24/18 11:34 / r/h
Silver	ND	mg/L		0.001		E200.8	12/03/18 20:10 / by
Sodium	20	mg/L		1		E200.7	12/03/18 20:45 / r/h
Strontium	0.04	mg/L		0.01		E200.8	12/03/18 20:10 / by
Thallium	0.0011	mg/L	D	0.0007		E200.8	12/03/18 20:10 / by
Tin	ND	mg/L	D	0.03		E200.8	12/03/18 20:10 / by
Titanium	0.677	mg/L		0.005		E200.8	12/28/18 13:44 / car
Uranium	ND	mg/L	D	0.0005		E200.8	12/03/18 20:10 / by
Vanadium	ND	mg/L		0.01		E200.8	12/03/18 20:10 / by
Zinc	0.08	mg/L	D	0.03		E200.8	12/03/18 20:10 / by
<b>METALS, TOTAL</b>							
Selenium	0.202	mg/L	D	0.002		A3114 C	12/04/18 14:22 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.005	mg/L		0.001		A3114 C	12/03/18 13:15 / eli-h
Selenium-VI	0.197	mg/L		0.001		A3114 C	12/05/18 08:29 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18112127-011  
**Client Sample ID:** R4

**Report Date:** 01/02/19  
**Collection Date:** 11/21/18 11:00  
**Date Received:** 11/27/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	29	mg/L	D	2		A5310 C	12/05/18 05:52 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	4.20	mg/L		0.03		E200.8	12/03/18 20:26 / by
Antimony	ND	mg/L	D	0.004		E200.8	12/03/18 20:26 / by
Arsenic	ND	mg/L	D	0.002		E200.8	12/03/18 20:26 / by
Barium	ND	mg/L		0.05		E200.8	12/03/18 20:26 / by
Beryllium	ND	mg/L		0.001		E200.8	12/03/18 20:26 / by
Boron	ND	mg/L		0.05		E200.7	12/03/18 19:15 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/03/18 20:26 / by
Calcium	4	mg/L		1		E200.8	12/03/18 20:26 / by
Chromium	0.006	mg/L		0.005		E200.8	12/03/18 20:26 / by
Cobalt	ND	mg/L		0.005		E200.8	12/03/18 20:26 / by
Copper	0.021	mg/L		0.005		E200.7	12/03/18 19:15 / rlh
Iron	1.59	mg/L		0.02		E200.8	12/03/18 20:26 / by
Lead	0.001	mg/L		0.001		E200.8	12/03/18 20:26 / by
Lithium	ND	mg/L		0.1		E200.7	12/03/18 19:15 / rlh
Magnesium	2	mg/L		1		E200.8	12/03/18 20:26 / by
Manganese	0.007	mg/L	D	0.002		E200.8	12/03/18 20:26 / by
Molybdenum	ND	mg/L		0.001		E200.8	12/03/18 20:26 / by
Nickel	0.008	mg/L	D	0.006		E200.8	12/03/18 20:26 / by
Potassium	2	mg/L		1		E200.8	12/03/18 20:26 / by
Silicon	7.6	mg/L		0.1		E200.8	12/03/18 20:26 / by
Silver	0.002	mg/L		0.001		E200.8	12/03/18 20:26 / by
Sodium	7	mg/L		1		E200.7	12/03/18 19:15 / rlh
Strontium	0.01	mg/L		0.01		E200.8	12/03/18 20:26 / by
Thallium	ND	mg/L	D	0.002		E200.8	12/03/18 20:26 / by
Tin	ND	mg/L	D	0.03		E200.8	12/03/18 20:26 / by
Titanium	0.101	mg/L		0.005		E200.8	12/03/18 20:26 / by
Uranium	ND	mg/L	D	0.0005		E200.8	12/03/18 20:26 / by
Vanadium	ND	mg/L		0.01		E200.8	12/03/18 20:26 / by
Zinc	0.05	mg/L	D	0.03		E200.8	12/03/18 20:26 / by
<b>METALS, TOTAL</b>							
Selenium	0.009	mg/L		0.001		A3114 C	12/04/18 14:27 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.001	mg/L		0.001		A3114 C	12/03/18 13:20 / eli-h
Selenium-VI	0.007	mg/L		0.001		A3114 C	12/05/18 08:29 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18112127-012  
**Client Sample ID:** E4

**Report Date:** 01/02/19  
**Collection Date:** 11/21/18 11:00  
**DateReceived:** 11/27/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	20	mg/L	D	4		A5310 C	12/05/18 06:07 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.03	mg/L		0.03		E200.8	12/03/18 20:47 / by
Antimony	ND	mg/L	D	0.004		E200.8	12/03/18 20:47 / by
Arsenic	ND	mg/L	D	0.002		E200.8	12/03/18 20:47 / by
Barium	ND	mg/L		0.05		E200.8	12/03/18 20:47 / by
Beryllium	ND	mg/L		0.001		E200.8	12/03/18 20:47 / by
Boron	0.06	mg/L		0.05		E200.7	12/03/18 19:19 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/03/18 20:47 / by
Calcium	21	mg/L		1		E200.8	12/03/18 20:47 / by
Chromium	ND	mg/L		0.005		E200.8	12/03/18 20:47 / by
Cobalt	ND	mg/L		0.005		E200.8	12/03/18 20:47 / by
Copper	ND	mg/L		0.005		E200.7	12/03/18 19:19 / rlh
Iron	ND	mg/L		0.02		E200.8	12/03/18 20:47 / by
Lead	ND	mg/L		0.001		E200.8	12/03/18 20:47 / by
Lithium	ND	mg/L		0.1		E200.7	12/03/18 19:19 / rlh
Magnesium	62	mg/L		1		E200.8	12/03/18 20:47 / by
Manganese	ND	mg/L	D	0.002		E200.8	12/03/18 20:47 / by
Molybdenum	0.004	mg/L		0.001		E200.8	12/03/18 20:47 / by
Nickel	ND	mg/L	D	0.006		E200.8	12/03/18 20:47 / by
Potassium	3	mg/L		1		E200.8	12/03/18 20:47 / by
Silicon	1.4	mg/L		0.1		E200.8	12/03/18 20:47 / by
Silver	ND	mg/L		0.001		E200.8	12/03/18 20:47 / by
Sodium	7	mg/L		1		E200.7	12/03/18 19:19 / rlh
Strontium	0.19	mg/L		0.01		E200.8	12/03/18 20:47 / by
Thallium	ND	mg/L	D	0.002		E200.8	12/03/18 20:47 / by
Tin	ND	mg/L	D	0.03		E200.8	12/03/18 20:47 / by
Titanium	ND	mg/L		0.005		E200.8	12/03/18 20:47 / by
Uranium	0.0041	mg/L	D	0.0005		E200.8	12/03/18 20:47 / by
Vanadium	ND	mg/L		0.01		E200.8	12/03/18 20:47 / by
Zinc	ND	mg/L	D	0.03		E200.8	12/03/18 20:47 / by
<b>METALS, TOTAL</b>							
Selenium	0.027	mg/L		0.001		A3114 C	12/04/18 14:29 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.001	mg/L		0.001		A3114 C	12/03/18 13:21 / eli-h
Selenium-VI	0.026	mg/L		0.001		A3114 C	12/05/18 08:29 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18112127-013  
**Client Sample ID:** F5

**Report Date:** 01/02/19  
**Collection Date:** 11/21/18 11:00  
**Date Received:** 11/27/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	7	mg/L	D	4		A5310 C	12/05/18 06:23 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.26	mg/L		0.03		E200.8	12/03/18 20:51 / by
Antimony	ND	mg/L	D	0.004		E200.8	12/03/18 20:51 / by
Arsenic	ND	mg/L	D	0.002		E200.8	12/03/18 20:51 / by
Barium	0.07	mg/L		0.05		E200.8	12/03/18 20:51 / by
Beryllium	ND	mg/L		0.001		E200.8	12/03/18 20:51 / by
Boron	ND	mg/L		0.05		E200.7	12/03/18 19:23 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/03/18 20:51 / by
Calcium	9	mg/L		1		E200.8	12/03/18 20:51 / by
Chromium	ND	mg/L		0.005		E200.8	12/03/18 20:51 / by
Cobalt	ND	mg/L		0.005		E200.8	12/03/18 20:51 / by
Copper	ND	mg/L		0.005		E200.7	12/03/18 19:23 / rlh
Iron	0.11	mg/L		0.02		E200.8	12/03/18 20:51 / by
Lead	ND	mg/L		0.001		E200.8	12/03/18 20:51 / by
Lithium	ND	mg/L		0.1		E200.7	12/03/18 19:23 / rlh
Magnesium	2	mg/L		1		E200.8	12/03/18 20:51 / by
Manganese	ND	mg/L	D	0.002		E200.8	12/03/18 20:51 / by
Molybdenum	ND	mg/L		0.001		E200.8	12/03/18 20:51 / by
Nickel	ND	mg/L	D	0.006		E200.8	12/03/18 20:51 / by
Potassium	ND	mg/L		1		E200.8	12/03/18 20:51 / by
Silicon	1.4	mg/L		0.1		E200.8	12/03/18 20:51 / by
Silver	ND	mg/L		0.001		E200.8	12/03/18 20:51 / by
Sodium	21	mg/L		1		E200.7	12/03/18 19:23 / rlh
Strontium	0.03	mg/L		0.01		E200.8	12/03/18 20:51 / by
Thallium	ND	mg/L	D	0.001		E200.8	12/03/18 20:51 / by
Tin	ND	mg/L	D	0.03		E200.8	12/03/18 20:51 / by
Titanium	ND	mg/L		0.005		E200.8	12/03/18 20:51 / by
Uranium	ND	mg/L	D	0.0005		E200.8	12/03/18 20:51 / by
Vanadium	ND	mg/L		0.01		E200.8	12/03/18 20:51 / by
Zinc	ND	mg/L	D	0.03		E200.8	12/03/18 20:51 / by
<b>METALS, TOTAL</b>							
Selenium	0.211	mg/L	D	0.002		A3114 C	12/04/18 14:38 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.001	mg/L		0.001		A3114 C	12/03/18 13:23 / eli-h
Selenium-VI	0.209	mg/L		0.001		A3114 C	12/05/18 08:29 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.





### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18112127-014  
**Client Sample ID:** R5

**Report Date:** 01/02/19  
**Collection Date:** 11/21/18 11:00  
**Date Received:** 11/27/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	14	mg/L	D	2		A5310 C	12/05/18 06:38 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.09	mg/L		0.03		E200.8	12/03/18 20:56 / by
Antimony	ND	mg/L	D	0.004		E200.8	12/03/18 20:56 / by
Arsenic	ND	mg/L	D	0.002		E200.8	12/03/18 20:56 / by
Barium	ND	mg/L		0.05		E200.8	12/03/18 20:56 / by
Beryllium	ND	mg/L		0.001		E200.8	12/03/18 20:56 / by
Boron	ND	mg/L		0.05		E200.7	12/03/18 19:27 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/03/18 20:56 / by
Calcium	2	mg/L		1		E200.8	12/03/18 20:56 / by
Chromium	ND	mg/L		0.005		E200.8	12/03/18 20:56 / by
Cobalt	ND	mg/L		0.005		E200.8	12/03/18 20:56 / by
Copper	ND	mg/L		0.005		E200.7	12/03/18 19:27 / rlh
Iron	0.07	mg/L		0.02		E200.8	12/03/18 20:56 / by
Lead	ND	mg/L		0.001		E200.8	12/03/18 20:56 / by
Lithium	ND	mg/L		0.1		E200.7	12/03/18 19:27 / rlh
Magnesium	ND	mg/L		1		E200.8	12/03/18 20:56 / by
Manganese	ND	mg/L	D	0.002		E200.8	12/03/18 20:56 / by
Molybdenum	ND	mg/L		0.001		E200.8	12/03/18 20:56 / by
Nickel	ND	mg/L	D	0.006		E200.8	12/03/18 20:56 / by
Potassium	ND	mg/L		1		E200.8	12/03/18 20:56 / by
Silicon	1.2	mg/L		0.1		E200.8	12/03/18 20:56 / by
Silver	ND	mg/L		0.001		E200.8	12/03/18 20:56 / by
Sodium	6	mg/L		1		E200.7	12/03/18 19:27 / rlh
Strontium	ND	mg/L		0.01		E200.8	12/03/18 20:56 / by
Thallium	ND	mg/L	D	0.0007		E200.8	12/03/18 20:56 / by
Tin	ND	mg/L	D	0.03		E200.8	12/03/18 20:56 / by
Titanium	0.006	mg/L		0.005		E200.8	12/03/18 20:56 / by
Uranium	ND	mg/L	D	0.0005		E200.8	12/03/18 20:56 / by
Vanadium	ND	mg/L		0.01		E200.8	12/03/18 20:56 / by
Zinc	ND	mg/L	D	0.03		E200.8	12/03/18 20:56 / by
<b>METALS, TOTAL</b>							
Selenium	0.029	mg/L		0.001		A3114 C	12/04/18 14:32 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.007	mg/L	D	0.002		A3114 C	12/03/18 13:25 / eli-h
Selenium-VI	0.022	mg/L		0.001		A3114 C	12/05/18 08:29 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** Not Indicated  
**Lab ID:** B18112127-015  
**Client Sample ID:** E5

**Report Date:** 01/02/19  
**Collection Date:** 11/21/18 11:00  
**Date Received:** 11/27/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	6	mg/L	D	2		A5310 C	12/05/18 06:55 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	12/03/18 21:00 / by
Antimony	ND	mg/L	D	0.004		E200.8	12/03/18 21:00 / by
Arsenic	ND	mg/L	D	0.002		E200.8	12/03/18 21:00 / by
Barium	ND	mg/L		0.05		E200.8	12/03/18 21:00 / by
Beryllium	ND	mg/L		0.001		E200.8	12/03/18 21:00 / by
Boron	0.06	mg/L		0.05		E200.7	12/03/18 19:31 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/03/18 21:00 / by
Calcium	42	mg/L		1		E200.8	12/03/18 21:00 / by
Chromium	ND	mg/L		0.005		E200.8	12/03/18 21:00 / by
Cobalt	ND	mg/L		0.005		E200.8	12/03/18 21:00 / by
Copper	ND	mg/L		0.005		E200.7	12/03/18 19:31 / rlh
Iron	0.03	mg/L		0.02		E200.8	12/03/18 21:00 / by
Lead	ND	mg/L		0.001		E200.8	12/03/18 21:00 / by
Lithium	ND	mg/L		0.1		E200.7	12/03/18 19:31 / rlh
Magnesium	49	mg/L		1		E200.8	12/03/18 21:00 / by
Manganese	0.003	mg/L	D	0.002		E200.8	12/03/18 21:00 / by
Molybdenum	0.264	mg/L		0.001		E200.8	12/03/18 21:00 / by
Nickel	ND	mg/L	D	0.006		E200.8	12/03/18 21:00 / by
Potassium	2	mg/L		1		E200.8	12/03/18 21:00 / by
Silicon	1.9	mg/L		0.1		E200.8	12/03/18 21:00 / by
Silver	ND	mg/L		0.001		E200.8	12/03/18 21:00 / by
Sodium	5	mg/L		1		E200.7	12/03/18 19:31 / rlh
Strontium	0.22	mg/L		0.01		E200.8	12/03/18 21:00 / by
Thallium	ND	mg/L	D	0.0007		E200.8	12/03/18 21:00 / by
Tin	ND	mg/L	D	0.03		E200.8	12/03/18 21:00 / by
Titanium	ND	mg/L		0.005		E200.8	12/03/18 21:00 / by
Uranium	0.0043	mg/L	D	0.0005		E200.8	12/03/18 21:00 / by
Vanadium	ND	mg/L		0.01		E200.8	12/03/18 21:00 / by
Zinc	ND	mg/L	D	0.03		E200.8	12/03/18 21:00 / by
<b>METALS, TOTAL</b>							
Selenium	0.035	mg/L		0.001		A3114 C	12/04/18 14:33 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.001	mg/L		0.001		A3114 C	12/03/18 13:30 / eli-h
Selenium-VI	0.034	mg/L		0.001		A3114 C	12/05/18 08:29 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** Enviromin Inc

**Report Date:** 12/05/18

**Project:** Not Indicated

**Work Order:** B18112127

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A5310 C									Analytical Run: TOC3-C_181204A
<b>Lab ID:</b> CCV-10292	Continuing Calibration Verification Standard								12/05/18 01:35
Organic Carbon, Dissolved (DOC)	4.82	mg/L	0.50	97	90	110			
<b>Method:</b> A5310 C									Batch: R242297
<b>Lab ID:</b> LCS-10553	Laboratory Control Sample								Run: TOC3-C_181204A 12/05/18 01:00
Organic Carbon, Dissolved (DOC)	4.69	mg/L	0.50	94	90	110			
<b>Lab ID:</b> MBLK	Method Blank								Run: TOC3-C_181204A 12/05/18 01:16
Organic Carbon, Dissolved (DOC)	ND	mg/L	0.5						
<b>Lab ID:</b> C18110739-004CMS	Sample Matrix Spike								Run: TOC3-C_181204A 12/05/18 02:07
Organic Carbon, Dissolved (DOC)	769	mg/L	40	98	85	115			
<b>Lab ID:</b> C18110739-004CMSD	Sample Matrix Spike Duplicate								Run: TOC3-C_181204A 12/05/18 02:22
Organic Carbon, Dissolved (DOC)	774	mg/L	40	99	85	115	0.6	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc

**Report Date:** 12/07/18

**Project:** Not Indicated

**Work Order:** B18112127

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A3114 C									tical Run: SELENIUM PSA MILLENIUM_181203A
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard								
Selenium-IV	0.0200	mg/L	0.0010	100	90	110			12/03/18 12:41
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								
Selenium-IV	0.0197	mg/L	0.0010	99	90	110			12/03/18 12:43
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								
Selenium-IV	0.0196	mg/L	0.0010	98	90	110			12/03/18 13:02
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								
Selenium-IV	0.0191	mg/L	0.0010	96	90	110			12/03/18 13:18
<b>Method:</b> A3114 C									Batch: 43982
<b>Lab ID:</b> MB-43982	Method Blank								
Selenium-IV	ND	mg/L	0.0006						Run: SELENIUM PSA MILLENIUM_ 12/03/18 12:47
<b>Lab ID:</b> LCS-43982	Laboratory Control Sample								
Selenium-IV	0.0194	mg/L	0.0010	97	90	110			Run: SELENIUM PSA MILLENIUM_ 12/03/18 12:48
<b>Lab ID:</b> LFB-43982	Laboratory Fortified Blank								
Selenium-IV	0.0193	mg/L	0.0010	97	85	115			Run: SELENIUM PSA MILLENIUM_ 12/03/18 12:50
<b>Lab ID:</b> B18112127-007AMS	Sample Matrix Spike								
Selenium-IV	0.0403	mg/L	0.0020	93	70	130			Run: SELENIUM PSA MILLENIUM_ 12/03/18 13:08
<b>Lab ID:</b> B18112127-007AMSD	Sample Matrix Spike Duplicate								
Selenium-IV	0.0397	mg/L	0.0020	92	70	130	1.3	20	Run: SELENIUM PSA MILLENIUM_ 12/03/18 13:10
<b>Lab ID:</b> B18112127-014AMS	Sample Matrix Spike								
Selenium-IV	0.0471	mg/L	0.0020	99	70	130			Run: SELENIUM PSA MILLENIUM_ 12/03/18 13:27
<b>Lab ID:</b> B18112127-014AMSD	Sample Matrix Spike Duplicate								
Selenium-IV	0.0471	mg/L	0.0020	99	70	130	0.0	20	Run: SELENIUM PSA MILLENIUM_ 12/03/18 13:28

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc

**Report Date:** 12/07/18

**Project:** Not Indicated

**Work Order:** B18112127

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A3114 C									tical Run: SELENIUM PSA MILLENIUM_181204A
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard								12/04/18 13:38
Selenium	0.103	mg/L	0.0010	95	90	110			
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								12/04/18 13:40
Selenium	0.0198	mg/L	0.0010	99	90	110			
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								12/04/18 14:00
Selenium	0.0188	mg/L	0.0010	94	90	110			
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								12/04/18 14:20
Selenium	0.0182	mg/L	0.0010	91	90	110			
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard								12/04/18 15:05
Selenium	0.103	mg/L	0.0010	95	90	110			
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								12/04/18 15:35
Selenium	0.0191	mg/L	0.0010	96	90	110			
<b>Method:</b> A3114 C									Batch: 43993
<b>Lab ID:</b> MB-43993	Method Blank								Run: SELENIUM PSA MILLENIUM_ 12/04/18 13:43
Selenium	ND	mg/L	0.0002						
<b>Lab ID:</b> LCS-43993	Laboratory Control Sample								Run: SELENIUM PSA MILLENIUM_ 12/04/18 13:44
Selenium	0.103	mg/L	0.0010	95	90	110			
<b>Lab ID:</b> LFB-43993	Laboratory Fortified Blank								Run: SELENIUM PSA MILLENIUM_ 12/04/18 13:46
Selenium	0.0385	mg/L	0.0010	96	85	115			
<b>Lab ID:</b> B18112127-005AMS	Sample Matrix Spike								Run: SELENIUM PSA MILLENIUM_ 12/04/18 14:04
Selenium	0.0925	mg/L	0.0020	93	70	130			
<b>Lab ID:</b> B18112127-005AMSD	Sample Matrix Spike Duplicate								Run: SELENIUM PSA MILLENIUM_ 12/04/18 14:06
Selenium	0.0956	mg/L	0.0020	97	70	130	3.2	20	
<b>Lab ID:</b> B18112127-010AMS	Sample Matrix Spike								Run: SELENIUM PSA MILLENIUM_ 12/04/18 14:23
Selenium	0.276	mg/L	0.0020	91	70	130			
<b>Lab ID:</b> B18112127-010AMSD	Sample Matrix Spike Duplicate								Run: SELENIUM PSA MILLENIUM_ 12/04/18 14:25
Selenium	0.269	mg/L	0.0020	83	70	130	2.5	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 01/02/19

**Project:** Not Indicated

**Work Order:** B18112127

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.7</b>							Analytical Run: ICP204-B_181203A			
<b>Lab ID:</b>	<b>ICV</b>	Continuing Calibration Verification Standard						12/03/18 09:25		
Boron	2.46	mg/L	0.10	98	95	105				
Copper	2.41	mg/L	0.010	97	95	105				
Lithium	1.27	mg/L	0.10	102	95	105				
Sodium	25.4	mg/L	1.0	101	95	105				
Zinc	2.46	mg/L	0.010	98	95	105				
<b>Method: E200.7</b>							Batch: R311887			
<b>Lab ID:</b>	<b>MB-7400DIS1811203A</b>	Method Blank						Run: ICP204-B_181203A		12/03/18 09:33
Boron	ND	mg/L	0.01							
Copper	ND	mg/L	0.004							
Lithium	ND	mg/L	0.02							
Sodium	ND	mg/L	0.1							
Zinc	ND	mg/L	0.002							
<b>Lab ID:</b>	<b>LFB-7400DIS181203A</b>	Laboratory Fortified Blank						Run: ICP204-B_181203A		12/03/18 09:41
Boron	0.991	mg/L	0.10	99	85	115				
Copper	0.951	mg/L	0.010	95	85	115				
Lithium	1.01	mg/L	0.10	101	85	115				
Sodium	50.6	mg/L	1.0	101	85	115				
Zinc	0.976	mg/L	0.010	98	85	115				
<b>Lab ID:</b>	<b>MB-128117</b>	Method Blank						Run: ICP204-B_181203A		12/03/18 18:29
Boron	ND	mg/L	0.01							
Copper	ND	mg/L	0.004							
Lithium	ND	mg/L	0.02							
Sodium	ND	mg/L	0.1							
Zinc	ND	mg/L	0.002							
<b>Lab ID:</b>	<b>B18111937-002BMS2</b>	Sample Matrix Spike						Run: ICP204-B_181203A		12/03/18 18:37
Boron	1.11	mg/L	0.050	94	70	130				
Copper	0.918	mg/L	0.0050	92	70	130				
Lithium	0.994	mg/L	0.10	98	70	130				
Sodium	129	mg/L	1.0	95	70	130				
Zinc	0.955	mg/L	0.010	96	70	130				
<b>Lab ID:</b>	<b>B18111937-002BMSD2</b>	Sample Matrix Spike Duplicate						Run: ICP204-B_181203A		12/03/18 18:40
Boron	1.11	mg/L	0.050	94	70	130	0.4	20		
Copper	0.922	mg/L	0.0050	92	70	130	0.4	20		
Lithium	0.998	mg/L	0.10	98	70	130	0.4	20		
Sodium	129	mg/L	1.0	94	70	130	0.1	20		
Zinc	0.953	mg/L	0.010	95	70	130	0.2	20		
<b>Lab ID:</b>	<b>B18112215-002BMS2</b>	Sample Matrix Spike						Run: ICP204-B_181203A		12/03/18 19:58
Boron	1.13	mg/L	0.050	95	70	130				

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 01/02/19

**Project:** Not Indicated

**Work Order:** B18112127

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E200.7									Batch: R311887
<b>Lab ID:</b> B18112215-002BMS2	Sample Matrix Spike				Run: ICP204-B_181203A	12/03/18 19:58			
Copper	0.922	mg/L	0.0050	92	70	130			
Lithium	1.03	mg/L	0.10	98	70	130			
Sodium	73.1	mg/L	1.0	97	70	130			
Zinc	0.962	mg/L	0.010	96	70	130			
<b>Lab ID:</b> B18112215-002BMSD2	Sample Matrix Spike Duplicate				Run: ICP204-B_181203A	12/03/18 20:02			
Boron	1.12	mg/L	0.050	95	70	130	0.4	20	
Copper	0.922	mg/L	0.0050	92	70	130	0.0	20	
Lithium	1.03	mg/L	0.10	98	70	130	0.3	20	
Sodium	72.7	mg/L	1.0	96	70	130	0.5	20	
Zinc	0.962	mg/L	0.010	96	70	130	0.0	20	
<b>Lab ID:</b> MB-128118	Method Blank				Run: ICP204-B_181203A	12/03/18 20:13			
Boron	ND	mg/L	0.01						
Copper	ND	mg/L	0.004						
Lithium	ND	mg/L	0.02						
Sodium	ND	mg/L	0.1						
Zinc	0.004	mg/L	0.002						
<b>Lab ID:</b> B18112313-001CMS2	Sample Matrix Spike				Run: ICP204-B_181203A	12/03/18 20:52			
Boron	2.17	mg/L	0.050	96	70	130			
Copper	1.89	mg/L	0.0075	94	70	130			
Lithium	2.10	mg/L	0.10	101	70	130			
Sodium	220	mg/L	1.0	98	70	130			
Zinc	1.94	mg/L	0.010	95	70	130			
<b>Lab ID:</b> B18112313-001CMSD2	Sample Matrix Spike Duplicate				Run: ICP204-B_181203A	12/03/18 20:56			
Boron	2.16	mg/L	0.050	96	70	130	0.3	20	
Copper	1.88	mg/L	0.0075	94	70	130	0.6	20	
Lithium	2.09	mg/L	0.10	101	70	130	0.2	20	
Sodium	221	mg/L	1.0	99	70	130	0.3	20	
Zinc	1.94	mg/L	0.010	95	70	130	0.2	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 01/02/19

**Project:** Not Indicated

**Work Order:** B18112127

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>							Analytical Run: ICP204-B_181224A		
<b>Lab ID: ICV</b>	Continuing Calibration Verification Standard						12/24/18 09:27		
Aluminum	2.49	mg/L	0.10	99	95	105			
Potassium	25.1	mg/L	1.0	101	95	105			
Silicon	4.93	mg/L	0.10	99	95	105			
Titanium	2.43	mg/L	0.010	97	95	105			
Zinc	2.45	mg/L	0.010	98	95	105			
<b>Method: E200.7</b>							Batch: R312993		
<b>Lab ID: MB-7400DIS181224A</b>	Method Blank						Run: ICP204-B_181224A		12/24/18 09:35
Aluminum	ND	mg/L	0.03						
Potassium	ND	mg/L	0.1						
Silicon	ND	mg/L	0.07						
Titanium	ND	mg/L	0.006						
Zinc	ND	mg/L	0.002						
<b>Lab ID: LFB-7400DIS181224A</b>	Laboratory Fortified Blank						Run: ICP204-B_181224A		12/24/18 09:43
Aluminum	4.90	mg/L	0.10	98	85	115			
Potassium	48.9	mg/L	1.0	98	85	115			
Silicon	9.76	mg/L	0.10	98	85	115			
Titanium	0.972	mg/L	0.010	97	85	115			
Zinc	0.968	mg/L	0.010	97	85	115			
<b>Lab ID: MB-128117</b>	Method Blank						Run: ICP204-B_181224A		12/24/18 10:55
Aluminum	ND	mg/L	0.03						
Potassium	ND	mg/L	0.1						
Silicon	ND	mg/L	0.07						
Titanium	ND	mg/L	0.006						
Zinc	0.002	mg/L	0.002						
<b>Lab ID: MB-128118</b>	Method Blank						Run: ICP204-B_181224A		12/24/18 10:59
Aluminum	ND	mg/L	0.03						
Potassium	ND	mg/L	0.1						
Silicon	ND	mg/L	0.07						
Titanium	ND	mg/L	0.006						
Zinc	ND	mg/L	0.002						
<b>Lab ID: B18121640-001BMS2</b>	Sample Matrix Spike						Run: ICP204-B_181224A		12/24/18 11:58
Aluminum	5.16	mg/L	0.036	103	70	130			
Potassium	53.3	mg/L	1.0	104	70	130			
Silicon	23.9	mg/L	0.10	98	70	130			
Titanium	0.990	mg/L	0.0066	99	70	130			
Zinc	1.02	mg/L	0.010	99	70	130			
<b>Lab ID: B18121640-001BMSD2</b>	Sample Matrix Spike Duplicate						Run: ICP204-B_181224A		12/24/18 12:02
Aluminum	5.21	mg/L	0.036	104	70	130	0.8	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.





# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 01/02/19

**Project:** Not Indicated

**Work Order:** B18112127

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E200.7									Batch: R312993
<b>Lab ID:</b> B18121640-001BMSD2	Sample Matrix Spike Duplicate			Run: ICP204-B_181224A				12/24/18 12:02	
Potassium	54.2	mg/L	1.0	105	70	130	1.6	20	
Silicon	24.1	mg/L	0.10	100	70	130	0.9	20	
Titanium	1.00	mg/L	0.0066	100	70	130	1.2	20	
Zinc	1.03	mg/L	0.010	99	70	130	0.5	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 01/02/19

**Project:** Not Indicated

**Work Order:** B18112127

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>							Analytical Run: ICPMS206-B_181203A		
<b>Lab ID: QCS</b>	Initial Calibration Verification Standard							12/03/18 10:35	
Aluminum	0.249	mg/L	0.10	100	90	110			
Antimony	0.0461	mg/L	0.050	92	90	110			
Arsenic	0.0491	mg/L	0.0050	98	90	110			
Barium	0.0485	mg/L	0.10	97	90	110			
Beryllium	0.0244	mg/L	0.0010	97	90	110			
Boron	0.0498	mg/L	0.10	100	90	110			
Cadmium	0.0242	mg/L	0.0010	97	90	110			
Calcium	2.42	mg/L	0.50	97	90	110			
Chromium	0.0499	mg/L	0.010	100	90	110			
Cobalt	0.0503	mg/L	0.010	101	90	110			
Iron	0.259	mg/L	0.020	103	90	110			
Lead	0.0475	mg/L	0.010	95	90	110			
Magnesium	2.50	mg/L	0.50	100	90	110			
Manganese	0.253	mg/L	0.010	101	90	110			
Molybdenum	0.0477	mg/L	0.0050	95	90	110			
Nickel	0.0513	mg/L	0.010	103	90	110			
Potassium	2.45	mg/L	0.50	98	90	110			
Silicon	0.476	mg/L	0.10	95	90	110			
Silver	0.0247	mg/L	0.0050	99	90	110			
Sodium	2.53	mg/L	0.50	101	90	110			
Strontium	0.0501	mg/L	0.10	100	90	110			
Thallium	0.0487	mg/L	0.10	97	90	110			
Tin	0.0489	mg/L	0.10	98	90	110			
Titanium	0.0482	mg/L	0.010	96	90	110			
Uranium	0.0187	mg/L	0.00030	94	90	110			
Vanadium	0.0485	mg/L	0.10	97	90	110			
Zinc	0.0502	mg/L	0.010	100	90	110			

<b>Method: E200.8</b>							Batch: R311909		
<b>Lab ID: LRB</b>	Method Blank							Run: ICPMS206-B_181203A 12/03/18 10:53	
Aluminum	ND	mg/L	0.0008						
Antimony	ND	mg/L	0.0004						
Arsenic	ND	mg/L	0.0002						
Barium	0.0002	mg/L	0.00004						
Beryllium	ND	mg/L	0.0001						
Boron	ND	mg/L	0.006						
Cadmium	ND	mg/L	0.00003						
Calcium	ND	mg/L	0.06						
Chromium	ND	mg/L	0.0002						
Cobalt	ND	mg/L	0.00004						
Iron	ND	mg/L	0.001						
Lead	ND	mg/L	0.00005						
Magnesium	ND	mg/L	0.006						

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 01/02/19

**Project:** Not Indicated

**Work Order:** B18112127

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>									
Batch: R311909									
<b>Lab ID: LRB</b>	Method Blank			Run: ICPMS206-B_181203A			12/03/18 10:53		
Manganese	ND	mg/L	0.00010						
Molybdenum	ND	mg/L	0.00005						
Nickel	ND	mg/L	0.0006						
Potassium	ND	mg/L	0.08						
Silicon	ND	mg/L	0.01						
Silver	ND	mg/L	0.00002						
Sodium	ND	mg/L	0.02						
Strontium	ND	mg/L	0.0001						
Thallium	ND	mg/L	0.00007						
Tin	ND	mg/L	0.001						
Titanium	ND	mg/L	0.0001						
Uranium	ND	mg/L	0.00005						
Vanadium	ND	mg/L	0.001						
Zinc	ND	mg/L	0.003						
<b>Lab ID: LFB</b>	Laboratory Fortified Blank			Run: ICPMS206-B_181203A			12/03/18 11:01		
Aluminum	0.0519	mg/L	0.10	104	85	115			
Antimony	0.0435	mg/L	0.050	87	85	115			
Arsenic	0.0509	mg/L	0.0050	102	85	115			
Barium	0.0497	mg/L	0.10	99	85	115			
Beryllium	0.0531	mg/L	0.0010	106	85	115			
Boron	0.0517	mg/L	0.10	103	85	115			
Cadmium	0.0497	mg/L	0.0010	99	85	115			
Calcium	49.3	mg/L	0.50	99	85	115			
Chromium	0.0503	mg/L	0.010	101	85	115			
Cobalt	0.0495	mg/L	0.010	99	85	115			
Iron	5.01	mg/L	0.020	100	85	115			
Lead	0.0509	mg/L	0.010	102	85	115			
Magnesium	49.9	mg/L	0.50	100	85	115			
Manganese	0.0496	mg/L	0.010	99	85	115			
Molybdenum	0.0505	mg/L	0.0050	101	85	115			
Nickel	0.0505	mg/L	0.010	101	85	115			
Potassium	50.8	mg/L	0.50	102	85	115			
Silicon	0.196	mg/L	0.10	98	85	115			
Silver	0.0198	mg/L	0.0050	99	85	115			
Sodium	49.8	mg/L	0.50	100	85	115			
Strontium	0.0489	mg/L	0.10	98	85	115			
Thallium	0.0503	mg/L	0.10	101	85	115			
Tin	0.0500	mg/L	0.10	100	85	115			
Titanium	0.0549	mg/L	0.010	110	85	115			
Uranium	0.0516	mg/L	0.00030	103	85	115			
Vanadium	0.0497	mg/L	0.10	99	85	115			
Zinc	0.0494	mg/L	0.010	99	85	115			

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 01/02/19

**Project:** Not Indicated

**Work Order:** B18112127

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>							Batch: R311909		
<b>Lab ID: MB-128117</b>	Method Blank			Run: ICPMS206-B_181203A			12/03/18 18:51		
Aluminum	ND	mg/L	0.0008						
Antimony	ND	mg/L	0.0004						
Arsenic	ND	mg/L	0.0002						
Barium	ND	mg/L	0.00004						
Beryllium	ND	mg/L	0.0001						
Boron	ND	mg/L	0.006						
Cadmium	ND	mg/L	0.00003						
Calcium	ND	mg/L	0.06						
Chromium	ND	mg/L	0.0002						
Cobalt	ND	mg/L	0.00004						
Iron	ND	mg/L	0.001						
Lead	ND	mg/L	0.00005						
Magnesium	ND	mg/L	0.006						
Manganese	ND	mg/L	0.0002						
Molybdenum	ND	mg/L	0.00010						
Nickel	0.001	mg/L	0.0006						
Potassium	ND	mg/L	0.08						
Silicon	ND	mg/L	0.01						
Silver	ND	mg/L	0.00002						
Sodium	0.05	mg/L	0.02						
Strontium	ND	mg/L	0.0001						
Thallium	0.0007	mg/L	0.00007						
Tin	ND	mg/L	0.003						
Titanium	ND	mg/L	0.0001						
Uranium	ND	mg/L	0.00005						
Vanadium	ND	mg/L	0.001						
Zinc	ND	mg/L	0.003						
<b>Lab ID: MB-128118</b>	Method Blank			Run: ICPMS206-B_181203A			12/03/18 18:55		
Aluminum	0.003	mg/L	0.0008						
Antimony	ND	mg/L	0.0004						
Arsenic	ND	mg/L	0.0002						
Barium	0.00009	mg/L	0.00004						
Beryllium	ND	mg/L	0.0001						
Boron	ND	mg/L	0.006						
Cadmium	ND	mg/L	0.00003						
Calcium	ND	mg/L	0.06						
Chromium	ND	mg/L	0.0002						
Cobalt	ND	mg/L	0.00004						
Iron	0.001	mg/L	0.001						
Lead	ND	mg/L	0.00005						
Magnesium	ND	mg/L	0.006						
Manganese	ND	mg/L	0.0002						

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 01/02/19

**Project:** Not Indicated

**Work Order:** B18112127

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>									
Batch: R311909									
<b>Lab ID: MB-128118</b>	Method Blank			Run: ICPMS206-B_181203A			12/03/18 18:55		
Molybdenum	ND	mg/L	0.00010						
Nickel	0.001	mg/L	0.0006						
Potassium	ND	mg/L	0.08						
Silicon	ND	mg/L	0.01						
Silver	ND	mg/L	0.00002						
Sodium	0.04	mg/L	0.02						
Strontium	ND	mg/L	0.0001						
Thallium	0.0004	mg/L	0.00007						
Tin	ND	mg/L	0.003						
Titanium	ND	mg/L	0.0001						
Uranium	ND	mg/L	0.00005						
Vanadium	ND	mg/L	0.001						
Zinc	0.003	mg/L	0.003						
<b>Lab ID: B18112127-001BMS</b>									
Sample Matrix Spike									
Run: ICPMS206-B_181203A									
12/03/18 19:03									
Aluminum	2.40	mg/L	0.030	90	70	130			
Antimony	0.443	mg/L	0.0045	89	70	130			
Arsenic	0.471	mg/L	0.0019	94	70	130			
Barium	0.554	mg/L	0.050	96	70	130			
Beryllium	0.468	mg/L	0.0013	94	70	130			
Boron	0.491	mg/L	0.057	98	70	130			
Cadmium	0.482	mg/L	0.0010	96	70	130			
Calcium	509	mg/L	1.0	100	70	130			
Chromium	0.489	mg/L	0.0050	97	70	130			
Cobalt	0.469	mg/L	0.0050	94	70	130			
Iron	51.5	mg/L	0.020	101	70	130			
Lead	0.489	mg/L	0.0010	98	70	130			
Magnesium	483	mg/L	1.0	96	70	130			
Manganese	0.467	mg/L	0.0017	92	70	130			
Molybdenum	0.510	mg/L	0.0010	102	70	130			
Nickel	0.480	mg/L	0.0060	96	70	130			
Potassium	478	mg/L	1.0	95	70	130			
Silicon	5.61	mg/L	0.11	94	70	130			
Silver	0.190	mg/L	0.0010	95	70	130			
Sodium	523	mg/L	1.0	99	70	130			
Strontium	0.493	mg/L	0.010	92	70	130			
Thallium	0.495	mg/L	0.00073	99	70	130			
Tin	0.504	mg/L	0.029	101	70	130			
Titanium	0.575	mg/L	0.0050	106	70	130			
Uranium	0.494	mg/L	0.00053	99	70	130			
Vanadium	0.490	mg/L	0.012	98	70	130			
Zinc	0.504	mg/L	0.027	101	70	130			

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 01/02/19

**Project:** Not Indicated

**Work Order:** B18112127

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>							Batch: R311909		
<b>Lab ID:</b>	<b>B18112127-001BMSD</b>	Sample Matrix Spike Duplicate			Run: ICPMS206-B_181203A			12/03/18 19:07	
Aluminum	2.36	mg/L	0.030	83	70	130	1.4	20	
Antimony	0.446	mg/L	0.0045	89	70	130	0.6	20	
Arsenic	0.460	mg/L	0.0019	92	70	130	2.5	20	
Barium	0.574	mg/L	0.050	99	70	130	3.5	20	
Beryllium	0.451	mg/L	0.0013	90	70	130	3.8	20	
Boron	0.470	mg/L	0.057	94	70	130	4.4	20	
Cadmium	0.473	mg/L	0.0010	95	70	130	1.7	20	
Calcium	476	mg/L	1.0	93	70	130	6.7	20	
Chromium	0.462	mg/L	0.0050	92	70	130	5.7	20	
Cobalt	0.455	mg/L	0.0050	91	70	130	3.2	20	
Iron	48.8	mg/L	0.020	96	70	130	5.3	20	
Lead	0.480	mg/L	0.0010	96	70	130	1.8	20	
Magnesium	450	mg/L	1.0	90	70	130	7.1	20	
Manganese	0.459	mg/L	0.0017	91	70	130	1.7	20	
Molybdenum	0.501	mg/L	0.0010	100	70	130	1.7	20	
Nickel	0.461	mg/L	0.0060	92	70	130	4.1	20	
Potassium	443	mg/L	1.0	88	70	130	7.6	20	
Silicon	6.44	mg/L	0.11	136	70	130	14	20	S
Silver	0.187	mg/L	0.0010	93	70	130	1.6	20	
Sodium	495	mg/L	1.0	94	70	130	5.5	20	
Strontium	0.490	mg/L	0.010	91	70	130	0.6	20	
Thallium	0.487	mg/L	0.00073	97	70	130	1.5	20	
Tin	0.499	mg/L	0.029	100	70	130	1.0	20	
Titanium	0.568	mg/L	0.0050	104	70	130	1.4	20	
Uranium	0.476	mg/L	0.00053	95	70	130	3.8	20	
Vanadium	0.482	mg/L	0.012	96	70	130	1.6	20	
Zinc	0.512	mg/L	0.027	102	70	130	1.5	20	
<b>Lab ID:</b>	<b>B18112127-010BMS</b>	Sample Matrix Spike			Run: ICPMS206-B_181203A			12/03/18 20:14	
Aluminum	9.57	mg/L	0.030		70	130			A
Antimony	0.466	mg/L	0.0045	93	70	130			
Arsenic	0.482	mg/L	0.0019	96	70	130			
Barium	0.739	mg/L	0.050	98	70	130			
Beryllium	0.474	mg/L	0.0013	95	70	130			
Boron	0.483	mg/L	0.057	97	70	130			
Cadmium	0.488	mg/L	0.0010	98	70	130			
Calcium	487	mg/L	1.0	96	70	130			
Chromium	0.495	mg/L	0.0050	97	70	130			
Cobalt	0.463	mg/L	0.0050	92	70	130			
Iron	53.1	mg/L	0.020	100	70	130			
Lead	0.503	mg/L	0.0010	99	70	130			
Magnesium	499	mg/L	1.0	99	70	130			
Manganese	0.478	mg/L	0.0017	93	70	130			

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.



## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Enviromin Inc

Report Date: 01/02/19

Project: Not Indicated

Work Order: B18112127

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>							Batch: R311909		
<b>Lab ID: B18112127-010BMS</b>	Sample Matrix Spike			Run: ICPMS206-B_181203A			12/03/18 20:14		
Molybdenum	0.527	mg/L	0.0010	105	70	130			
Nickel	0.508	mg/L	0.0060	99	70	130			
Potassium	465	mg/L	1.0	92	70	130			
Silicon	14.8	mg/L	0.11		70	130			A
Silver	0.194	mg/L	0.0010	97	70	130			
Sodium	525	mg/L	1.0	101	70	130			
Strontium	0.506	mg/L	0.010	93	70	130			
Thallium	0.505	mg/L	0.00073	101	70	130			
Tin	0.513	mg/L	0.029	103	70	130			
Titanium	0.651	mg/L	0.0050	97	70	130			
Uranium	0.506	mg/L	0.00053	101	70	130			
Vanadium	0.524	mg/L	0.012	105	70	130			
Zinc	0.567	mg/L	0.027	98	70	130			
<b>Lab ID: B18112127-010BMSD</b>	Sample Matrix Spike Duplicate			Run: ICPMS206-B_181203A			12/03/18 20:18		
Aluminum	9.12	mg/L	0.030		70	130	4.8	20	A
Antimony	0.468	mg/L	0.0045	94	70	130	0.4	20	
Arsenic	0.483	mg/L	0.0019	97	70	130	0.3	20	
Barium	0.737	mg/L	0.050	98	70	130	0.3	20	
Beryllium	0.476	mg/L	0.0013	95	70	130	0.5	20	
Boron	0.491	mg/L	0.057	98	70	130	1.6	20	
Cadmium	0.489	mg/L	0.0010	98	70	130	0.3	20	
Calcium	496	mg/L	1.0	97	70	130	1.8	20	
Chromium	0.491	mg/L	0.0050	96	70	130	0.9	20	
Cobalt	0.456	mg/L	0.0050	91	70	130	1.6	20	
Iron	53.8	mg/L	0.020	101	70	130	1.3	20	
Lead	0.492	mg/L	0.0010	97	70	130	2.2	20	
Magnesium	496	mg/L	1.0	99	70	130	0.6	20	
Manganese	0.474	mg/L	0.0017	92	70	130	0.8	20	
Molybdenum	0.519	mg/L	0.0010	104	70	130	1.5	20	
Nickel	0.503	mg/L	0.0060	98	70	130	1.0	20	
Potassium	473	mg/L	1.0	94	70	130	1.7	20	
Silicon	13.5	mg/L	0.11		70	130	9.4	20	A
Silver	0.188	mg/L	0.0010	94	70	130	2.9	20	
Sodium	529	mg/L	1.0	102	70	130	0.7	20	
Strontium	0.506	mg/L	0.010	93	70	130	0.0	20	
Thallium	0.501	mg/L	0.00073	100	70	130	0.8	20	
Tin	0.511	mg/L	0.029	102	70	130	0.3	20	
Titanium	0.643	mg/L	0.0050	95	70	130	1.2	20	
Uranium	0.490	mg/L	0.00053	98	70	130	3.2	20	
Vanadium	0.518	mg/L	0.012	104	70	130	1.2	20	
Zinc	0.548	mg/L	0.027	94	70	130	3.4	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.



## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 01/02/19

**Project:** Not Indicated

**Work Order:** B18112127

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>							Batch: R311909		
<b>Lab ID:</b>	<b>B18112348-006BMS</b>	Sample Matrix Spike			Run: ICPMS206-B_181203A			12/03/18 21:45	
Aluminum	0.0563	mg/L	0.030	94	70	130			
Antimony	0.0441	mg/L	0.0010	88	70	130			
Arsenic	0.0488	mg/L	0.0010	95	70	130			
Barium	0.316	mg/L	0.050		70	130			A
Beryllium	0.0460	mg/L	0.0010	92	70	130			
Boron	0.0704	mg/L	0.050	90	70	130			
Cadmium	0.0485	mg/L	0.0010	97	70	130			
Calcium	63.9	mg/L	1.0	94	70	130			
Chromium	0.0487	mg/L	0.0050	97	70	130			
Cobalt	0.0467	mg/L	0.0050	92	70	130			
Iron	5.03	mg/L	0.020	101	70	130			
Lead	0.0492	mg/L	0.0010	98	70	130			
Magnesium	53.9	mg/L	1.0	99	70	130			
Manganese	0.0506	mg/L	0.0010	89	70	130			
Molybdenum	0.0518	mg/L	0.0010	103	70	130			
Nickel	0.0489	mg/L	0.0050	96	70	130			
Potassium	46.5	mg/L	1.0	91	70	130			
Silicon	7.02	mg/L	0.10		70	130			A
Silver	0.0187	mg/L	0.0010	94	70	130			
Sodium	58.2	mg/L	1.0	100	70	130			
Strontium	0.144	mg/L	0.010	82	70	130			
Thallium	0.0487	mg/L	0.00050	97	70	130			
Tin	0.0491	mg/L	0.010	98	70	130			
Titanium	0.0529	mg/L	0.0050	104	70	130			
Uranium	0.0501	mg/L	0.00030	100	70	130			
Vanadium	0.0465	mg/L	0.010	93	70	130			
Zinc	0.0633	mg/L	0.010	95	70	130			
<b>Lab ID:</b>	<b>B18112348-006BMSD</b>	Sample Matrix Spike Duplicate			Run: ICPMS206-B_181203A			12/03/18 21:49	
Aluminum	0.0581	mg/L	0.030	97	70	130	3.1	20	
Antimony	0.0454	mg/L	0.0010	91	70	130	3.0	20	
Arsenic	0.0494	mg/L	0.0010	96	70	130	1.4	20	
Barium	0.315	mg/L	0.050		70	130	0.3	20	A
Beryllium	0.0466	mg/L	0.0010	93	70	130	1.5	20	
Boron	0.0714	mg/L	0.050	92	70	130	1.4	20	
Cadmium	0.0486	mg/L	0.0010	97	70	130	0.0	20	
Calcium	65.9	mg/L	1.0	98	70	130	3.0	20	
Chromium	0.0479	mg/L	0.0050	96	70	130	1.8	20	
Cobalt	0.0462	mg/L	0.0050	91	70	130	1.1	20	
Iron	5.15	mg/L	0.020	103	70	130	2.4	20	
Lead	0.0480	mg/L	0.0010	96	70	130	2.6	20	
Magnesium	54.6	mg/L	1.0	100	70	130	1.3	20	
Manganese	0.0519	mg/L	0.0010	92	70	130	2.6	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.





# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 01/02/19

**Project:** Not Indicated

**Work Order:** B18112127

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E200.8									Batch: R311909
<b>Lab ID:</b> B18112348-006BMSD	Sample Matrix Spike Duplicate			Run: ICPMS206-B_181203A				12/03/18 21:49	
Molybdenum	0.0526	mg/L	0.0010	105	70	130	1.4	20	
Nickel	0.0486	mg/L	0.0050	96	70	130	0.5	20	
Potassium	47.0	mg/L	1.0	92	70	130	1.2	20	
Silicon	7.00	mg/L	0.10		70	130	0.2	20	A
Silver	0.0186	mg/L	0.0010	93	70	130	0.8	20	
Sodium	58.5	mg/L	1.0	101	70	130	0.6	20	
Strontium	0.146	mg/L	0.010	86	70	130	1.1	20	
Thallium	0.0494	mg/L	0.00050	99	70	130	1.5	20	
Tin	0.0506	mg/L	0.010	101	70	130	3.0	20	
Titanium	0.0518	mg/L	0.0050	102	70	130	2.0	20	
Uranium	0.0491	mg/L	0.00030	98	70	130	2.1	20	
Vanadium	0.0470	mg/L	0.010	94	70	130	1.2	20	
Zinc	0.0911	mg/L	0.010	151	70	130	36	20	SR

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

R - RPD exceeds advisory limit.



## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 01/02/19

**Project:** Not Indicated

**Work Order:** B18112127

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E200.8									Analytical Run: ICPMS206-B_181219A
<b>Lab ID:</b> QCS	Initial Calibration Verification Standard								12/20/18 13:38
Aluminum	0.241	mg/L	0.10	96	90	110			
Iron	0.260	mg/L	0.020	104	90	110			
Thallium	0.0461	mg/L	0.10	92	90	110			
<b>Method:</b> E200.8									Batch: R312819
<b>Lab ID:</b> LFB	Laboratory Fortified Blank								Run: ICPMS206-B_181219A 12/19/18 11:14
Aluminum	0.0549	mg/L	0.10	102	85	115			
Iron	5.10	mg/L	0.020	102	85	115			
Thallium	0.0529	mg/L	0.10	106	85	115			
<b>Lab ID:</b> LRB	Method Blank								Run: ICPMS206-B_181219A 12/20/18 13:54
Aluminum	0.003	mg/L	0.0008						
Iron	ND	mg/L	0.001						
Thallium	ND	mg/L	0.00007						
<b>Lab ID:</b> B18120090-001BMS	Sample Matrix Spike								Run: ICPMS206-B_181219A 12/20/18 14:57
Aluminum	0.0568	mg/L	0.030	88	70	130			
Iron	4.81	mg/L	0.020	96	70	130			
Thallium	0.0450	mg/L	0.00050	90	70	130			
<b>Lab ID:</b> B18120090-001BMSD	Sample Matrix Spike Duplicate								Run: ICPMS206-B_181219A 12/20/18 15:01
Aluminum	0.0578	mg/L	0.030	90	70	130	1.7	20	
Iron	4.94	mg/L	0.020	98	70	130	2.6	20	
Thallium	0.0452	mg/L	0.00050	90	70	130	0.4	20	
<b>Lab ID:</b> MB-128117	Method Blank								Run: ICPMS206-B_181219A 12/20/18 15:30
Aluminum	0.006	mg/L	0.0008						
Iron	0.001	mg/L	0.001						
Thallium	ND	mg/L	0.00007						
<b>Lab ID:</b> MB-128118	Method Blank								Run: ICPMS206-B_181219A 12/20/18 16:08
Aluminum	0.06	mg/L	0.0008						
Iron	0.004	mg/L	0.001						
Thallium	ND	mg/L	0.00007						

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 01/02/19

**Project:** Not Indicated

**Work Order:** B18112127

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>							Analytical Run: ICPMS207-B_181226A		
<b>Lab ID: QCS</b>	Initial Calibration Verification Standard						12/26/18 14:04		
Aluminum	0.239	mg/L	0.10	96	90	110			
Iron	0.258	mg/L	0.020	103	90	110			
Manganese	0.244	mg/L	0.010	98	90	110			
Nickel	0.0495	mg/L	0.010	99	90	110			
Zinc	0.0520	mg/L	0.010	104	90	110			
<b>Method: E200.8</b>							Batch: R313065		
<b>Lab ID: LRB</b>	Method Blank						Run: ICPMS207-B_181226A 12/26/18 14:20		
Aluminum	ND	mg/L	0.0009						
Iron	ND	mg/L	0.001						
Manganese	ND	mg/L	0.00010						
Nickel	ND	mg/L	0.0006						
Zinc	ND	mg/L	0.003						
<b>Lab ID: LFB</b>	Laboratory Fortified Blank						Run: ICPMS207-B_181226A 12/26/18 14:24		
Aluminum	0.0495	mg/L	0.10	99	85	115			
Iron	5.24	mg/L	0.020	105	85	115			
Manganese	0.0496	mg/L	0.010	99	85	115			
Nickel	0.0483	mg/L	0.010	97	85	115			
Zinc	0.0484	mg/L	0.010	97	85	115			
<b>Lab ID: MB-128117</b>	Method Blank						Run: ICPMS207-B_181226A 12/26/18 19:44		
Aluminum	0.008	mg/L	0.0009						
Iron	ND	mg/L	0.001						
Manganese	ND	mg/L	0.00010						
Nickel	0.001	mg/L	0.0006						
Zinc	ND	mg/L	0.003						
<b>Lab ID: B18121084-001AMS</b>	Sample Matrix Spike						Run: ICPMS207-B_181226A 12/26/18 22:03		
Aluminum	0.0381	mg/L	0.030	76	70	130			
Iron	5.02	mg/L	0.020	100	70	130			
Manganese	0.0450	mg/L	0.0010	90	70	130			
Nickel	0.0471	mg/L	0.0050	94	70	130			
Zinc	0.0743	mg/L	0.010	111	70	130			
<b>Lab ID: B18121084-001AMSD</b>	Sample Matrix Spike Duplicate						Run: ICPMS207-B_181226A 12/26/18 22:19		
Aluminum	0.0421	mg/L	0.030	84	70	130	10	20	
Iron	5.26	mg/L	0.020	105	70	130	4.7	20	
Manganese	0.0475	mg/L	0.0010	95	70	130	5.5	20	
Nickel	0.0487	mg/L	0.0050	97	70	130	3.2	20	
Zinc	0.0750	mg/L	0.010	112	70	130	0.8	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 01/02/19

**Project:** Not Indicated

**Work Order:** B18112127

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method:</b> E200.8							Analytical Run: ICPMS207-B_181228A			
<b>Lab ID:</b> QCS	Initial Calibration Verification Standard						12/28/18 11:27			
Aluminum	0.237	mg/L	0.10	95	90	110				
Iron	0.250	mg/L	0.020	100	90	110				
Nickel	0.0516	mg/L	0.010	103	90	110				
Titanium	0.0480	mg/L	0.010	96	90	110				
<b>Method:</b> E200.8							Batch: R313200			
<b>Lab ID:</b> LFB	Laboratory Fortified Blank						Run: ICPMS207-B_181228A		12/28/18 11:51	
Aluminum	0.0505	mg/L	0.10	101	85	115				
Iron	4.47	mg/L	0.020	89	85	115				
Nickel	0.0466	mg/L	0.010	93	85	115				
Titanium	0.0488	mg/L	0.010	98	85	115				
<b>Lab ID:</b> LRB	Method Blank						Run: ICPMS207-B_181228A		12/28/18 13:52	
Aluminum	0.0010	mg/L	0.0009							
Iron	ND	mg/L	0.001							
Nickel	ND	mg/L	0.0006							
Titanium	ND	mg/L	0.00009							
<b>Lab ID:</b> B18112127-010BMS	Sample Matrix Spike						Run: ICPMS207-B_181228A		12/28/18 13:56	
Aluminum	34.0	mg/L	0.030		70	130			A	
Iron	33.5	mg/L	0.020	88	70	130				
Nickel	0.254	mg/L	0.0050	91	70	130				
Titanium	0.917	mg/L	0.0050	96	70	130				
<b>Lab ID:</b> B18112127-010BMSD	Sample Matrix Spike Duplicate						Run: ICPMS207-B_181228A		12/28/18 14:00	
Aluminum	32.9	mg/L	0.030		70	130	3.2	20	A	
Iron	32.9	mg/L	0.020	86	70	130	1.9	20		
Nickel	0.252	mg/L	0.0050	90	70	130	0.7	20		
Titanium	0.915	mg/L	0.0050	95	70	130	0.2	20		

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.



# Work Order Receipt Checklist

Enviromin Inc

B18112127

Login completed by: Richard L. Shular

Date Received: 11/27/2018

Reviewed by: BL2000\gmccartney

Received by: qej

Reviewed Date: 11/29/2018

Carrier name: Return-UPS Ground

- Shipping container/cooler in good condition? Yes  No  Not Present
- Custody seals intact on all shipping container(s)/cooler(s)? Yes  No  Not Present
- Custody seals intact on all sample bottles? Yes  No  Not Present
- Chain of custody present? Yes  No
- Chain of custody signed when relinquished and received? Yes  No
- Chain of custody agrees with sample labels? Yes  No
- Samples in proper container/bottle? Yes  No
- Sample containers intact? Yes  No
- Sufficient sample volume for indicated test? Yes  No
- All samples received within holding time?  
(Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.) Yes  No
- Temp Blank received in all shipping container(s)/cooler(s)? Yes  No  Not Applicable
- Container/Temp Blank temperature: -1.2°C Blue Ice
- Water - VOA vials have zero headspace? Yes  No  No VOA vials submitted
- Water - pH acceptable upon receipt? Yes  No  Not Applicable

## Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

## Contact and Corrective Action Comments:

All samples were received partially frozen.

The client requested Se Speciation, Dissolved Organic Carbon, and Dissolved Metals Protocol A however only a 250 mL plastic unpreserved container was received for each sample.

The sample for Dissolved Organic Carbon was received past the 48 hour holding time and in plastic. Proceed with analysis per Shari Endy, Energy Laboratories Project Manager.

The samples for Dissolved Metals/Hardness were subsampled, filtered and preserved to pH <2 with 2 mL of nitric acid per 250 mL in the laboratory. According to 40CFR136, samples for Dissolved Metals should be filtered and preserved within 15 minutes of collection.

The samples for Dissolved Organic Carbon were subsampled, filtered and preserved to pH <2 with 0.5 mL of



## Work Order Receipt Checklist - Continued

Enviromin Inc

B18112127

phosphoric acid per 160 mL in the laboratory.

# Chain of Custody & Analytical Request Record

[www.energylab.com](http://www.energylab.com)

### Account Information (Billing Information)

Company/Name: Environment, Inc.  
 Contact: Gerrit Bergman  
 Phone: 208-315-4218  
 Mailing Address: 572 Professional Drive  
 City, State, Zip: Bozeman, MT 59718  
 Email: gerrit@environment.com  
 Receive Invoice  Hard Copy  Email  Hard Copy  Email  
 Purchase Order: 4093

### Report Information (if different than Account Information)

Company/Name: \_\_\_\_\_  
 Contact: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_  
 City, State, Zip: \_\_\_\_\_  
 Email: \_\_\_\_\_  
 Receive Report  Hard Copy  Email  
 Special Report/Format:  LEVEL IV  NELAC  EDMEDT (contact laboratory)  Other \_\_\_\_\_

Comments: These samples are not preserved or filtered.

### Project Information

Project Name, PWSID, Permit, etc.: \_\_\_\_\_  
 Sampler Name: \_\_\_\_\_ Sampler Phone: \_\_\_\_\_  
 Sample Origin State: \_\_\_\_\_ EPA/State Compliance  Yes  No  
 \*If one has been processed or refined, call before sending.  
 Byproduct 11 (e)2 material  Unprocessed ore (NOT ground or refined)\*

Matrix Codes

A - Air
W - Water
S - Solids
V - Vegetation
B - Biossary
O - Other
DW - Drinking Water

### Analysis Requested

See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached
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All turnaround times are standard unless marked as RUSH.  
 Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling -- See Instructions Page

Sample Identification (Name, Location, Interval, etc.)	Collection		Matrix (See Codes Above)	Number of Containers	Analysis Requested	Special Report/Format	TAT
	Date	Time					
F1	11/21/18	11 am	3	1	Se specifications		18112127-8881
R1							-002
E1							-003
F2							-004
R2							-005
E2							-006
F3							-007
R3							-008
E3							-009
F4							-010

Received by (print): Quince Jones Date/Time: 11/21/18 09:20  
 Received by Laboratory (print): \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Signature: [Signature] Signature: \_\_\_\_\_  
 Shipped By: \_\_\_\_\_ Cooler D(s): Y N C B Intact: Y N Recapt Temp: \_\_\_\_\_ °C Temp Blank: Y N On Ice: Y N Payment Type: CC Cash Check Amount: \$ \_\_\_\_\_  
 Receipt Number (cash/check only): \_\_\_\_\_

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

# Chain of Custody & Analytical Request Record

www.energylab.com

## Account Information (Billing information)

Company/Name: Environment, Inc.  
 Contact: Geoffrey Baynes  
 Phone: 209-315-4218  
 Mailing Address: 522 Professional Drive  
 City, State, Zip: Bozeman, MT 59718  
 Email: geoffrey@environment.com  
 Receive Invoice  Hard Copy  Email  
 Purchase Order: \_\_\_\_\_  
 Quote: \_\_\_\_\_  
 Bottle Order: \_\_\_\_\_

## Report Information (if different than Account Information)

Company/Name: \_\_\_\_\_  
 Contact: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_  
 City, State, Zip: \_\_\_\_\_  
 Email: \_\_\_\_\_  
 Receive Report  Hard Copy  Email  
 Special Report/Formats:  LEVEL IV  NELAC  EDD/EDT (contact laboratory)  Other: \_\_\_\_\_

Comments

## Project Information

Project Name, PWSID, Permit, etc.: \_\_\_\_\_  
 Sampler Name: \_\_\_\_\_  
 Sampler Phone: \_\_\_\_\_  
 EPA/State Compliance:  Yes  No  
 Sample Origin State: \_\_\_\_\_  
 MINING CLIENTS, please indicate sample type.  
 \*If one has been processed or refined, call before sending.  
 Byproduct 11 (e)2 material  Unprocessed ore (NOT ground or refined)\*

All turnaround times are standard unless marked as RUSH.  
 Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling - See Instructions Page

Matrix Codes	Analysis Requested
A - Air	
W - Water	
S - Solids	
V - Vegetation	
B - Bioassay	
D - Other	
DW - Water	

Sample Identification (Name, Location, Interval, etc.)	Collection		Number of Containers	Matrix (See Codes Above)	Analysis Requested	Special Notes	RUSH TAT
	Date	Time					
R4	11/21/18	11am	1	W	See Attached		1818112127-011
E4							-012
F5							-013
R5							-014
E5							-015

Received by (print): Maureen Jones Date/Time: 11/21/18 08:20  
 Signature: [Signature]  
 Received by Laboratory (print): \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Signature: \_\_\_\_\_  
 Receipt Number (cash/check only): \_\_\_\_\_  
 Amount: \$ \_\_\_\_\_  
 Payment Type: \_\_\_\_\_  
 Cash  Check   
 On Ice: Y  N   
 Temp Blank: Y  N   
 Receipt Temp: \_\_\_\_\_ °C  
 Intact: Y  N   
 Cooler ID(s): Y  N  C  B   
 Custody Seals: Y  N  C  B   
 Shipped By: \_\_\_\_\_  
 Relinquished by (print): \_\_\_\_\_ Date/Time: 11/24/18 1500  
 Signature: [Signature]  
 Relinquished by (print): \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Signature: \_\_\_\_\_

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.





# ANALYTICAL SUMMARY REPORT

December 27, 2018

Enviromin Inc  
524 Professional Dr  
Bozeman, MT 59718

Work Order: B18120578      Quote ID: B4093 - Enviromin Lab

Project Name: NWP Column Study

Energy Laboratories Inc Billings MT received the following 11 samples for Enviromin Inc on 12/7/2018 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B18120578-001	Feed 1-5	12/05/18 12:00	12/07/18	Aqueous	Metals by ICP/ICPMS, Dissolved Carbon, Dissolved Organic Selenium By CVAA, Total Selenium IV, Total Selenium-VI, Total
B18120578-002	R1	12/05/18 12:00	12/07/18	Aqueous	Same As Above
B18120578-003	R2	12/05/18 12:00	12/07/18	Aqueous	Same As Above
B18120578-004	R3	12/05/18 12:00	12/07/18	Aqueous	Same As Above
B18120578-005	R4	12/05/18 12:00	12/07/18	Aqueous	Same As Above
B18120578-006	R5	12/05/18 12:00	12/07/18	Aqueous	Same As Above
B18120578-007	E1	12/05/18 12:00	12/07/18	Aqueous	Same As Above
B18120578-008	E2	12/05/18 12:00	12/07/18	Aqueous	Same As Above
B18120578-009	E3	12/05/18 12:00	12/07/18	Aqueous	Same As Above
B18120578-010	E4	12/05/18 12:00	12/07/18	Aqueous	Same As Above
B18120578-011	E5	12/05/18 12:00	12/07/18	Aqueous	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:



**CLIENT:** Enviromin Inc  
**Project:** NWP Column Study  
**Work Order:** B18120578

**Report Date:** 12/27/18

## **CASE NARRATIVE**

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Tests associated with analyst identified as ELI-CA were subcontracted to Energy Laboratories, PO Box 247, Casper, WY, EPA Number WY00002.

Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 East Lyndale Ave, Helena, MT, EPA Number MT00945.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18120578-001  
**Client Sample ID:** Feed 1-5

**Report Date:** 12/27/18  
**Collection Date:** 12/05/18 12:00  
**Date Received:** 12/07/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	3	mg/L	D	2		A5310 C	12/13/18 03:10 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	12/15/18 17:53 / car
Antimony	ND	mg/L		0.001		E200.8	12/26/18 16:33 / ped
Arsenic	ND	mg/L		0.001		E200.8	12/15/18 17:53 / car
Barium	0.05	mg/L		0.05		E200.7	12/10/18 18:37 / rlh
Beryllium	ND	mg/L		0.001		E200.7	12/10/18 18:37 / rlh
Boron	ND	mg/L		0.05		E200.7	12/10/18 18:37 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/15/18 17:53 / car
Calcium	5	mg/L		1		E200.7	12/10/18 18:37 / rlh
Chromium	ND	mg/L		0.005		E200.8	12/15/18 17:53 / car
Cobalt	ND	mg/L		0.005		E200.8	12/15/18 17:53 / car
Copper	ND	mg/L		0.005		E200.7	12/10/18 18:37 / rlh
Iron	0.03	mg/L		0.02		E200.7	12/10/18 18:37 / rlh
Lead	ND	mg/L		0.001		E200.8	12/17/18 20:32 / jpv
Lithium	ND	mg/L		0.1		E200.7	12/10/18 18:37 / rlh
Magnesium	2	mg/L		1		E200.7	12/10/18 18:37 / rlh
Manganese	ND	mg/L		0.001		E200.8	12/15/18 17:53 / car
Molybdenum	ND	mg/L		0.001		E200.8	12/15/18 17:53 / car
Nickel	ND	mg/L		0.005		E200.8	12/15/18 17:53 / car
Potassium	ND	mg/L		1		E200.7	12/10/18 18:37 / rlh
Selenium	0.205	mg/L		0.001		E200.8	12/15/18 17:53 / car
Silicon	2.0	mg/L		0.1		E200.7	12/10/18 18:37 / rlh
Silver	ND	mg/L		0.001		E200.8	12/17/18 20:32 / jpv
Sodium	22	mg/L		1		E200.7	12/10/18 18:37 / rlh
Strontium	0.02	mg/L		0.01		E200.7	12/10/18 18:37 / rlh
Thallium	ND	mg/L		0.0005		E200.8	12/17/18 20:32 / jpv
Tin	ND	mg/L		0.01		E200.8	12/15/18 17:53 / car
Titanium	ND	mg/L		0.005		E200.7	12/10/18 18:37 / rlh
Uranium	ND	mg/L		0.0003		E200.8	12/17/18 20:32 / jpv
Vanadium	ND	mg/L		0.01		E200.8	12/15/18 17:53 / car
Zinc	ND	mg/L		0.01		E200.7	12/10/18 18:37 / rlh
<b>METALS, TOTAL</b>							
Selenium	0.161	mg/L		0.001		A3114 C	12/12/18 14:53 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.001	mg/L		0.001		A3114 C	12/13/18 13:41 / eli-h
Selenium-VI	0.160	mg/L		0.001		A3114 C	12/13/18 14:45 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18120578-002  
**Client Sample ID:** R1

**Report Date:** 12/27/18  
**Collection Date:** 12/05/18 12:00  
**Date Received:** 12/07/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	41	mg/L	D	4		A5310 C	12/13/18 03:27 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.07	mg/L		0.03		E200.8	12/15/18 17:57 / car
Antimony	ND	mg/L		0.001		E200.8	12/26/18 16:37 / ped
Arsenic	0.002	mg/L		0.001		E200.8	12/15/18 17:57 / car
Barium	ND	mg/L		0.05		E200.7	12/10/18 18:42 / rlh
Beryllium	ND	mg/L		0.001		E200.7	12/10/18 18:42 / rlh
Boron	0.07	mg/L		0.05		E200.7	12/10/18 18:42 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/15/18 17:57 / car
Calcium	6	mg/L		1		E200.7	12/10/18 18:42 / rlh
Chromium	ND	mg/L		0.005		E200.8	12/15/18 17:57 / car
Cobalt	0.005	mg/L		0.005		E200.8	12/15/18 17:57 / car
Copper	0.135	mg/L		0.005		E200.7	12/10/18 18:42 / rlh
Iron	0.14	mg/L		0.02		E200.7	12/10/18 18:42 / rlh
Lead	ND	mg/L		0.001		E200.8	12/17/18 20:48 / jpv
Lithium	ND	mg/L		0.1		E200.7	12/10/18 18:42 / rlh
Magnesium	2	mg/L		1		E200.7	12/10/18 18:42 / rlh
Manganese	0.058	mg/L		0.001		E200.8	12/15/18 17:57 / car
Molybdenum	ND	mg/L		0.001		E200.8	12/15/18 17:57 / car
Nickel	0.010	mg/L		0.005		E200.8	12/15/18 17:57 / car
Potassium	ND	mg/L		1		E200.7	12/10/18 18:42 / rlh
Selenium	0.004	mg/L		0.001		E200.8	12/17/18 20:48 / jpv
Silicon	8.3	mg/L		0.1		E200.7	12/10/18 18:42 / rlh
Silver	ND	mg/L		0.001		E200.8	12/17/18 20:48 / jpv
Sodium	17	mg/L		1		E200.7	12/10/18 18:42 / rlh
Strontium	0.02	mg/L		0.01		E200.7	12/10/18 18:42 / rlh
Thallium	ND	mg/L		0.0005		E200.8	12/17/18 20:48 / jpv
Tin	ND	mg/L		0.01		E200.8	12/15/18 17:57 / car
Titanium	ND	mg/L		0.005		E200.7	12/10/18 18:42 / rlh
Uranium	ND	mg/L		0.0003		E200.8	12/17/18 20:48 / jpv
Vanadium	ND	mg/L		0.01		E200.8	12/15/18 17:57 / car
Zinc	0.02	mg/L		0.01		E200.7	12/10/18 18:42 / rlh
<b>METALS, TOTAL</b>							
Selenium	0.003	mg/L		0.001		A3114 C	12/12/18 14:55 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.002	mg/L		0.001		A3114 C	12/13/18 13:43 / eli-h
Selenium-VI	0.001	mg/L		0.001		A3114 C	12/13/18 14:45 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18120578-003  
**Client Sample ID:** R2

**Report Date:** 12/27/18  
**Collection Date:** 12/05/18 12:00  
**Date Received:** 12/07/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	32	mg/L	D	4		A5310 C	12/13/18 04:17 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.04	mg/L		0.03		E200.8	12/15/18 18:01 / car
Antimony	ND	mg/L		0.001		E200.8	12/26/18 16:41 / ped
Arsenic	0.002	mg/L		0.001		E200.8	12/15/18 18:01 / car
Barium	0.06	mg/L		0.05		E200.7	12/10/18 18:46 / rlh
Beryllium	ND	mg/L		0.001		E200.7	12/10/18 18:46 / rlh
Boron	ND	mg/L		0.05		E200.7	12/10/18 18:46 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/15/18 18:01 / car
Calcium	7	mg/L		1		E200.7	12/10/18 18:46 / rlh
Chromium	ND	mg/L		0.005		E200.8	12/15/18 18:01 / car
Cobalt	ND	mg/L		0.005		E200.8	12/15/18 18:01 / car
Copper	0.222	mg/L		0.005		E200.7	12/10/18 18:46 / rlh
Iron	0.07	mg/L		0.02		E200.7	12/10/18 18:46 / rlh
Lead	ND	mg/L		0.001		E200.8	12/17/18 21:04 / jpv
Lithium	ND	mg/L		0.1		E200.7	12/10/18 18:46 / rlh
Magnesium	2	mg/L		1		E200.7	12/10/18 18:46 / rlh
Manganese	0.030	mg/L		0.001		E200.8	12/15/18 18:01 / car
Molybdenum	ND	mg/L		0.001		E200.8	12/15/18 18:01 / car
Nickel	0.010	mg/L		0.005		E200.8	12/15/18 18:01 / car
Potassium	ND	mg/L		1		E200.7	12/10/18 18:46 / rlh
Selenium	0.011	mg/L		0.001		E200.8	12/15/18 18:01 / car
Silicon	6.3	mg/L		0.1		E200.7	12/10/18 18:46 / rlh
Silver	ND	mg/L		0.001		E200.8	12/17/18 21:04 / jpv
Sodium	14	mg/L		1		E200.7	12/10/18 18:46 / rlh
Strontium	0.02	mg/L		0.01		E200.7	12/10/18 18:46 / rlh
Thallium	ND	mg/L		0.0005		E200.8	12/17/18 21:04 / jpv
Tin	ND	mg/L		0.01		E200.8	12/15/18 18:01 / car
Titanium	ND	mg/L		0.005		E200.7	12/10/18 18:46 / rlh
Uranium	ND	mg/L		0.0003		E200.8	12/17/18 21:04 / jpv
Vanadium	ND	mg/L		0.01		E200.8	12/15/18 18:01 / car
Zinc	0.24	mg/L		0.01		E200.7	12/10/18 18:46 / rlh
<b>METALS, TOTAL</b>							
Selenium	0.008	mg/L		0.001		A3114 C	12/12/18 15:05 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 C	12/13/18 13:44 / eli-h
Selenium-VI	0.008	mg/L		0.001		A3114 C	12/13/18 14:45 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18120578-004  
**Client Sample ID:** R3

**Report Date:** 12/27/18  
**Collection Date:** 12/05/18 12:00  
**Date Received:** 12/07/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	11	mg/L	D	2		A5310 C	12/13/18 04:33 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.05	mg/L		0.03		E200.8	12/15/18 18:05 / car
Antimony	ND	mg/L		0.001		E200.8	12/26/18 16:45 / ped
Arsenic	0.003	mg/L		0.001		E200.8	12/15/18 18:05 / car
Barium	ND	mg/L		0.05		E200.7	12/10/18 18:50 / rlh
Beryllium	ND	mg/L		0.001		E200.7	12/10/18 18:50 / rlh
Boron	ND	mg/L		0.05		E200.7	12/10/18 18:50 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/15/18 18:05 / car
Calcium	3	mg/L		1		E200.7	12/10/18 18:50 / rlh
Chromium	ND	mg/L		0.005		E200.8	12/15/18 18:05 / car
Cobalt	ND	mg/L		0.005		E200.8	12/15/18 18:05 / car
Copper	0.016	mg/L		0.005		E200.7	12/10/18 18:50 / rlh
Iron	0.04	mg/L		0.02		E200.7	12/10/18 18:50 / rlh
Lead	ND	mg/L		0.001		E200.8	12/17/18 21:08 / jpv
Lithium	ND	mg/L		0.1		E200.7	12/10/18 18:50 / rlh
Magnesium	1	mg/L		1		E200.7	12/10/18 18:50 / rlh
Manganese	ND	mg/L		0.001		E200.8	12/15/18 18:05 / car
Molybdenum	ND	mg/L		0.001		E200.8	12/15/18 18:05 / car
Nickel	ND	mg/L		0.005		E200.8	12/15/18 18:05 / car
Potassium	ND	mg/L		1		E200.7	12/10/18 18:50 / rlh
Selenium	0.052	mg/L		0.001		E200.8	12/15/18 18:05 / car
Silicon	4.7	mg/L		0.1		E200.7	12/10/18 18:50 / rlh
Silver	ND	mg/L		0.001		E200.8	12/17/18 21:08 / jpv
Sodium	15	mg/L		1		E200.7	12/10/18 18:50 / rlh
Strontium	ND	mg/L		0.01		E200.7	12/10/18 18:50 / rlh
Thallium	ND	mg/L		0.0005		E200.8	12/17/18 21:08 / jpv
Tin	ND	mg/L		0.01		E200.8	12/15/18 18:05 / car
Titanium	ND	mg/L		0.005		E200.7	12/10/18 18:50 / rlh
Uranium	ND	mg/L		0.0003		E200.8	12/17/18 21:08 / jpv
Vanadium	ND	mg/L		0.01		E200.8	12/15/18 18:05 / car
Zinc	ND	mg/L		0.01		E200.7	12/10/18 18:50 / rlh
<b>METALS, TOTAL</b>							
Selenium	0.044	mg/L		0.001		A3114 C	12/12/18 15:06 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 C	12/13/18 13:46 / eli-h
Selenium-VI	0.044	mg/L		0.001		A3114 C	12/13/18 14:45 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18120578-005  
**Client Sample ID:** R4

**Report Date:** 12/27/18  
**Collection Date:** 12/05/18 12:00  
**Date Received:** 12/07/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	37	mg/L	D	4		A5310 C	12/13/18 04:49 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.09	mg/L		0.03		E200.8	12/15/18 18:09 / car
Antimony	ND	mg/L		0.001		E200.8	12/26/18 16:49 / ped
Arsenic	0.002	mg/L		0.001		E200.8	12/15/18 18:09 / car
Barium	ND	mg/L		0.05		E200.7	12/10/18 19:02 / rlh
Beryllium	ND	mg/L		0.001		E200.7	12/10/18 19:02 / rlh
Boron	0.07	mg/L		0.05		E200.7	12/10/18 19:02 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/15/18 18:09 / car
Calcium	3	mg/L		1		E200.7	12/10/18 19:02 / rlh
Chromium	ND	mg/L		0.005		E200.8	12/15/18 18:09 / car
Cobalt	ND	mg/L		0.005		E200.8	12/15/18 18:09 / car
Copper	0.021	mg/L		0.005		E200.7	12/10/18 19:02 / rlh
Iron	0.10	mg/L		0.02		E200.7	12/10/18 19:02 / rlh
Lead	ND	mg/L		0.001		E200.8	12/17/18 21:12 / jpv
Lithium	ND	mg/L		0.1		E200.7	12/10/18 19:02 / rlh
Magnesium	ND	mg/L		1		E200.7	12/10/18 19:02 / rlh
Manganese	ND	mg/L		0.001		E200.8	12/15/18 18:09 / car
Molybdenum	ND	mg/L		0.001		E200.8	12/15/18 18:09 / car
Nickel	ND	mg/L		0.005		E200.8	12/15/18 18:09 / car
Potassium	ND	mg/L		1		E200.7	12/10/18 19:02 / rlh
Selenium	0.005	mg/L		0.001		E200.8	12/17/18 21:12 / jpv
Silicon	5.7	mg/L		0.1		E200.7	12/10/18 19:02 / rlh
Silver	ND	mg/L		0.001		E200.8	12/17/18 21:12 / jpv
Sodium	20	mg/L		1		E200.7	12/10/18 19:02 / rlh
Strontium	ND	mg/L		0.01		E200.7	12/10/18 19:02 / rlh
Thallium	ND	mg/L		0.0005		E200.8	12/17/18 21:12 / jpv
Tin	ND	mg/L		0.01		E200.8	12/15/18 18:09 / car
Titanium	ND	mg/L		0.005		E200.7	12/10/18 19:02 / rlh
Uranium	ND	mg/L		0.0003		E200.8	12/17/18 21:12 / jpv
Vanadium	ND	mg/L		0.01		E200.8	12/15/18 18:09 / car
Zinc	ND	mg/L		0.01		E200.7	12/10/18 19:02 / rlh
<b>METALS, TOTAL</b>							
Selenium	0.004	mg/L		0.001		A3114 C	12/12/18 15:08 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 C	12/13/18 13:47 / eli-h
Selenium-VI	0.004	mg/L		0.001		A3114 C	12/13/18 14:45 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18120578-006  
**Client Sample ID:** R5

**Report Date:** 12/27/18  
**Collection Date:** 12/05/18 12:00  
**Date Received:** 12/07/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	17	mg/L	D	2		A5310 C	12/13/18 05:05 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.04	mg/L		0.03		E200.8	12/15/18 18:13 / car
Antimony	ND	mg/L		0.001		E200.8	12/26/18 16:53 / ped
Arsenic	0.004	mg/L		0.001		E200.8	12/15/18 18:13 / car
Barium	ND	mg/L		0.05		E200.7	12/10/18 19:06 / rlh
Beryllium	ND	mg/L		0.001		E200.7	12/10/18 19:06 / rlh
Boron	0.05	mg/L		0.05		E200.7	12/10/18 19:06 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/15/18 18:13 / car
Calcium	3	mg/L		1		E200.7	12/10/18 19:06 / rlh
Chromium	ND	mg/L		0.005		E200.8	12/15/18 18:13 / car
Cobalt	ND	mg/L		0.005		E200.8	12/15/18 18:13 / car
Copper	ND	mg/L		0.005		E200.7	12/10/18 19:06 / rlh
Iron	0.04	mg/L		0.02		E200.7	12/10/18 19:06 / rlh
Lead	ND	mg/L		0.001		E200.8	12/17/18 21:15 / jpv
Lithium	ND	mg/L		0.1		E200.7	12/10/18 19:06 / rlh
Magnesium	1	mg/L		1		E200.7	12/10/18 19:06 / rlh
Manganese	ND	mg/L		0.001		E200.8	12/15/18 18:13 / car
Molybdenum	ND	mg/L		0.001		E200.8	12/15/18 18:13 / car
Nickel	ND	mg/L		0.005		E200.8	12/15/18 18:13 / car
Potassium	ND	mg/L		1		E200.7	12/10/18 19:06 / rlh
Selenium	0.016	mg/L		0.001		E200.8	12/15/18 18:13 / car
Silicon	4.6	mg/L		0.1		E200.7	12/10/18 19:06 / rlh
Silver	ND	mg/L		0.001		E200.8	12/17/18 21:15 / jpv
Sodium	16	mg/L		1		E200.7	12/10/18 19:06 / rlh
Strontium	ND	mg/L		0.01		E200.7	12/10/18 19:06 / rlh
Thallium	ND	mg/L		0.0005		E200.8	12/17/18 21:15 / jpv
Tin	ND	mg/L		0.01		E200.8	12/15/18 18:13 / car
Titanium	ND	mg/L		0.005		E200.7	12/10/18 19:06 / rlh
Uranium	ND	mg/L		0.0003		E200.8	12/17/18 21:15 / jpv
Vanadium	ND	mg/L		0.01		E200.8	12/15/18 18:13 / car
Zinc	ND	mg/L		0.01		E200.7	12/10/18 19:06 / rlh
<b>METALS, TOTAL</b>							
Selenium	0.012	mg/L		0.001		A3114 C	12/12/18 15:10 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.003	mg/L		0.001		A3114 C	12/13/18 13:49 / eli-h
Selenium-VI	0.009	mg/L		0.001		A3114 C	12/13/18 14:45 / eli-h

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.





### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18120578-007  
**Client Sample ID:** E1

**Report Date:** 12/27/18  
**Collection Date:** 12/05/18 12:00  
**Date Received:** 12/07/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	3	mg/L	D	2		A5310 C	12/13/18 05:21 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	12/15/18 18:17 / car
Antimony	ND	mg/L		0.001		E200.8	12/26/18 16:57 / ped
Arsenic	ND	mg/L		0.001		E200.8	12/15/18 18:17 / car
Barium	ND	mg/L		0.05		E200.7	12/10/18 19:10 / rlh
Beryllium	ND	mg/L		0.001		E200.7	12/10/18 19:10 / rlh
Boron	ND	mg/L		0.05		E200.7	12/10/18 19:10 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/15/18 18:17 / car
Calcium	40	mg/L		1		E200.7	12/10/18 19:10 / rlh
Chromium	ND	mg/L		0.005		E200.8	12/15/18 18:17 / car
Cobalt	ND	mg/L		0.005		E200.8	12/15/18 18:17 / car
Copper	ND	mg/L		0.005		E200.7	12/10/18 19:10 / rlh
Iron	ND	mg/L		0.02		E200.7	12/10/18 19:10 / rlh
Lead	ND	mg/L		0.001		E200.8	12/17/18 21:19 / jpv
Lithium	ND	mg/L		0.1		E200.7	12/10/18 19:10 / rlh
Magnesium	32	mg/L		1		E200.7	12/10/18 19:10 / rlh
Manganese	0.001	mg/L		0.001		E200.8	12/15/18 18:17 / car
Molybdenum	0.016	mg/L		0.001		E200.8	12/15/18 18:17 / car
Nickel	ND	mg/L		0.005		E200.8	12/15/18 18:17 / car
Potassium	3	mg/L		1		E200.7	12/10/18 19:10 / rlh
Selenium	0.035	mg/L		0.001		E200.8	12/15/18 18:17 / car
Silicon	0.9	mg/L		0.1		E200.7	12/10/18 19:10 / rlh
Silver	ND	mg/L		0.001		E200.8	12/17/18 21:19 / jpv
Sodium	8	mg/L		1		E200.7	12/10/18 19:10 / rlh
Strontium	0.21	mg/L		0.01		E200.7	12/10/18 19:10 / rlh
Thallium	ND	mg/L		0.0005		E200.8	12/17/18 21:19 / jpv
Tin	ND	mg/L		0.01		E200.8	12/15/18 18:17 / car
Titanium	ND	mg/L		0.005		E200.7	12/10/18 19:10 / rlh
Uranium	0.0032	mg/L		0.0003		E200.8	12/17/18 21:19 / jpv
Vanadium	ND	mg/L		0.01		E200.8	12/15/18 18:17 / car
Zinc	ND	mg/L		0.01		E200.7	12/10/18 19:10 / rlh
<b>METALS, TOTAL</b>							
Selenium	0.025	mg/L		0.001		A3114 C	12/12/18 15:11 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.002	mg/L		0.001		A3114 C	12/13/18 13:51 / eli-h
Selenium-VI	0.023	mg/L		0.001		A3114 C	12/13/18 14:45 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18120578-008  
**Client Sample ID:** E2

**Report Date:** 12/27/18  
**Collection Date:** 12/05/18 12:00  
**Date Received:** 12/07/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	3	mg/L	D	2		A5310 C	12/13/18 05:36 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	12/15/18 18:21 / car
Antimony	ND	mg/L		0.001		E200.8	12/24/18 17:19 / ped
Arsenic	ND	mg/L		0.001		E200.8	12/15/18 18:21 / car
Barium	ND	mg/L		0.05		E200.7	12/10/18 19:14 / rlh
Beryllium	ND	mg/L		0.001		E200.7	12/10/18 19:14 / rlh
Boron	ND	mg/L		0.05		E200.7	12/10/18 19:14 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/15/18 18:21 / car
Calcium	50	mg/L		1		E200.7	12/10/18 19:14 / rlh
Chromium	ND	mg/L		0.005		E200.8	12/15/18 18:21 / car
Cobalt	ND	mg/L		0.005		E200.8	12/15/18 18:21 / car
Copper	ND	mg/L		0.005		E200.7	12/10/18 19:14 / rlh
Iron	ND	mg/L		0.02		E200.7	12/10/18 19:14 / rlh
Lead	ND	mg/L		0.001		E200.8	12/17/18 21:23 / jpv
Lithium	ND	mg/L		0.1		E200.7	12/10/18 19:14 / rlh
Magnesium	49	mg/L		1		E200.7	12/10/18 19:14 / rlh
Manganese	ND	mg/L		0.001		E200.8	12/15/18 18:21 / car
Molybdenum	0.010	mg/L		0.001		E200.8	12/15/18 18:21 / car
Nickel	ND	mg/L		0.005		E200.8	12/15/18 18:21 / car
Potassium	2	mg/L		1		E200.7	12/10/18 19:14 / rlh
Selenium	0.040	mg/L		0.001		E200.8	12/15/18 18:21 / car
Silicon	1.0	mg/L		0.1		E200.7	12/10/18 19:14 / rlh
Silver	ND	mg/L		0.001		E200.8	12/17/18 21:23 / jpv
Sodium	6	mg/L		1		E200.7	12/10/18 19:14 / rlh
Strontium	0.27	mg/L		0.01		E200.7	12/10/18 19:14 / rlh
Thallium	ND	mg/L		0.0005		E200.8	12/17/18 21:23 / jpv
Tin	ND	mg/L		0.01		E200.8	12/15/18 18:21 / car
Titanium	ND	mg/L		0.005		E200.7	12/10/18 19:14 / rlh
Uranium	0.0051	mg/L		0.0003		E200.8	12/17/18 21:23 / jpv
Vanadium	ND	mg/L		0.01		E200.8	12/15/18 18:21 / car
Zinc	ND	mg/L		0.01		E200.7	12/10/18 19:14 / rlh
<b>METALS, TOTAL</b>							
Selenium	0.030	mg/L		0.001		A3114 C	12/12/18 15:13 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.002	mg/L		0.001		A3114 C	12/13/18 13:58 / eli-h
Selenium-VI	0.028	mg/L		0.001		A3114 C	12/13/18 14:45 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18120578-009  
**Client Sample ID:** E3

**Report Date:** 12/27/18  
**Collection Date:** 12/05/18 12:00  
**Date Received:** 12/07/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	3	mg/L	D	2		A5310 C	12/13/18 05:51 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	12/15/18 18:49 / car
Antimony	ND	mg/L		0.001		E200.8	12/24/18 17:23 / ped
Arsenic	ND	mg/L		0.001		E200.8	12/15/18 18:49 / car
Barium	0.05	mg/L		0.05		E200.7	12/10/18 19:19 / rlh
Beryllium	ND	mg/L		0.001		E200.7	12/10/18 19:19 / rlh
Boron	0.05	mg/L		0.05		E200.7	12/10/18 19:19 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/15/18 18:49 / car
Calcium	49	mg/L		1		E200.7	12/10/18 19:19 / rlh
Chromium	ND	mg/L		0.005		E200.8	12/15/18 18:49 / car
Cobalt	ND	mg/L		0.005		E200.8	12/15/18 18:49 / car
Copper	ND	mg/L		0.005		E200.7	12/10/18 19:19 / rlh
Iron	ND	mg/L		0.02		E200.7	12/10/18 19:19 / rlh
Lead	ND	mg/L		0.001		E200.8	12/15/18 18:49 / car
Lithium	ND	mg/L		0.1		E200.7	12/10/18 19:19 / rlh
Magnesium	72	mg/L		1		E200.7	12/10/18 19:19 / rlh
Manganese	ND	mg/L		0.001		E200.8	12/15/18 18:49 / car
Molybdenum	0.005	mg/L		0.001		E200.8	12/15/18 18:49 / car
Nickel	ND	mg/L		0.005		E200.8	12/15/18 18:49 / car
Potassium	3	mg/L		1		E200.7	12/10/18 19:19 / rlh
Selenium	0.042	mg/L		0.001		E200.8	12/15/18 18:49 / car
Silicon	1.5	mg/L		0.1		E200.7	12/10/18 19:19 / rlh
Silver	ND	mg/L		0.001		E200.8	12/15/18 18:49 / car
Sodium	9	mg/L		1		E200.7	12/10/18 19:19 / rlh
Strontium	0.37	mg/L		0.01		E200.7	12/10/18 19:19 / rlh
Thallium	ND	mg/L		0.0005		E200.8	12/15/18 18:49 / car
Tin	ND	mg/L		0.01		E200.8	12/15/18 18:49 / car
Titanium	ND	mg/L		0.005		E200.7	12/10/18 19:19 / rlh
Uranium	0.0057	mg/L		0.0003		E200.8	12/15/18 18:49 / car
Vanadium	ND	mg/L		0.01		E200.8	12/15/18 18:49 / car
Zinc	ND	mg/L		0.01		E200.7	12/10/18 19:19 / rlh
<b>METALS, TOTAL</b>							
Selenium	0.030	mg/L		0.001		A3114 C	12/12/18 15:15 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 C	12/13/18 14:00 / eli-h
Selenium-VI	0.030	mg/L		0.001		A3114 C	12/13/18 14:45 / eli-h

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18120578-010  
**Client Sample ID:** E4

**Report Date:** 12/27/18  
**Collection Date:** 12/05/18 12:00  
**Date Received:** 12/07/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	3	mg/L	D	2		A5310 C	12/13/18 06:07 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.7	12/10/18 19:23 / rlh
Antimony	ND	mg/L		0.001		E200.8	12/24/18 17:27 / ped
Arsenic	ND	mg/L		0.001		E200.8	12/15/18 18:53 / car
Barium	ND	mg/L		0.05		E200.7	12/10/18 19:23 / rlh
Beryllium	ND	mg/L		0.001		E200.7	12/10/18 19:23 / rlh
Boron	0.06	mg/L		0.05		E200.7	12/10/18 19:23 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/15/18 18:53 / car
Calcium	49	mg/L		1		E200.7	12/10/18 19:23 / rlh
Chromium	ND	mg/L		0.005		E200.8	12/15/18 18:53 / car
Cobalt	ND	mg/L		0.005		E200.8	12/15/18 18:53 / car
Copper	ND	mg/L		0.005		E200.7	12/10/18 19:23 / rlh
Iron	ND	mg/L		0.02		E200.7	12/10/18 19:23 / rlh
Lead	ND	mg/L		0.001		E200.8	12/15/18 18:53 / car
Lithium	ND	mg/L		0.1		E200.7	12/10/18 19:23 / rlh
Magnesium	77	mg/L		1		E200.7	12/10/18 19:23 / rlh
Manganese	ND	mg/L		0.001		E200.8	12/15/18 18:53 / car
Molybdenum	0.004	mg/L		0.001		E200.8	12/15/18 18:53 / car
Nickel	ND	mg/L		0.005		E200.8	12/15/18 18:53 / car
Potassium	3	mg/L		1		E200.7	12/10/18 19:23 / rlh
Selenium	0.049	mg/L		0.001		E200.8	12/15/18 18:53 / car
Silicon	1.0	mg/L		0.1		E200.7	12/10/18 19:23 / rlh
Silver	ND	mg/L		0.001		E200.8	12/15/18 18:53 / car
Sodium	10	mg/L		1		E200.7	12/10/18 19:23 / rlh
Strontium	0.34	mg/L		0.01		E200.7	12/10/18 19:23 / rlh
Thallium	ND	mg/L		0.0005		E200.8	12/15/18 18:53 / car
Tin	ND	mg/L		0.01		E200.8	12/15/18 18:53 / car
Titanium	ND	mg/L		0.005		E200.7	12/10/18 19:23 / rlh
Uranium	0.0064	mg/L		0.0003		E200.8	12/15/18 18:53 / car
Vanadium	ND	mg/L		0.01		E200.8	12/15/18 18:53 / car
Zinc	ND	mg/L		0.01		E200.7	12/10/18 19:23 / rlh
<b>METALS, TOTAL</b>							
Selenium	0.036	mg/L		0.001		A3114 C	12/12/18 15:17 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.002	mg/L		0.001		A3114 C	12/13/18 14:02 / eli-h
Selenium-VI	0.034	mg/L		0.001		A3114 C	12/13/18 14:45 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study  
**Lab ID:** B18120578-011  
**Client Sample ID:** E5

**Report Date:** 12/27/18  
**Collection Date:** 12/05/18 12:00  
**Date Received:** 12/07/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	6	mg/L	D	2		A5310 C	12/13/18 06:22 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.7	12/10/18 19:35 / rlh
Antimony	ND	mg/L		0.001		E200.8	12/24/18 17:31 / ped
Arsenic	ND	mg/L		0.001		E200.8	12/15/18 18:57 / car
Barium	ND	mg/L		0.05		E200.7	12/10/18 19:35 / rlh
Beryllium	ND	mg/L		0.001		E200.7	12/10/18 19:35 / rlh
Boron	0.06	mg/L		0.05		E200.7	12/10/18 19:35 / rlh
Cadmium	ND	mg/L		0.001		E200.8	12/15/18 18:57 / car
Calcium	65	mg/L		1		E200.7	12/10/18 19:35 / rlh
Chromium	ND	mg/L		0.005		E200.8	12/15/18 18:57 / car
Cobalt	ND	mg/L		0.005		E200.8	12/15/18 18:57 / car
Copper	ND	mg/L		0.005		E200.7	12/10/18 19:35 / rlh
Iron	ND	mg/L		0.02		E200.7	12/10/18 19:35 / rlh
Lead	ND	mg/L		0.001		E200.8	12/15/18 18:57 / car
Lithium	ND	mg/L		0.1		E200.7	12/10/18 19:35 / rlh
Magnesium	52	mg/L		1		E200.7	12/10/18 19:35 / rlh
Manganese	0.002	mg/L		0.001		E200.8	12/15/18 18:57 / car
Molybdenum	0.158	mg/L		0.001		E200.8	12/15/18 18:57 / car
Nickel	ND	mg/L		0.005		E200.8	12/15/18 18:57 / car
Potassium	3	mg/L		1		E200.7	12/10/18 19:35 / rlh
Selenium	0.053	mg/L		0.001		E200.8	12/15/18 18:57 / car
Silicon	1.7	mg/L		0.1		E200.7	12/10/18 19:35 / rlh
Silver	ND	mg/L		0.001		E200.8	12/15/18 18:57 / car
Sodium	6	mg/L		1		E200.7	12/10/18 19:35 / rlh
Strontium	0.31	mg/L		0.01		E200.7	12/10/18 19:35 / rlh
Thallium	ND	mg/L		0.0005		E200.8	12/15/18 18:57 / car
Tin	ND	mg/L		0.01		E200.8	12/15/18 18:57 / car
Titanium	ND	mg/L		0.005		E200.7	12/10/18 19:35 / rlh
Uranium	0.0061	mg/L		0.0003		E200.8	12/15/18 18:57 / car
Vanadium	ND	mg/L		0.01		E200.8	12/15/18 18:57 / car
Zinc	ND	mg/L		0.01		E200.7	12/10/18 19:35 / rlh
<b>METALS, TOTAL</b>							
Selenium	0.037	mg/L		0.001		A3114 C	12/12/18 15:19 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.001	mg/L		0.001		A3114 C	12/13/18 14:27 / eli-h
Selenium-VI	0.036	mg/L		0.001		A3114 C	12/13/18 14:45 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 12/13/18  
**Work Order:** B18120578

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A5310 C									Analytical Run: TOC3-C_181212A
<b>Lab ID:</b> CCV-10292	Continuing Calibration Verification Standard								12/13/18 00:03
Organic Carbon, Dissolved (DOC)	4.87	mg/L	0.50	97	90	110			
<b>Method:</b> A5310 C									Batch: R242482
<b>Lab ID:</b> LCS-10553	Laboratory Control Sample								Run: TOC3-C_181212A 12/12/18 23:32
Organic Carbon, Dissolved (DOC)	4.92	mg/L	0.50	98	90	110			
<b>Lab ID:</b> MBLK	Method Blank								Run: TOC3-C_181212A 12/12/18 23:48
Organic Carbon, Dissolved (DOC)	ND	mg/L	0.5						
<b>Lab ID:</b> C18120314-001EMS	Sample Matrix Spike								Run: TOC3-C_181212A 12/13/18 01:28
Organic Carbon, Dissolved (DOC)	9.11	mg/L	0.50	104	85	115			
<b>Lab ID:</b> C18120314-001EMSD	Sample Matrix Spike Duplicate								Run: TOC3-C_181212A 12/13/18 01:44
Organic Carbon, Dissolved (DOC)	9.09	mg/L	0.50	104	85	115	0.2	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 12/27/18  
**Work Order:** B18120578

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>		Analytical Run: ICP203-B_181210A								
<b>Lab ID: ICV</b>	15 Continuing Calibration Verification Standard									12/10/18 13:24
Aluminum		2.47	mg/L	0.10	99	95	105			
Barium		2.44	mg/L	0.10	97	95	105			
Beryllium		1.23	mg/L	0.010	98	95	105			
Boron		2.46	mg/L	0.10	98	95	105			
Calcium		25.5	mg/L	1.0	102	95	105			
Copper		2.44	mg/L	0.010	97	95	105			
Iron		2.59	mg/L	0.020	103	95	105			
Lithium		1.27	mg/L	0.10	101	95	105			
Magnesium		25.6	mg/L	1.0	102	95	105			
Potassium		25.6	mg/L	1.0	102	95	105			
Silicon		4.99	mg/L	0.10	100	95	105			
Sodium		25.6	mg/L	1.0	102	95	105			
Strontium		2.47	mg/L	0.10	99	95	105			
Titanium		2.46	mg/L	0.010	98	95	105			
Zinc		2.47	mg/L	0.010	99	95	105			

<b>Method: E200.7</b>		Run: ICP203-B_181210A								Batch: R312292
<b>Lab ID: MB-6500DIS181210A</b>	15 Method Blank									12/10/18 13:32
Aluminum		ND	mg/L	0.03						
Barium		ND	mg/L	0.0010						
Beryllium		ND	mg/L	0.0005						
Boron		ND	mg/L	0.01						
Calcium		ND	mg/L	0.07						
Copper		ND	mg/L	0.004						
Iron		ND	mg/L	0.02						
Lithium		ND	mg/L	0.02						
Magnesium		ND	mg/L	0.02						
Potassium		ND	mg/L	0.1						
Silicon		ND	mg/L	0.07						
Sodium		ND	mg/L	0.1						
Strontium		ND	mg/L	0.001						
Titanium		ND	mg/L	0.006						
Zinc		ND	mg/L	0.002						

<b>Lab ID: LFB-6500DIS181210A</b>		15 Laboratory Fortified Blank									Run: ICP203-B_181210A	12/10/18 13:40
Aluminum		4.90	mg/L	0.10	98	85	115					
Barium		0.949	mg/L	0.10	95	85	115					
Beryllium		0.471	mg/L	0.010	94	85	115					
Boron		0.979	mg/L	0.10	98	85	115					
Calcium		50.1	mg/L	1.0	100	85	115					
Copper		0.949	mg/L	0.010	95	85	115					
Iron		5.03	mg/L	0.020	101	85	115					
Lithium		1.01	mg/L	0.10	101	85	115					
Magnesium		50.2	mg/L	1.0	100	85	115					

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 12/27/18  
**Work Order:** B18120578

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>										
Batch: R312292										
<b>Lab ID:</b>	<b>LFB-6500DIS181210A</b>	15	Laboratory Fortified Blank							
										Run: ICP203-B_181210A 12/10/18 13:40
Potassium		50.5	mg/L	1.0	101	85	115			
Silicon		9.87	mg/L	0.10	99	85	115			
Sodium		50.8	mg/L	1.0	102	85	115			
Strontium		0.963	mg/L	0.10	96	85	115			
Titanium		0.963	mg/L	0.010	96	85	115			
Zinc		0.968	mg/L	0.010	97	85	115			
<b>Lab ID:</b>	<b>B18120577-001BMS2</b>	15	Sample Matrix Spike							
										Run: ICP203-B_181210A 12/10/18 18:29
Aluminum		9.62	mg/L	0.072	96	70	130			
Barium		1.86	mg/L	0.050	92	70	130			
Beryllium		0.894	mg/L	0.0010	89	70	130			
Boron		1.98	mg/L	0.050	97	70	130			
Calcium		138	mg/L	1.0	101	70	130			
Copper		1.84	mg/L	0.0075	92	70	130			
Iron		9.84	mg/L	0.034	98	70	130			
Lithium		1.91	mg/L	0.10	96	70	130			
Magnesium		107	mg/L	1.0	97	70	130			
Potassium		97.2	mg/L	1.0	94	70	130			
Silicon		24.1	mg/L	0.15	100	70	130			
Sodium		290	mg/L	1.0	89	70	130			
Strontium		2.33	mg/L	0.010	94	70	130			
Titanium		1.90	mg/L	0.013	95	70	130			
Zinc		1.92	mg/L	0.010	96	70	130			
<b>Lab ID:</b>	<b>B18120577-001BMSD</b>	15	Sample Matrix Spike Duplicate							
										Run: ICP203-B_181210A 12/10/18 18:33
Aluminum		9.72	mg/L	0.072	97	70	130	1.0	20	
Barium		1.85	mg/L	0.050	92	70	130	0.3	20	
Beryllium		0.894	mg/L	0.0010	89	70	130	0.0	20	
Boron		1.98	mg/L	0.050	97	70	130	0.2	20	
Calcium		138	mg/L	1.0	101	70	130	0.1	20	
Copper		1.86	mg/L	0.0075	93	70	130	1.0	20	
Iron		9.83	mg/L	0.034	98	70	130	0.1	20	
Lithium		1.94	mg/L	0.10	97	70	130	1.5	20	
Magnesium		107	mg/L	1.0	97	70	130	0.0	20	
Potassium		98.9	mg/L	1.0	96	70	130	1.7	20	
Silicon		24.0	mg/L	0.15	99	70	130	0.3	20	
Sodium		290	mg/L	1.0	90	70	130	0.0	20	
Strontium		2.33	mg/L	0.010	94	70	130	0.2	20	
Titanium		1.89	mg/L	0.013	95	70	130	0.3	20	
Zinc		1.92	mg/L	0.010	96	70	130	0.3	20	
<b>Lab ID:</b>	<b>B18120578-010BMS2</b>	15	Sample Matrix Spike							
										Run: ICP203-B_181210A 12/10/18 19:27
Aluminum		4.95	mg/L	0.036	99	70	130			
Barium		0.963	mg/L	0.050	93	70	130			
Beryllium		0.425	mg/L	0.0010	85	70	130			

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.





# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 12/27/18  
**Work Order:** B18120578

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>										
Batch: R312292										
<b>Lab ID:</b>	<b>B18120578-010BMS2</b>	15 Sample Matrix Spike					Run: ICP203-B_181210A			12/10/18 19:27
Boron		1.05	mg/L	0.050	99	70	130			
Calcium		98.5	mg/L	1.0	98	70	130			
Copper		0.940	mg/L	0.0050	94	70	130			
Iron		4.92	mg/L	0.020	98	70	130			
Lithium		1.04	mg/L	0.10	101	70	130			
Magnesium		125	mg/L	1.0	94	70	130			
Potassium		53.8	mg/L	1.0	101	70	130			
Silicon		11.8	mg/L	0.10	107	70	130			
Sodium		58.8	mg/L	1.0	98	70	130			
Strontium		1.28	mg/L	0.010	94	70	130			
Titanium		0.937	mg/L	0.0066	94	70	130			
Zinc		0.968	mg/L	0.010	97	70	130			
<b>Lab ID:</b>	<b>B18120578-010BMSD</b>	15 Sample Matrix Spike Duplicate					Run: ICP203-B_181210A			12/10/18 19:31
Aluminum		4.97	mg/L	0.036	99	70	130	0.4	20	
Barium		0.970	mg/L	0.050	94	70	130	0.7	20	
Beryllium		0.428	mg/L	0.0010	86	70	130	0.8	20	
Boron		1.06	mg/L	0.050	100	70	130	1.2	20	
Calcium		99.0	mg/L	1.0	99	70	130	0.5	20	
Copper		0.943	mg/L	0.0050	94	70	130	0.3	20	
Iron		4.97	mg/L	0.020	99	70	130	0.9	20	
Lithium		1.05	mg/L	0.10	102	70	130	0.6	20	
Magnesium		125	mg/L	1.0	94	70	130	0.0	20	
Potassium		54.3	mg/L	1.0	102	70	130	0.9	20	
Silicon		11.9	mg/L	0.10	108	70	130	1.0	20	
Sodium		59.4	mg/L	1.0	99	70	130	1.0	20	
Strontium		1.29	mg/L	0.010	94	70	130	0.5	20	
Titanium		0.943	mg/L	0.0066	94	70	130	0.7	20	
Zinc		0.979	mg/L	0.010	98	70	130	1.1	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 12/27/18  
**Work Order:** B18120578

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.8</b>								Analytical Run: ICPMS207-B_181213A			
<b>Lab ID: QCS</b>	15 Initial Calibration Verification Standard							12/13/18 17:41			
Aluminum		0.239	mg/L	0.10	96	90	110				
Arsenic		0.0498	mg/L	0.0050	100	90	110				
Cadmium		0.0243	mg/L	0.0010	97	90	110				
Chromium		0.0509	mg/L	0.010	102	90	110				
Cobalt		0.0520	mg/L	0.010	104	90	110				
Lead		0.0488	mg/L	0.010	98	90	110				
Manganese		0.254	mg/L	0.010	102	90	110				
Molybdenum		0.0470	mg/L	0.0050	94	90	110				
Nickel		0.0501	mg/L	0.010	100	90	110				
Selenium		0.0496	mg/L	0.0050	99	90	110				
Silver		0.0244	mg/L	0.0050	98	90	110				
Thallium		0.0479	mg/L	0.10	96	90	110				
Tin		0.0490	mg/L	0.10	98	90	110				
Uranium		0.0485	mg/L	0.00030	97	90	110				
Vanadium		0.0500	mg/L	0.10	100	90	110				

<b>Method: E200.8</b>								Batch: R312543		
<b>Lab ID: LRB</b>	15 Method Blank							Run: ICPMS207-B_181213A		12/13/18 17:58
Aluminum		0.001	mg/L	0.0009						
Arsenic		ND	mg/L	0.0002						
Cadmium		ND	mg/L	0.00002						
Chromium		ND	mg/L	0.0002						
Cobalt		ND	mg/L	0.00004						
Lead		ND	mg/L	0.00006						
Manganese		ND	mg/L	0.00010						
Molybdenum		ND	mg/L	0.00005						
Nickel		ND	mg/L	0.0006						
Selenium		ND	mg/L	0.0003						
Silver		ND	mg/L	0.00002						
Thallium		ND	mg/L	0.00004						
Tin		ND	mg/L	0.001						
Uranium		ND	mg/L	0.00005						
Vanadium		ND	mg/L	0.001						

<b>Lab ID: LFB</b>	15 Laboratory Fortified Blank							Run: ICPMS207-B_181213A		12/13/18 18:02
Aluminum		0.0503	mg/L	0.10	98	85	115			
Arsenic		0.0525	mg/L	0.0050	105	85	115			
Cadmium		0.0509	mg/L	0.0010	102	85	115			
Chromium		0.0532	mg/L	0.010	106	85	115			
Cobalt		0.0537	mg/L	0.010	107	85	115			
Lead		0.0506	mg/L	0.010	101	85	115			
Manganese		0.0525	mg/L	0.010	105	85	115			
Molybdenum		0.0505	mg/L	0.0050	101	85	115			
Nickel		0.0525	mg/L	0.010	105	85	115			

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 12/27/18  
**Work Order:** B18120578

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b> <span style="float: right;">Batch: R312543</span>										
<b>Lab ID: LFB</b>	15	Laboratory Fortified Blank					Run: ICPMS207-B_181213A		12/13/18 18:02	
Selenium		0.0515	mg/L	0.0050	103	85	115			
Silver		0.0206	mg/L	0.0050	103	85	115			
Thallium		0.0485	mg/L	0.10	97	85	115			
Tin		0.0501	mg/L	0.10	100	85	115			
Uranium		0.0518	mg/L	0.00030	104	85	115			
Vanadium		0.0540	mg/L	0.10	108	85	115			
<b>Lab ID: B18120578-008BMS</b>	15	Sample Matrix Spike					Run: ICPMS207-B_181213A		12/15/18 18:25	
Aluminum		0.0529	mg/L	0.030	104	70	130			
Arsenic		0.0524	mg/L	0.0010	105	70	130			
Cadmium		0.0498	mg/L	0.0010	100	70	130			
Chromium		0.0514	mg/L	0.0050	102	70	130			
Cobalt		0.0505	mg/L	0.0050	101	70	130			
Lead		0.0397	mg/L	0.0010	79	70	130			
Manganese		0.0513	mg/L	0.0010	102	70	130			
Molybdenum		0.0599	mg/L	0.0010	100	70	130			
Nickel		0.0528	mg/L	0.0050	101	70	130			
Selenium		0.0890	mg/L	0.0010	99	70	130			
Silver		0.0190	mg/L	0.0010	95	70	130			
Thallium		0.0461	mg/L	0.00050	92	70	130			
Tin		0.0502	mg/L	0.010	100	70	130			
Uranium		0.0446	mg/L	0.00030	78	70	130			
Vanadium		0.0517	mg/L	0.010	103	70	130			
<b>Lab ID: B18120578-008BMSD</b>	15	Sample Matrix Spike Duplicate					Run: ICPMS207-B_181213A		12/15/18 18:29	
Aluminum		0.0506	mg/L	0.030	99	70	130	4.5	20	
Arsenic		0.0526	mg/L	0.0010	105	70	130	0.4	20	
Cadmium		0.0495	mg/L	0.0010	99	70	130	0.6	20	
Chromium		0.0515	mg/L	0.0050	102	70	130	0.3	20	
Cobalt		0.0508	mg/L	0.0050	101	70	130	0.4	20	
Lead		0.0457	mg/L	0.0010	91	70	130	14	20	
Manganese		0.0518	mg/L	0.0010	103	70	130	1.1	20	
Molybdenum		0.0603	mg/L	0.0010	101	70	130	0.7	20	
Nickel		0.0538	mg/L	0.0050	103	70	130	1.9	20	
Selenium		0.0876	mg/L	0.0010	96	70	130	1.6	20	
Silver		0.0202	mg/L	0.0010	101	70	130	6.3	20	
Thallium		0.0489	mg/L	0.00050	98	70	130	5.8	20	
Tin		0.0508	mg/L	0.010	102	70	130	1.2	20	
Uranium		0.0516	mg/L	0.00030	92	70	130	15	20	
Vanadium		0.0518	mg/L	0.010	104	70	130	0.2	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 12/27/18  
**Work Order:** B18120578

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.8</b>		Analytical Run: ICPMS207-B_181217B									
<b>Lab ID: QCS</b>	5	Initial Calibration Verification Standard							12/17/18 16:08		
Lead		0.0457	mg/L	0.010	91	90	110				
Selenium		0.0488	mg/L	0.0050	98	90	110				
Silver		0.0237	mg/L	0.0050	95	90	110				
Thallium		0.0459	mg/L	0.10	92	90	110				
Uranium		0.0192	mg/L	0.00030	96	90	110				
<b>Method: E200.8</b>		Batch: R312689									
<b>Lab ID: LRB</b>	5	Method Blank							Run: ICPMS207-B_181217B 12/17/18 16:24		
Lead		ND	mg/L	0.00006							
Selenium		ND	mg/L	0.0003							
Silver		ND	mg/L	0.00002							
Thallium		ND	mg/L	0.00004							
Uranium		ND	mg/L	0.00005							
<b>Lab ID: LFB</b>	5	Laboratory Fortified Blank							Run: ICPMS207-B_181217B 12/17/18 16:28		
Lead		0.0452	mg/L	0.010	90	85	115				
Selenium		0.0467	mg/L	0.0050	93	85	115				
Silver		0.0182	mg/L	0.0050	91	85	115				
Thallium		0.0480	mg/L	0.10	96	85	115				
Uranium		0.0470	mg/L	0.00030	94	85	115				
<b>Lab ID: B18120578-001BMS</b>	5	Sample Matrix Spike							Run: ICPMS207-B_181217B 12/17/18 20:36		
Lead		0.0461	mg/L	0.0010	92	70	130				
Selenium		0.236	mg/L	0.0010	81	70	130				
Silver		0.0184	mg/L	0.0010	92	70	130				
Thallium		0.0506	mg/L	0.00050	101	70	130				
Uranium		0.0467	mg/L	0.00030	93	70	130				
<b>Lab ID: B18120578-001BMSD</b>	5	Sample Matrix Spike Duplicate							Run: ICPMS207-B_181217B 12/17/18 20:40		
Lead		0.0479	mg/L	0.0010	96	70	130	3.8	20		
Selenium		0.230	mg/L	0.0010	70	70	130	2.4	20		
Silver		0.0190	mg/L	0.0010	95	70	130	3.5	20		
Thallium		0.0499	mg/L	0.00050	100	70	130	1.3	20		
Uranium		0.0496	mg/L	0.00030	99	70	130	6.2	20		
<b>Lab ID: B18120578-011BMS</b>	5	Sample Matrix Spike							Run: ICPMS207-B_181217B 12/17/18 21:39		
Lead		0.0463	mg/L	0.0010	93	70	130				
Selenium		0.0950	mg/L	0.0010	93	70	130				
Silver		0.0184	mg/L	0.0010	92	70	130				
Thallium		0.0503	mg/L	0.00050	101	70	130				
Uranium		0.0543	mg/L	0.00030	97	70	130				
<b>Lab ID: B18120578-011BMSD</b>	5	Sample Matrix Spike Duplicate							Run: ICPMS207-B_181217B 12/17/18 21:55		
Lead		0.0471	mg/L	0.0010	94	70	130	1.7	20		
Selenium		0.0939	mg/L	0.0010	91	70	130	1.2	20		
Silver		0.0187	mg/L	0.0010	93	70	130	1.4	20		

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 12/27/18  
**Work Order:** B18120578

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b> <span style="float:right">Batch: R312689</span>										
<b>Lab ID: B18120578-011BMSD</b>	5	Sample Matrix Spike Duplicate					Run: ICPMS207-B_181217B			12/17/18 21:55
Thallium		0.0501	mg/L	0.00050	100	70	130	0.4	20	
Uranium		0.0542	mg/L	0.00030	97	70	130	0.0	20	
<hr/>										
<b>Method: E200.8</b> <span style="float:right">Analytical Run: ICPMS207-B_181224A</span>										
<b>Lab ID: QCS</b>		Initial Calibration Verification Standard								12/24/18 12:13
Antimony		0.0481	mg/L	0.050	96	90	110			
<hr/>										
<b>Method: E200.8</b> <span style="float:right">Batch: R313040</span>										
<b>Lab ID: LRB</b>		Method Blank					Run: ICPMS207-B_181224A			12/24/18 12:29
Antimony		ND	mg/L	0.0004						
<b>Lab ID: LFB</b>		Laboratory Fortified Blank					Run: ICPMS207-B_181224A			12/24/18 12:33
Antimony		0.0434	mg/L	0.050	87	85	115			
<b>Lab ID: B18120578-001BMS</b>		Sample Matrix Spike					Run: ICPMS207-B_181224A			12/24/18 16:32
Antimony		0.259	mg/L	0.0021	104	70	130			
<b>Lab ID: B18120578-001BMSD</b>		Sample Matrix Spike Duplicate					Run: ICPMS207-B_181224A			12/24/18 16:36
Antimony		0.264	mg/L	0.0021	105	70	130	1.8	20	
<b>Lab ID: B18120578-011BMS</b>		Sample Matrix Spike					Run: ICPMS207-B_181224A			12/24/18 17:35
Antimony		0.251	mg/L	0.0010	101	70	130			
<b>Lab ID: B18120578-011BMSD</b>		Sample Matrix Spike Duplicate					Run: ICPMS207-B_181224A			12/24/18 17:39
Antimony		0.253	mg/L	0.0010	101	70	130	0.7	20	
<hr/>										
<b>Method: E200.8</b> <span style="float:right">Analytical Run: ICPMS207-B_181226A</span>										
<b>Lab ID: QCS</b>		Initial Calibration Verification Standard								12/26/18 14:04
Antimony		0.0486	mg/L	0.050	97	90	110			
<hr/>										
<b>Method: E200.8</b> <span style="float:right">Batch: R313065</span>										
<b>Lab ID: LRB</b>		Method Blank					Run: ICPMS207-B_181226A			12/26/18 14:20
Antimony		ND	mg/L	0.0004						
<b>Lab ID: LFB</b>		Laboratory Fortified Blank					Run: ICPMS207-B_181226A			12/26/18 14:24
Antimony		0.0426	mg/L	0.050	85	85	115			
<b>Lab ID: B18120490-001BMS</b>		Sample Matrix Spike					Run: ICPMS207-B_181226A			12/26/18 15:26
Antimony		0.0413	mg/L	0.0010	83	70	130			
<b>Lab ID: B18120490-001BMSD</b>		Sample Matrix Spike Duplicate					Run: ICPMS207-B_181226A			12/26/18 15:30
Antimony		0.0430	mg/L	0.0010	86	70	130	4.1	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 12/19/18  
**Work Order:** B18120578

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A3114 C									tical Run: SELENIUM PSA MILLENIUM_181212A
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard								
Selenium	0.101	mg/L	0.0010	94	90	110			12/12/18 14:12
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								
Selenium	0.0197	mg/L	0.0010	98	90	110			12/12/18 14:38
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								
Selenium	0.0190	mg/L	0.0010	95	90	110			12/12/18 15:00
<b>Method:</b> A3114 C									Batch: 44106
<b>Lab ID:</b> MB-44106	Method Blank								
Selenium	ND	mg/L	0.0002						Run: SELENIUM PSA MILLENIUM_ 12/12/18 14:39
<b>Lab ID:</b> LFB-44106	Laboratory Fortified Blank								
Selenium	0.0398	mg/L	0.0010	100	85	115			Run: SELENIUM PSA MILLENIUM_ 12/12/18 14:41
<b>Lab ID:</b> H18120192-003DMS3	Sample Matrix Spike								
Selenium	0.0577	mg/L	0.0010	88	70	130			Run: SELENIUM PSA MILLENIUM_ 12/12/18 14:49
<b>Lab ID:</b> H18120192-003DMSD3	Sample Matrix Spike Duplicate								
Selenium	0.0570	mg/L	0.0010	87	70	130	1.3	20	Run: SELENIUM PSA MILLENIUM_ 12/12/18 14:52
<b>Lab ID:</b> B18120578-002AMS	Sample Matrix Spike								
Selenium	0.0562	mg/L	0.0020	66	70	130			Run: SELENIUM PSA MILLENIUM_ 12/12/18 14:56 S
<b>Lab ID:</b> B18120578-002AMSD	Sample Matrix Spike Duplicate								
Selenium	0.0784	mg/L	0.0020	94	70	130	33	20	Run: SELENIUM PSA MILLENIUM_ 12/12/18 15:01 R

**Qualifiers:**

RL - Analyte reporting limit.  
R - RPD exceeds advisory limit.

ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.



## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study

**Report Date:** 12/19/18  
**Work Order:** B18120578

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A3114 C									tical Run: SELENIUM PSA MILLENIUM_181213B
<b>Lab ID:</b> ICV Selenium-IV	Initial Calibration Verification Standard								
	0.0186	mg/L	0.0010	93	90	110			12/13/18 13:07
<b>Lab ID:</b> CCV Selenium-IV	Continuing Calibration Verification Standard								
	0.0198	mg/L	0.0010	99	90	110			12/13/18 13:09
<b>Lab ID:</b> CCV Selenium-IV	Continuing Calibration Verification Standard								
	0.0195	mg/L	0.0010	97	90	110			12/13/18 13:57
<b>Lab ID:</b> CCV Selenium-IV	Continuing Calibration Verification Standard								
	0.0194	mg/L	0.0010	97	90	110			12/13/18 14:30
<b>Method:</b> A3114 C									Batch: 44138
<b>Lab ID:</b> MB-44138 Selenium-IV	Method Blank								
	ND	mg/L	0.0006						Run: SELENIUM PSA MILLENIUM_ 12/13/18 13:13
<b>Lab ID:</b> LFB-44138 Selenium-IV	Laboratory Fortified Blank								
	0.0188	mg/L	0.0010	94	85	115			Run: SELENIUM PSA MILLENIUM_ 12/13/18 13:15
<b>Lab ID:</b> H18120192-002DMS Selenium-IV	Sample Matrix Spike								
	0.0222	mg/L	0.0010	92	70	130			Run: SELENIUM PSA MILLENIUM_ 12/13/18 13:36
<b>Lab ID:</b> H18120192-002DMSD Selenium-IV	Sample Matrix Spike Duplicate								
	0.0223	mg/L	0.0010	93	70	130	0.6	20	Run: SELENIUM PSA MILLENIUM_ 12/13/18 13:38

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# Work Order Receipt Checklist

Enviromin Inc

B18120578

Login completed by: Briana G. Sangiuliano

Date Received: 12/7/2018

Reviewed by: BL2000\gmccartney

Received by: srm

Reviewed Date: 12/12/2018

Carrier name: Return-UPS Ground

- Shipping container/cooler in good condition? Yes  No  Not Present
- Custody seals intact on all shipping container(s)/cooler(s)? Yes  No  Not Present
- Custody seals intact on all sample bottles? Yes  No  Not Present
- Chain of custody present? Yes  No
- Chain of custody signed when relinquished and received? Yes  No
- Chain of custody agrees with sample labels? Yes  No
- Samples in proper container/bottle? Yes  No
- Sample containers intact? Yes  No
- Sufficient sample volume for indicated test? Yes  No
- All samples received within holding time?  
(Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.) Yes  No
- Temp Blank received in all shipping container(s)/cooler(s)? Yes  No  Not Applicable
- Container/Temp Blank temperature: 2.8°C Blue Ice
- Water - VOA vials have zero headspace? Yes  No  No VOA vials submitted
- Water - pH acceptable upon receipt? Yes  No  Not Applicable

## Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

## Contact and Corrective Action Comments:

None



# Chain of Custody & Analytical Request Record

www.energylab.com

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## Comments

Report information (if different than Account Information)

**Account Information (Billing information)**  
 Company Name: ExxonMobil  
 Contact: Terry Biere  
 Phone: 404-438-2333  
 Mailing Address: 524 Professional Drive  
 City, State, Zip: Boynton, NJ 07005  
 Email: terrybiere@exxonmobil.com  
 Receive Invoice:  Hard Copy  Email  
 Purchase Order: 4093

**Report Information**  
 Company Name: \_\_\_\_\_  
 Contact: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_  
 City, State, Zip: \_\_\_\_\_  
 Email: \_\_\_\_\_  
 Receive Report:  Hard Copy  Email  
 Special Report/Format: \_\_\_\_\_  
 LEVEL IV  NELAC  EDD/JEDT (contact laboratory)  Other

**Project Information**  
 Project Name, PWSID, Permit, etc.: NWP Colerain Study  
 Sampler Name: \_\_\_\_\_  
 Sampler Phone: \_\_\_\_\_  
 EPA/State Compliance:  Yes  No  
 Sample Origin State: \_\_\_\_\_  
 \*If one has been processed or refined, call before sending.  
 Byproduct 11 (e)2 material  Unprocessed ore (NOT ground or refined)\*

**Analysis Requested**  
 Matrix Codes:  
 A - Air  
 W - Water  
 S - Solids  
 V - Vegetation  
 B - Biossary  
 O - Other  
 DW - Water  
 Analysis Requested: \_\_\_\_\_  
 See Attached: \_\_\_\_\_

All turnaround times are standard unless marked as RUSH. Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling - See Instructions Page

Sample Identification (Name, Location, Interval, etc.)	Collection		Matrix (See Codes Above)	Number of Containers	Received by (print)	Date/Time	Signature
	Date	Time					
1 Fed 1-5	12/5	12PM	W	3	X		
2 A1					X		
3 A2					X		
4 A3							
5 A4							
6 A5							
7 E1							
8 E2							
9 E3							
10 E4							

Received by (print): \_\_\_\_\_  
 Received by Laboratory (print): Terri Biere  
 Date/Time: 12/5/18 4PM  
 Signature: Terry Biere  
 Signature: Terri Biere  
 Receipt Temp °C: \_\_\_\_\_  
 Receipt Temp Blank:  Y  N  
 Temp Blank:  Y  N  
 On Ice:  Y  N  
 Payment Type:  Cash  Check  
 Amount: \$ \_\_\_\_\_  
 Receipt Number (cash/check only): \_\_\_\_\_

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.



# ANALYTICAL SUMMARY REPORT

January 28, 2019

Enviromin Inc  
524 Professional Dr  
Bozeman, MT 59718

Work Order: B19010739                      Quote ID: B4093 - Enviromin Lab

Project Name: NWP Phase II

Energy Laboratories Inc Billings MT received the following 11 samples for Enviromin Inc on 1/9/2019 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B19010739-001	F	01/08/19 11:00	01/09/19	Aqueous	Metals by ICP/ICPMS, Dissolved
B19010739-002	R1	01/08/19 11:00	01/09/19	Aqueous	Metals by ICP/ICPMS, Dissolved Selenium By CVAA, Total Selenium IV, Total Selenium-VI, Total
B19010739-003	R2	01/08/19 11:00	01/09/19	Aqueous	Same As Above
B19010739-004	R3	01/08/19 11:00	01/09/19	Aqueous	Same As Above
B19010739-005	R4	01/08/19 11:00	01/09/19	Aqueous	Same As Above
B19010739-006	R5	01/08/19 11:00	01/09/19	Aqueous	Same As Above
B19010739-007	E1	01/08/19 11:00	01/09/19	Aqueous	Same As Above
B19010739-008	E2	01/08/19 11:00	01/09/19	Aqueous	Same As Above
B19010739-009	E3	01/08/19 11:00	01/09/19	Aqueous	Same As Above
B19010739-010	E4	01/08/19 11:00	01/09/19	Aqueous	Same As Above
B19010739-011	E5	01/08/19 11:00	01/09/19	Aqueous	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:



**CLIENT:** Enviromin Inc  
**Project:** NWP Phase II  
**Work Order:** B19010739

**Report Date:** 01/28/19

## **CASE NARRATIVE**

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Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 East Lyndale Ave, Helena, MT, EPA Number MT00945.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19010739-001  
**Client Sample ID:** F

**Report Date:** 01/28/19  
**Collection Date:** 01/08/19 11:00  
**DateReceived:** 01/09/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Aluminum	0.03	mg/L		0.03		E200.8	01/23/19 17:30 / ped
Antimony	ND	mg/L		0.001		E200.8	01/17/19 10:17 / ped
Arsenic	ND	mg/L		0.001		E200.8	01/17/19 10:17 / ped
Barium	ND	mg/L		0.05		E200.7	01/11/19 17:32 / r/h
Beryllium	ND	mg/L		0.001		E200.7	01/11/19 17:32 / r/h
Boron	ND	mg/L		0.05		E200.7	01/11/19 17:32 / r/h
Cadmium	ND	mg/L		0.001		E200.8	01/17/19 10:17 / ped
Calcium	4	mg/L		1		E200.7	01/11/19 17:32 / r/h
Chromium	ND	mg/L		0.005		E200.8	01/17/19 10:17 / ped
Cobalt	ND	mg/L		0.005		E200.8	01/17/19 10:17 / ped
Copper	ND	mg/L		0.005		E200.7	01/11/19 17:32 / r/h
Iron	0.04	mg/L		0.02		E200.8	01/23/19 17:30 / ped
Lead	ND	mg/L		0.001		E200.8	01/17/19 10:17 / ped
Lithium	ND	mg/L		0.1		E200.7	01/11/19 17:32 / r/h
Magnesium	1	mg/L		1		E200.7	01/11/19 17:32 / r/h
Manganese	0.002	mg/L		0.001		E200.8	01/17/19 10:17 / ped
Molybdenum	ND	mg/L		0.001		E200.8	01/17/19 10:17 / ped
Nickel	ND	mg/L		0.005		E200.7	01/11/19 17:32 / r/h
Potassium	ND	mg/L		1		E200.7	01/11/19 17:32 / r/h
Silicon	1.8	mg/L		0.1		E200.7	01/11/19 17:32 / r/h
Silver	ND	mg/L		0.001		E200.8	01/17/19 10:17 / ped
Sodium	41	mg/L		1		E200.7	01/11/19 17:32 / r/h
Strontium	0.01	mg/L		0.01		E200.7	01/11/19 17:32 / r/h
Thallium	ND	mg/L		0.0005		E200.8	01/17/19 10:17 / ped
Tin	ND	mg/L		0.01		E200.8	01/17/19 10:17 / ped
Titanium	ND	mg/L		0.005		E200.7	01/11/19 17:32 / r/h
Uranium	ND	mg/L		0.0003		E200.8	01/17/19 10:17 / ped
Vanadium	ND	mg/L		0.01		E200.8	01/17/19 10:17 / ped
Zinc	0.03	mg/L		0.01		E200.8	01/17/19 10:17 / ped

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19010739-002  
**Client Sample ID:** R1

**Report Date:** 01/28/19  
**Collection Date:** 01/08/19 11:00  
**Date Received:** 01/09/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Aluminum	0.13	mg/L		0.03		E200.8	01/23/19 17:35 / ped
Antimony	ND	mg/L		0.001		E200.8	01/17/19 10:21 / ped
Arsenic	0.002	mg/L		0.001		E200.8	01/17/19 10:21 / ped
Barium	ND	mg/L		0.05		E200.7	01/11/19 17:44 / rlh
Beryllium	ND	mg/L		0.001		E200.7	01/11/19 17:44 / rlh
Boron	ND	mg/L		0.05		E200.7	01/11/19 17:44 / rlh
Cadmium	ND	mg/L		0.001		E200.8	01/17/19 10:21 / ped
Calcium	5	mg/L		1		E200.7	01/11/19 17:44 / rlh
Chromium	ND	mg/L		0.005		E200.8	01/17/19 10:21 / ped
Cobalt	ND	mg/L		0.005		E200.8	01/17/19 10:21 / ped
Copper	0.075	mg/L		0.005		E200.7	01/11/19 17:44 / rlh
Iron	0.16	mg/L		0.02		E200.8	01/23/19 17:35 / ped
Lead	ND	mg/L		0.001		E200.8	01/17/19 10:21 / ped
Lithium	ND	mg/L		0.1		E200.7	01/11/19 17:44 / rlh
Magnesium	2	mg/L		1		E200.7	01/11/19 17:44 / rlh
Manganese	0.005	mg/L		0.001		E200.8	01/17/19 10:21 / ped
Molybdenum	ND	mg/L		0.001		E200.8	01/17/19 10:21 / ped
Nickel	ND	mg/L		0.005		E200.7	01/11/19 17:44 / rlh
Potassium	18	mg/L		1		E200.7	01/11/19 17:44 / rlh
Silicon	4.9	mg/L		0.1		E200.7	01/11/19 17:44 / rlh
Silver	ND	mg/L		0.001		E200.8	01/17/19 10:21 / ped
Sodium	10	mg/L		1		E200.7	01/11/19 17:44 / rlh
Strontium	0.02	mg/L		0.01		E200.7	01/11/19 17:44 / rlh
Thallium	ND	mg/L		0.0005		E200.8	01/17/19 10:21 / ped
Tin	ND	mg/L		0.01		E200.8	01/17/19 10:21 / ped
Titanium	0.007	mg/L		0.005		E200.7	01/11/19 17:44 / rlh
Uranium	ND	mg/L		0.0003		E200.8	01/17/19 10:21 / ped
Vanadium	ND	mg/L		0.01		E200.8	01/17/19 10:21 / ped
Zinc	0.04	mg/L		0.01		E200.8	01/17/19 10:21 / ped
<b>METALS, TOTAL</b>							
Selenium	0.003	mg/L		0.001		A3114 C	01/18/19 13:26 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.001	mg/L		0.001		A3114 C	01/18/19 11:21 / eli-h
Selenium-VI	0.002	mg/L		0.001		A3114 C	01/18/19 14:39 / eli-h

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19010739-003  
**Client Sample ID:** R2

**Report Date:** 01/28/19  
**Collection Date:** 01/08/19 11:00  
**Date Received:** 01/09/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	01/23/19 17:39 / ped
Antimony	ND	mg/L		0.001		E200.8	01/17/19 10:25 / ped
Arsenic	0.003	mg/L		0.001		E200.8	01/17/19 10:25 / ped
Barium	ND	mg/L		0.05		E200.7	01/11/19 17:48 / r/h
Beryllium	ND	mg/L		0.001		E200.7	01/11/19 17:48 / r/h
Boron	ND	mg/L		0.05		E200.7	01/11/19 17:48 / r/h
Cadmium	ND	mg/L		0.001		E200.8	01/17/19 10:25 / ped
Calcium	4	mg/L		1		E200.7	01/11/19 17:48 / r/h
Chromium	ND	mg/L		0.005		E200.8	01/17/19 10:25 / ped
Cobalt	ND	mg/L		0.005		E200.8	01/17/19 10:25 / ped
Copper	0.050	mg/L		0.005		E200.7	01/11/19 17:48 / r/h
Iron	0.05	mg/L		0.02		E200.8	01/23/19 17:39 / ped
Lead	ND	mg/L		0.001		E200.8	01/17/19 10:25 / ped
Lithium	ND	mg/L		0.1		E200.7	01/11/19 17:48 / r/h
Magnesium	1	mg/L		1		E200.7	01/11/19 17:48 / r/h
Manganese	0.003	mg/L		0.001		E200.8	01/17/19 10:25 / ped
Molybdenum	ND	mg/L		0.001		E200.8	01/17/19 10:25 / ped
Nickel	ND	mg/L		0.005		E200.7	01/11/19 17:48 / r/h
Potassium	2	mg/L		1		E200.7	01/11/19 17:48 / r/h
Silicon	3.8	mg/L		0.1		E200.7	01/11/19 17:48 / r/h
Silver	ND	mg/L		0.001		E200.8	01/17/19 10:25 / ped
Sodium	9	mg/L		1		E200.7	01/11/19 17:48 / r/h
Strontium	0.01	mg/L		0.01		E200.7	01/11/19 17:48 / r/h
Thallium	ND	mg/L		0.0005		E200.8	01/17/19 10:25 / ped
Tin	ND	mg/L		0.01		E200.8	01/17/19 10:25 / ped
Titanium	ND	mg/L		0.005		E200.7	01/11/19 17:48 / r/h
Uranium	ND	mg/L		0.0003		E200.8	01/17/19 10:25 / ped
Vanadium	ND	mg/L		0.01		E200.8	01/17/19 10:25 / ped
Zinc	0.01	mg/L		0.01		E200.8	01/17/19 10:25 / ped
<b>METALS, TOTAL</b>							
Selenium	ND	mg/L		0.001		A3114 C	01/18/19 13:27 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.001	mg/L		0.001		A3114 C	01/18/19 11:23 / eli-h
Selenium-VI	ND	mg/L		0.001		A3114 C	01/18/19 14:39 / eli-h

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19010739-004  
**Client Sample ID:** R3

**Report Date:** 01/28/19  
**Collection Date:** 01/08/19 11:00  
**Date Received:** 01/09/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Aluminum	0.12	mg/L		0.03		E200.8	01/17/19 10:29 / ped
Antimony	ND	mg/L		0.001		E200.8	01/17/19 10:29 / ped
Arsenic	0.002	mg/L		0.001		E200.8	01/17/19 10:29 / ped
Barium	ND	mg/L		0.05		E200.7	01/11/19 17:53 / r/h
Beryllium	ND	mg/L		0.001		E200.7	01/11/19 17:53 / r/h
Boron	0.07	mg/L		0.05		E200.7	01/11/19 17:53 / r/h
Cadmium	ND	mg/L		0.001		E200.8	01/17/19 10:29 / ped
Calcium	3	mg/L		1		E200.7	01/11/19 17:53 / r/h
Chromium	ND	mg/L		0.005		E200.8	01/17/19 10:29 / ped
Cobalt	ND	mg/L		0.005		E200.8	01/17/19 10:29 / ped
Copper	0.020	mg/L		0.005		E200.7	01/11/19 17:53 / r/h
Iron	0.12	mg/L		0.02		E200.7	01/11/19 17:53 / r/h
Lead	ND	mg/L		0.001		E200.8	01/17/19 10:29 / ped
Lithium	ND	mg/L		0.1		E200.7	01/11/19 17:53 / r/h
Magnesium	1	mg/L		1		E200.7	01/11/19 17:53 / r/h
Manganese	0.001	mg/L		0.001		E200.8	01/17/19 10:29 / ped
Molybdenum	ND	mg/L		0.001		E200.8	01/17/19 10:29 / ped
Nickel	ND	mg/L		0.005		E200.7	01/11/19 17:53 / r/h
Potassium	ND	mg/L		1		E200.7	01/11/19 17:53 / r/h
Silicon	4.7	mg/L		0.1		E200.7	01/11/19 17:53 / r/h
Silver	ND	mg/L		0.001		E200.8	01/17/19 10:29 / ped
Sodium	12	mg/L		1		E200.7	01/11/19 17:53 / r/h
Strontium	ND	mg/L		0.01		E200.7	01/11/19 17:53 / r/h
Thallium	ND	mg/L		0.0005		E200.8	01/17/19 10:29 / ped
Tin	ND	mg/L		0.01		E200.8	01/17/19 10:29 / ped
Titanium	ND	mg/L		0.005		E200.7	01/11/19 17:53 / r/h
Uranium	ND	mg/L		0.0003		E200.8	01/17/19 10:29 / ped
Vanadium	ND	mg/L		0.01		E200.8	01/17/19 10:29 / ped
Zinc	0.05	mg/L		0.01		E200.8	01/17/19 10:29 / ped
<b>METALS, TOTAL</b>							
Selenium	0.032	mg/L		0.001		A3114 C	01/18/19 13:29 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 C	01/18/19 11:25 / eli-h
Selenium-VI	0.031	mg/L		0.001		A3114 C	01/18/19 14:39 / eli-h

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19010739-005  
**Client Sample ID:** R4

**Report Date:** 01/28/19  
**Collection Date:** 01/08/19 11:00  
**DateReceived:** 01/09/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Aluminum	0.08	mg/L		0.03		E200.8	01/17/19 10:33 / ped
Antimony	ND	mg/L		0.001		E200.8	01/17/19 10:33 / ped
Arsenic	0.002	mg/L		0.001		E200.8	01/17/19 10:33 / ped
Barium	ND	mg/L		0.05		E200.7	01/11/19 17:57 / rlh
Beryllium	ND	mg/L		0.001		E200.7	01/11/19 17:57 / rlh
Boron	0.07	mg/L		0.05		E200.7	01/11/19 17:57 / rlh
Cadmium	ND	mg/L		0.001		E200.8	01/17/19 10:33 / ped
Calcium	6	mg/L		1		E200.7	01/11/19 17:57 / rlh
Chromium	ND	mg/L		0.005		E200.8	01/17/19 10:33 / ped
Cobalt	ND	mg/L		0.005		E200.8	01/17/19 10:33 / ped
Copper	0.015	mg/L		0.005		E200.7	01/11/19 17:57 / rlh
Iron	0.37	mg/L		0.02		E200.7	01/11/19 17:57 / rlh
Lead	ND	mg/L		0.001		E200.8	01/17/19 10:33 / ped
Lithium	ND	mg/L		0.1		E200.7	01/11/19 17:57 / rlh
Magnesium	1	mg/L		1		E200.7	01/11/19 17:57 / rlh
Manganese	0.003	mg/L		0.001		E200.8	01/17/19 10:33 / ped
Molybdenum	ND	mg/L		0.001		E200.8	01/17/19 10:33 / ped
Nickel	ND	mg/L		0.005		E200.7	01/11/19 17:57 / rlh
Potassium	ND	mg/L		1		E200.7	01/11/19 17:57 / rlh
Silicon	3.6	mg/L		0.1		E200.7	01/11/19 17:57 / rlh
Silver	ND	mg/L		0.001		E200.8	01/17/19 10:33 / ped
Sodium	14	mg/L		1		E200.7	01/11/19 17:57 / rlh
Strontium	ND	mg/L		0.01		E200.7	01/11/19 17:57 / rlh
Thallium	ND	mg/L		0.0005		E200.8	01/17/19 10:33 / ped
Tin	ND	mg/L		0.01		E200.8	01/17/19 10:33 / ped
Titanium	ND	mg/L		0.005		E200.7	01/11/19 17:57 / rlh
Uranium	ND	mg/L		0.0003		E200.8	01/17/19 10:33 / ped
Vanadium	ND	mg/L		0.01		E200.8	01/17/19 10:33 / ped
Zinc	0.02	mg/L		0.01		E200.8	01/17/19 10:33 / ped
<b>METALS, TOTAL</b>							
Selenium	0.005	mg/L	D	0.002		A3114 C	01/18/19 13:30 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.002	mg/L	D	0.002		A3114 C	01/18/19 11:26 / eli-h
Selenium-VI	0.003	mg/L		0.001		A3114 C	01/18/19 14:39 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.





### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19010739-006  
**Client Sample ID:** R5

**Report Date:** 01/28/19  
**Collection Date:** 01/08/19 11:00  
**DateReceived:** 01/09/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Aluminum	0.07	mg/L		0.03		E200.8	01/17/19 10:37 / ped
Antimony	ND	mg/L		0.001		E200.8	01/17/19 10:37 / ped
Arsenic	ND	mg/L		0.001		E200.8	01/17/19 10:37 / ped
Barium	ND	mg/L		0.05		E200.7	01/11/19 18:13 / r/h
Beryllium	ND	mg/L		0.001		E200.7	01/11/19 18:13 / r/h
Boron	0.07	mg/L		0.05		E200.7	01/11/19 18:13 / r/h
Cadmium	ND	mg/L		0.001		E200.8	01/17/19 10:37 / ped
Calcium	6	mg/L		1		E200.7	01/11/19 18:13 / r/h
Chromium	ND	mg/L		0.005		E200.8	01/17/19 10:37 / ped
Cobalt	ND	mg/L		0.005		E200.8	01/17/19 10:37 / ped
Copper	ND	mg/L		0.005		E200.7	01/11/19 18:13 / r/h
Iron	0.28	mg/L		0.02		E200.7	01/11/19 18:13 / r/h
Lead	ND	mg/L		0.001		E200.8	01/17/19 10:37 / ped
Lithium	ND	mg/L		0.1		E200.7	01/11/19 18:13 / r/h
Magnesium	ND	mg/L		1		E200.7	01/11/19 18:13 / r/h
Manganese	0.001	mg/L		0.001		E200.8	01/17/19 10:37 / ped
Molybdenum	ND	mg/L		0.001		E200.8	01/17/19 10:37 / ped
Nickel	ND	mg/L		0.005		E200.7	01/11/19 18:13 / r/h
Potassium	ND	mg/L		1		E200.7	01/11/19 18:13 / r/h
Silicon	4.1	mg/L		0.1		E200.7	01/11/19 18:13 / r/h
Silver	ND	mg/L		0.001		E200.8	01/17/19 10:37 / ped
Sodium	15	mg/L		1		E200.7	01/11/19 18:13 / r/h
Strontium	ND	mg/L		0.01		E200.7	01/11/19 18:13 / r/h
Thallium	ND	mg/L		0.0005		E200.8	01/17/19 10:37 / ped
Tin	ND	mg/L		0.01		E200.8	01/17/19 10:37 / ped
Titanium	ND	mg/L		0.005		E200.7	01/11/19 18:13 / r/h
Uranium	ND	mg/L		0.0003		E200.8	01/17/19 10:37 / ped
Vanadium	ND	mg/L		0.01		E200.8	01/17/19 10:37 / ped
Zinc	0.01	mg/L		0.01		E200.8	01/17/19 10:37 / ped
<b>METALS, TOTAL</b>							
Selenium	0.014	mg/L		0.001		A3114 C	01/18/19 13:32 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.002	mg/L		0.001		A3114 C	01/18/19 11:28 / eli-h
Selenium-VI	0.012	mg/L		0.001		A3114 C	01/18/19 14:39 / eli-h

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19010739-007  
**Client Sample ID:** E1

**Report Date:** 01/28/19  
**Collection Date:** 01/08/19 11:00  
**DateReceived:** 01/09/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	01/17/19 10:41 / ped
Antimony	ND	mg/L		0.001		E200.8	01/17/19 10:41 / ped
Arsenic	ND	mg/L		0.001		E200.8	01/17/19 10:41 / ped
Barium	ND	mg/L		0.05		E200.7	01/11/19 18:17 / r/h
Beryllium	ND	mg/L		0.001		E200.7	01/11/19 18:17 / r/h
Boron	ND	mg/L		0.05		E200.7	01/11/19 18:17 / r/h
Cadmium	ND	mg/L		0.001		E200.8	01/17/19 10:41 / ped
Calcium	37	mg/L		1		E200.7	01/11/19 18:17 / r/h
Chromium	ND	mg/L		0.005		E200.8	01/17/19 10:41 / ped
Cobalt	ND	mg/L		0.005		E200.8	01/17/19 10:41 / ped
Copper	ND	mg/L		0.005		E200.7	01/11/19 18:17 / r/h
Iron	0.06	mg/L		0.02		E200.7	01/11/19 18:17 / r/h
Lead	ND	mg/L		0.001		E200.8	01/17/19 10:41 / ped
Lithium	ND	mg/L		0.1		E200.7	01/11/19 18:17 / r/h
Magnesium	33	mg/L		1		E200.7	01/11/19 18:17 / r/h
Manganese	0.012	mg/L		0.001		E200.8	01/17/19 10:41 / ped
Molybdenum	0.016	mg/L		0.001		E200.8	01/17/19 10:41 / ped
Nickel	ND	mg/L		0.005		E200.7	01/11/19 18:17 / r/h
Potassium	2	mg/L		1		E200.7	01/11/19 18:17 / r/h
Silicon	1.3	mg/L		0.1		E200.7	01/11/19 18:17 / r/h
Silver	ND	mg/L		0.001		E200.8	01/17/19 10:41 / ped
Sodium	6	mg/L		1		E200.7	01/11/19 18:17 / r/h
Strontium	0.20	mg/L		0.01		E200.7	01/11/19 18:17 / r/h
Thallium	ND	mg/L		0.0005		E200.8	01/17/19 10:41 / ped
Tin	ND	mg/L		0.01		E200.8	01/17/19 10:41 / ped
Titanium	ND	mg/L		0.005		E200.7	01/11/19 18:17 / r/h
Uranium	0.0039	mg/L		0.0003		E200.8	01/17/19 10:41 / ped
Vanadium	ND	mg/L		0.01		E200.8	01/17/19 10:41 / ped
Zinc	ND	mg/L		0.01		E200.8	01/17/19 10:41 / ped
<b>METALS, TOTAL</b>							
Selenium	0.043	mg/L	D	0.002		A3114 C	01/18/19 13:34 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.003	mg/L	D	0.002		A3114 C	01/18/19 11:29 / eli-h
Selenium-VI	0.040	mg/L		0.001		A3114 C	01/18/19 14:39 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19010739-008  
**Client Sample ID:** E2

**Report Date:** 01/28/19  
**Collection Date:** 01/08/19 11:00  
**DateReceived:** 01/09/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	01/17/19 10:45 / ped
Antimony	ND	mg/L		0.001		E200.8	01/17/19 10:45 / ped
Arsenic	ND	mg/L		0.001		E200.8	01/17/19 10:45 / ped
Barium	ND	mg/L		0.05		E200.7	01/11/19 18:21 / r/h
Beryllium	ND	mg/L		0.001		E200.7	01/11/19 18:21 / r/h
Boron	ND	mg/L		0.05		E200.7	01/11/19 18:21 / r/h
Cadmium	ND	mg/L		0.001		E200.8	01/17/19 10:45 / ped
Calcium	52	mg/L		1		E200.7	01/11/19 18:21 / r/h
Chromium	ND	mg/L		0.005		E200.8	01/17/19 10:45 / ped
Cobalt	ND	mg/L		0.005		E200.8	01/17/19 10:45 / ped
Copper	ND	mg/L		0.005		E200.7	01/11/19 18:21 / r/h
Iron	ND	mg/L		0.02		E200.7	01/11/19 18:21 / r/h
Lead	ND	mg/L		0.001		E200.8	01/17/19 10:45 / ped
Lithium	ND	mg/L		0.1		E200.7	01/11/19 18:21 / r/h
Magnesium	51	mg/L		1		E200.7	01/11/19 18:21 / r/h
Manganese	0.008	mg/L		0.001		E200.8	01/17/19 10:45 / ped
Molybdenum	0.010	mg/L		0.001		E200.8	01/17/19 10:45 / ped
Nickel	ND	mg/L		0.005		E200.7	01/11/19 18:21 / r/h
Potassium	3	mg/L		1		E200.7	01/11/19 18:21 / r/h
Silicon	1.5	mg/L		0.1		E200.7	01/11/19 18:21 / r/h
Silver	ND	mg/L		0.001		E200.8	01/17/19 10:45 / ped
Sodium	7	mg/L		1		E200.7	01/11/19 18:21 / r/h
Strontium	0.29	mg/L		0.01		E200.7	01/11/19 18:21 / r/h
Thallium	ND	mg/L		0.0005		E200.8	01/17/19 10:45 / ped
Tin	ND	mg/L		0.01		E200.8	01/17/19 10:45 / ped
Titanium	ND	mg/L		0.005		E200.7	01/11/19 18:21 / r/h
Uranium	0.0074	mg/L		0.0003		E200.8	01/17/19 10:45 / ped
Vanadium	ND	mg/L		0.01		E200.8	01/17/19 10:45 / ped
Zinc	ND	mg/L		0.01		E200.8	01/17/19 10:45 / ped
<b>METALS, TOTAL</b>							
Selenium	0.052	mg/L		0.001		A3114 C	01/18/19 13:35 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.002	mg/L		0.001		A3114 C	01/18/19 11:34 / eli-h
Selenium-VI	0.050	mg/L		0.001		A3114 C	01/18/19 14:39 / eli-h

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19010739-009  
**Client Sample ID:** E3

**Report Date:** 01/28/19  
**Collection Date:** 01/08/19 11:00  
**Date Received:** 01/09/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	01/17/19 11:18 / ped
Antimony	ND	mg/L		0.001		E200.8	01/17/19 11:18 / ped
Arsenic	ND	mg/L		0.001		E200.8	01/17/19 11:18 / ped
Barium	0.05	mg/L		0.05		E200.7	01/11/19 18:34 / r/h
Beryllium	ND	mg/L		0.001		E200.7	01/11/19 18:34 / r/h
Boron	0.05	mg/L		0.05		E200.7	01/11/19 18:34 / r/h
Cadmium	ND	mg/L		0.001		E200.8	01/17/19 11:18 / ped
Calcium	44	mg/L		1		E200.7	01/11/19 18:34 / r/h
Chromium	ND	mg/L		0.005		E200.8	01/17/19 11:18 / ped
Cobalt	ND	mg/L		0.005		E200.8	01/17/19 11:18 / ped
Copper	ND	mg/L		0.005		E200.7	01/11/19 18:34 / r/h
Iron	ND	mg/L		0.02		E200.8	01/17/19 11:18 / ped
Lead	ND	mg/L		0.001		E200.8	01/17/19 11:18 / ped
Lithium	ND	mg/L		0.1		E200.7	01/11/19 18:34 / r/h
Magnesium	82	mg/L		1		E200.7	01/11/19 18:34 / r/h
Manganese	0.003	mg/L		0.001		E200.8	01/17/19 11:18 / ped
Molybdenum	0.005	mg/L		0.001		E200.8	01/17/19 11:18 / ped
Nickel	ND	mg/L		0.005		E200.7	01/11/19 18:34 / r/h
Potassium	4	mg/L		1		E200.7	01/11/19 18:34 / r/h
Silicon	1.8	mg/L		0.1		E200.7	01/11/19 18:34 / r/h
Silver	ND	mg/L		0.001		E200.8	01/17/19 11:18 / ped
Sodium	8	mg/L		1		E200.7	01/11/19 18:34 / r/h
Strontium	0.39	mg/L		0.01		E200.7	01/11/19 18:34 / r/h
Thallium	ND	mg/L		0.0005		E200.8	01/17/19 11:18 / ped
Tin	ND	mg/L		0.01		E200.8	01/17/19 11:18 / ped
Titanium	ND	mg/L		0.005		E200.7	01/11/19 18:34 / r/h
Uranium	0.0073	mg/L		0.0003		E200.8	01/17/19 11:18 / ped
Vanadium	ND	mg/L		0.01		E200.8	01/17/19 11:18 / ped
Zinc	ND	mg/L		0.01		E200.8	01/17/19 11:18 / ped
<b>METALS, TOTAL</b>							
Selenium	0.054	mg/L		0.001		A3114 C	01/18/19 13:37 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.004	mg/L		0.001		A3114 C	01/18/19 11:36 / eli-h
Selenium-VI	0.050	mg/L		0.001		A3114 C	01/18/19 14:39 / eli-h

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19010739-010  
**Client Sample ID:** E4

**Report Date:** 01/28/19  
**Collection Date:** 01/08/19 11:00  
**Date Received:** 01/09/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	01/17/19 11:22 / ped
Antimony	ND	mg/L		0.001		E200.8	01/17/19 11:22 / ped
Arsenic	ND	mg/L		0.001		E200.8	01/17/19 11:22 / ped
Barium	ND	mg/L		0.05		E200.7	01/11/19 18:38 / rlh
Beryllium	ND	mg/L		0.001		E200.7	01/11/19 18:38 / rlh
Boron	0.06	mg/L		0.05		E200.7	01/11/19 18:38 / rlh
Cadmium	ND	mg/L		0.001		E200.8	01/17/19 11:22 / ped
Calcium	58	mg/L		1		E200.7	01/11/19 18:38 / rlh
Chromium	ND	mg/L		0.005		E200.8	01/17/19 11:22 / ped
Cobalt	ND	mg/L		0.005		E200.8	01/17/19 11:22 / ped
Copper	ND	mg/L		0.005		E200.7	01/11/19 18:38 / rlh
Iron	0.10	mg/L		0.02		E200.8	01/18/19 05:33 / ped
Lead	ND	mg/L		0.001		E200.8	01/17/19 11:22 / ped
Lithium	ND	mg/L		0.1		E200.7	01/11/19 18:38 / rlh
Magnesium	90	mg/L		1		E200.7	01/11/19 18:38 / rlh
Manganese	0.001	mg/L		0.001		E200.8	01/22/19 03:31 / jdl
Molybdenum	0.004	mg/L		0.001		E200.8	01/17/19 11:22 / ped
Nickel	ND	mg/L		0.005		E200.7	01/11/19 18:38 / rlh
Potassium	3	mg/L		1		E200.7	01/11/19 18:38 / rlh
Silicon	1.6	mg/L		0.1		E200.7	01/11/19 18:38 / rlh
Silver	ND	mg/L		0.001		E200.8	01/17/19 11:22 / ped
Sodium	9	mg/L		1		E200.7	01/11/19 18:38 / rlh
Strontium	0.40	mg/L		0.01		E200.7	01/11/19 18:38 / rlh
Thallium	ND	mg/L		0.0005		E200.8	01/17/19 11:22 / ped
Tin	ND	mg/L		0.01		E200.8	01/17/19 11:22 / ped
Titanium	ND	mg/L		0.005		E200.7	01/11/19 18:38 / rlh
Uranium	0.0089	mg/L		0.0003		E200.8	01/17/19 11:22 / ped
Vanadium	ND	mg/L		0.01		E200.8	01/17/19 11:22 / ped
Zinc	ND	mg/L		0.01		E200.8	01/17/19 11:22 / ped
<b>METALS, TOTAL</b>							
Selenium	0.072	mg/L		0.001		A3114 C	01/18/19 13:39 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.001	mg/L		0.001		A3114 C	01/18/19 11:38 / eli-h
Selenium-VI	0.071	mg/L		0.001		A3114 C	01/18/19 14:39 / eli-h

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19010739-011  
**Client Sample ID:** E5

**Report Date:** 01/28/19  
**Collection Date:** 01/08/19 11:00  
**DateReceived:** 01/09/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	01/17/19 11:26 / ped
Antimony	ND	mg/L		0.001		E200.8	01/17/19 11:26 / ped
Arsenic	ND	mg/L		0.001		E200.8	01/17/19 11:26 / ped
Barium	ND	mg/L		0.05		E200.7	01/11/19 18:42 / r/h
Beryllium	ND	mg/L		0.001		E200.7	01/11/19 18:42 / r/h
Boron	ND	mg/L		0.05		E200.7	01/11/19 18:42 / r/h
Cadmium	ND	mg/L		0.001		E200.8	01/17/19 11:26 / ped
Calcium	69	mg/L		1		E200.7	01/11/19 18:42 / r/h
Chromium	ND	mg/L		0.005		E200.8	01/17/19 11:26 / ped
Cobalt	ND	mg/L		0.005		E200.8	01/17/19 11:26 / ped
Copper	ND	mg/L		0.005		E200.7	01/11/19 18:42 / r/h
Iron	ND	mg/L		0.02		E200.8	01/17/19 11:26 / ped
Lead	ND	mg/L		0.001		E200.8	01/17/19 11:26 / ped
Lithium	ND	mg/L		0.1		E200.7	01/11/19 18:42 / r/h
Magnesium	59	mg/L		1		E200.7	01/11/19 18:42 / r/h
Manganese	0.005	mg/L		0.001		E200.8	01/17/19 11:26 / ped
Molybdenum	0.071	mg/L		0.001		E200.8	01/17/19 11:26 / ped
Nickel	ND	mg/L		0.005		E200.7	01/11/19 18:42 / r/h
Potassium	3	mg/L		1		E200.7	01/11/19 18:42 / r/h
Silicon	1.7	mg/L		0.1		E200.7	01/11/19 18:42 / r/h
Silver	ND	mg/L		0.001		E200.8	01/17/19 11:26 / ped
Sodium	6	mg/L		1		E200.7	01/11/19 18:42 / r/h
Strontium	0.33	mg/L		0.01		E200.7	01/11/19 18:42 / r/h
Thallium	ND	mg/L		0.0005		E200.8	01/17/19 11:26 / ped
Tin	ND	mg/L		0.01		E200.8	01/17/19 11:26 / ped
Titanium	ND	mg/L		0.005		E200.7	01/11/19 18:42 / r/h
Uranium	0.0067	mg/L		0.0003		E200.8	01/17/19 11:26 / ped
Vanadium	ND	mg/L		0.01		E200.8	01/17/19 11:26 / ped
Zinc	ND	mg/L		0.01		E200.8	01/17/19 11:26 / ped
<b>METALS, TOTAL</b>							
Selenium	0.055	mg/L	D	0.002		A3114 C	01/18/19 13:41 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L	D	0.002		A3114 C	01/18/19 11:42 / eli-h
Selenium-VI	0.053	mg/L		0.001		A3114 C	01/18/19 14:39 / eli-h

**Report Definitions:** RL - Analyte reporting limit. MCL - Maximum contaminant level.  
QCL - Quality control limit. ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.



## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc

**Report Date:** 01/22/19

**Project:** NWP Phase II

**Work Order:** B19010739

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A3114 C									tical Run: SELENIUM PSA MILLENIUM_190118A
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard								
Selenium-IV	0.0193	mg/L	0.0010	97	90	110			01/18/19 11:12
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								
Selenium-IV	0.0194	mg/L	0.0010	97	90	110			01/18/19 11:13
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								
Selenium-IV	0.0194	mg/L	0.0010	97	90	110			01/18/19 11:41
<b>Method:</b> A3114 C									Batch: 44462
<b>Lab ID:</b> MB-44462	Method Blank								
Selenium-IV	ND	mg/L	0.0006						Run: SELENIUM PSA MILLENIUM_ 01/18/19 11:16
<b>Lab ID:</b> LFB-44462	Laboratory Fortified Blank								
Selenium-IV	0.0186	mg/L	0.0010	93	85	115			Run: SELENIUM PSA MILLENIUM_ 01/18/19 11:18
<b>Lab ID:</b> B19010739-007BMS	Sample Matrix Spike								
Selenium-IV	0.0416	mg/L	0.0020	95	70	130			Run: SELENIUM PSA MILLENIUM_ 01/18/19 11:31
<b>Lab ID:</b> B19010739-007BMSD	Sample Matrix Spike Duplicate								
Selenium-IV	0.0417	mg/L	0.0020	96	70	130	0.4	20	Run: SELENIUM PSA MILLENIUM_ 01/18/19 11:33

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc

**Report Date:** 01/22/19

**Project:** NWP Phase II

**Work Order:** B19010739

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A3114 C									tical Run: SELENIUM PSA MILLENIUM_190118B
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard								
Selenium	0.0385	mg/L	0.0010	96	90	110			01/18/19 13:18
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								
Selenium	0.0195	mg/L	0.0010	98	90	110			01/18/19 13:19
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								
Selenium	0.0186	mg/L	0.0010	93	90	110			01/18/19 14:09
<b>Method:</b> A3114 C									Batch: 44463
<b>Lab ID:</b> MB-44463	Method Blank								
Selenium	ND	mg/L	0.0002						Run: SELENIUM PSA MILLENIUM_ 01/18/19 13:22
<b>Lab ID:</b> H19010179-001BMS	Sample Matrix Spike								
Selenium	0.0897	mg/L	0.0010	85	70	130			Run: SELENIUM PSA MILLENIUM_ 01/18/19 13:49
<b>Lab ID:</b> H19010179-001BMSD	Sample Matrix Spike Duplicate								
Selenium	0.0926	mg/L	0.0010	93	70	130	3.2	20	Run: SELENIUM PSA MILLENIUM_ 01/18/19 13:50
<b>Lab ID:</b> H19010179-007BMS	Sample Matrix Spike								
Selenium	0.0817	mg/L	0.0010	95	70	130			Run: SELENIUM PSA MILLENIUM_ 01/18/19 14:03
<b>Lab ID:</b> H19010179-007BMSD	Sample Matrix Spike Duplicate								
Selenium	0.0823	mg/L	0.0010	96	70	130	0.7	20	Run: SELENIUM PSA MILLENIUM_ 01/18/19 14:04

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.





## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 01/28/19

**Project:** NWP Phase II

**Work Order:** B19010739

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A3114 C									Analytical Run: SUB-H141399
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard								
Selenium-IV	0.0193	mg/L	0.0010	97	90	110			01/18/19 11:12
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								
Selenium-IV	0.0194	mg/L	0.0010	97	90	110			01/18/19 11:13
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								
Selenium-IV	0.0194	mg/L	0.0010	97	90	110			01/18/19 11:41
<b>Method:</b> A3114 C									Batch: H_44462
<b>Lab ID:</b> MB-44462	Method Blank								
Selenium-IV	ND	mg/L	0.0006						Run: SUB-H141399 01/18/19 11:16
<b>Lab ID:</b> LFB-44462	Laboratory Fortified Blank								
Selenium-IV	0.0186	mg/L	0.0010	93	85	115			Run: SUB-H141399 01/18/19 11:18
<b>Lab ID:</b> H19010178-007BMS	Sample Matrix Spike								
Selenium-IV	0.0416	mg/L	0.0020	95	70	130			Run: SUB-H141399 01/18/19 11:31
<b>Lab ID:</b> H19010178-007BMSD	Sample Matrix Spike Duplicate								
Selenium-IV	0.0417	mg/L	0.0020	96	70	130	0.4	20	Run: SUB-H141399 01/18/19 11:33
<b>Lab ID:</b> B19010736-008B	Sample Matrix Spike								
Selenium-IV	0.0286	mg/L	0.0010	99	70	130			Run: SUB-H141399 01/18/19 11:59
<b>Lab ID:</b> B19010736-008B	Sample Matrix Spike Duplicate								
Selenium-IV	0.0287	mg/L	0.0010	99	70	130	0.4	20	Run: SUB-H141399 01/18/19 12:00

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 01/28/19

**Project:** NWP Phase II

**Work Order:** B19010739

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method:</b> A3114 C								Analytical Run: SUB-H141400		
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard									
Selenium	0.0385	mg/L	0.0010	96	90	110			01/18/19 13:18	
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard									
Selenium	0.0195	mg/L	0.0010	98	90	110			01/18/19 13:19	
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard									
Selenium	0.0186	mg/L	0.0010	93	90	110			01/18/19 14:09	
<b>Method:</b> A3114 C								Batch: H_44463		
<b>Lab ID:</b> MB-44463	Method Blank									
Selenium	ND	mg/L	0.0002						Run: SUB-H141400 01/18/19 13:22	
<b>Lab ID:</b> B19010736-001B	Sample Matrix Spike									
Selenium	0.0897	mg/L	0.0010	85	70	130			Run: SUB-H141400 01/18/19 13:49	
<b>Lab ID:</b> B19010736-001B	Sample Matrix Spike Duplicate									
Selenium	0.0926	mg/L	0.0010	93	70	130	3.2	20	Run: SUB-H141400 01/18/19 13:50	
<b>Lab ID:</b> B19010736-007B	Sample Matrix Spike									
Selenium	0.0817	mg/L	0.0010	95	70	130			Run: SUB-H141400 01/18/19 14:03	
<b>Lab ID:</b> B19010736-007B	Sample Matrix Spike Duplicate									
Selenium	0.0823	mg/L	0.0010	96	70	130	0.7	20	Run: SUB-H141400 01/18/19 14:04	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 01/28/19

**Project:** NWP Phase II

**Work Order:** B19010739

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.7</b>							Analytical Run: ICP203-B_190111A			
<b>Lab ID:</b>	<b>ICV</b>	Continuing Calibration Verification Standard						01/11/19 15:55		
Barium	2.46	mg/L	0.10	99	95	105				
Beryllium	1.24	mg/L	0.010	99	95	105				
Boron	2.50	mg/L	0.10	100	95	105				
Calcium	25.3	mg/L	1.0	101	95	105				
Copper	2.47	mg/L	0.010	99	95	105				
Iron	2.57	mg/L	0.020	103	95	105				
Lithium	1.30	mg/L	0.10	104	95	105				
Magnesium	26.0	mg/L	1.0	104	95	105				
Nickel	2.42	mg/L	0.050	97	95	105				
Potassium	26.3	mg/L	1.0	105	95	105				
Silicon	5.02	mg/L	0.10	100	95	105				
Sodium	25.8	mg/L	1.0	103	95	105				
Strontium	2.48	mg/L	0.10	99	95	105				
Titanium	2.46	mg/L	0.010	98	95	105				
<b>Method: E200.7</b>							Batch: R313778			
<b>Lab ID:</b>	<b>MB-6500DIS190111A</b>	Method Blank			Run: ICP203-B_190111A			01/11/19 09:56		
Barium	ND	mg/L	0.0010							
Beryllium	ND	mg/L	0.0005							
Boron	ND	mg/L	0.01							
Calcium	ND	mg/L	0.07							
Copper	ND	mg/L	0.004							
Iron	ND	mg/L	0.02							
Lithium	ND	mg/L	0.02							
Magnesium	ND	mg/L	0.02							
Nickel	ND	mg/L	0.02							
Potassium	ND	mg/L	0.1							
Silicon	ND	mg/L	0.07							
Sodium	ND	mg/L	0.1							
Strontium	ND	mg/L	0.001							
Titanium	ND	mg/L	0.006							
<b>Lab ID:</b>	<b>LFB-6500DIS190111A</b>	Laboratory Fortified Blank			Run: ICP203-B_190111A			01/11/19 10:04		
Barium	0.912	mg/L	0.10	91	85	115				
Beryllium	0.462	mg/L	0.010	92	85	115				
Boron	0.957	mg/L	0.10	96	85	115				
Calcium	44.4	mg/L	1.0	89	85	115				
Copper	0.946	mg/L	0.010	95	85	115				
Iron	4.96	mg/L	0.020	99	85	115				
Lithium	1.00	mg/L	0.10	100	85	115				
Magnesium	47.1	mg/L	1.0	94	85	115				
Nickel	0.919	mg/L	0.050	92	85	115				
Potassium	48.5	mg/L	1.0	97	85	115				

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 01/28/19

**Project:** NWP Phase II

**Work Order:** B19010739

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>									
Batch: R313778									
<b>Lab ID:</b>	<b>LFB-6500DIS190111A</b>	Laboratory Fortified Blank			Run: ICP203-B_190111A			01/11/19 10:04	
Silicon	9.71	mg/L	0.10	97	85	115			
Sodium	51.7	mg/L	1.0	103	85	115			
Strontium	0.949	mg/L	0.10	95	85	115			
Titanium	0.940	mg/L	0.010	94	85	115			
<b>Lab ID:</b>	<b>B19010739-005AMS2</b>	Sample Matrix Spike			Run: ICP203-B_190111A			01/11/19 18:05	
Barium	0.960	mg/L	0.050	95	70	130			
Beryllium	0.434	mg/L	0.0010	87	70	130			
Boron	1.06	mg/L	0.050	99	70	130			
Calcium	57.8	mg/L	1.0	103	70	130			
Copper	0.960	mg/L	0.0050	95	70	130			
Iron	5.55	mg/L	0.020	104	70	130			
Lithium	0.988	mg/L	0.10	99	70	130			
Magnesium	51.0	mg/L	1.0	100	70	130			
Nickel	0.936	mg/L	0.018	94	70	130			
Potassium	48.5	mg/L	1.0	97	70	130			
Silicon	13.9	mg/L	0.10	103	70	130			
Sodium	63.5	mg/L	1.0	100	70	130			
Strontium	0.980	mg/L	0.010	97	70	130			
Titanium	0.969	mg/L	0.0066	97	70	130			
<b>Lab ID:</b>	<b>B19010739-005AMSD2</b>	Sample Matrix Spike Duplicate			Run: ICP203-B_190111A			01/11/19 18:09	
Barium	0.952	mg/L	0.050	94	70	130	0.8	20	
Beryllium	0.435	mg/L	0.0010	87	70	130	0.2	20	
Boron	1.05	mg/L	0.050	99	70	130	0.7	20	
Calcium	58.6	mg/L	1.0	105	70	130	1.5	20	
Copper	0.936	mg/L	0.0050	92	70	130	2.5	20	
Iron	5.58	mg/L	0.020	104	70	130	0.4	20	
Lithium	0.933	mg/L	0.10	93	70	130	5.8	20	
Magnesium	50.5	mg/L	1.0	99	70	130	1.1	20	
Nickel	0.928	mg/L	0.018	93	70	130	0.9	20	
Potassium	45.7	mg/L	1.0	91	70	130	6.1	20	
Silicon	13.7	mg/L	0.10	100	70	130	1.6	20	
Sodium	61.2	mg/L	1.0	95	70	130	3.7	20	
Strontium	0.973	mg/L	0.010	97	70	130	0.7	20	
Titanium	0.964	mg/L	0.0066	96	70	130	0.5	20	
<b>Lab ID:</b>	<b>B19010739-011AMS2</b>	Sample Matrix Spike			Run: ICP203-B_190111A			01/11/19 18:46	
Barium	0.984	mg/L	0.050	94	70	130			
Beryllium	0.427	mg/L	0.0010	85	70	130			
Boron	1.05	mg/L	0.050	101	70	130			
Calcium	118	mg/L	1.0	99	70	130			
Copper	0.963	mg/L	0.0050	96	70	130			
Iron	5.16	mg/L	0.020	103	70	130			

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 01/28/19

**Project:** NWP Phase II

**Work Order:** B19010739

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>							Batch: R313778		
<b>Lab ID:</b>	<b>B19010739-011AMS2</b>	Sample Matrix Spike			Run: ICP203-B_190111A			01/11/19 18:46	
Lithium	1.06	mg/L	0.10	104	70	130			
Magnesium	108	mg/L	1.0	99	70	130			
Nickel	0.912	mg/L	0.018	91	70	130			
Potassium	53.8	mg/L	1.0	102	70	130			
Silicon	12.1	mg/L	0.10	104	70	130			
Sodium	56.8	mg/L	1.0	102	70	130			
Strontium	1.28	mg/L	0.010	95	70	130			
Titanium	0.959	mg/L	0.0066	96	70	130			
<b>Lab ID:</b>	<b>B19010739-011AMSD2</b>	Sample Matrix Spike Duplicate			Run: ICP203-B_190111A			01/11/19 18:51	
Barium	0.977	mg/L	0.050	93	70	130	0.7	20	
Beryllium	0.428	mg/L	0.0010	86	70	130	0.3	20	
Boron	1.05	mg/L	0.050	100	70	130	0.6	20	
Calcium	119	mg/L	1.0	100	70	130	0.7	20	
Copper	0.951	mg/L	0.0050	95	70	130	1.2	20	
Iron	5.16	mg/L	0.020	103	70	130	0.0	20	
Lithium	1.03	mg/L	0.10	100	70	130	3.0	20	
Magnesium	107	mg/L	1.0	96	70	130	1.4	20	
Nickel	0.917	mg/L	0.018	92	70	130	0.6	20	
Potassium	52.5	mg/L	1.0	99	70	130	2.4	20	
Silicon	12.0	mg/L	0.10	103	70	130	0.4	20	
Sodium	55.8	mg/L	1.0	100	70	130	1.8	20	
Strontium	1.27	mg/L	0.010	94	70	130	0.6	20	
Titanium	0.961	mg/L	0.0066	96	70	130	0.3	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 01/28/19

**Project:** NWP Phase II

**Work Order:** B19010739

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>							Analytical Run: ICPMS207-B_190116A		
<b>Lab ID: QCS</b>	Initial Calibration Verification Standard							01/17/19 08:06	
Aluminum	0.269	mg/L	0.10	108	90	110			
Antimony	0.0491	mg/L	0.050	98	90	110			
Arsenic	0.0528	mg/L	0.0050	106	90	110			
Cadmium	0.0267	mg/L	0.0010	107	90	110			
Chromium	0.0541	mg/L	0.010	108	90	110			
Cobalt	0.0545	mg/L	0.010	109	90	110			
Iron	0.260	mg/L	0.020	104	90	110			
Lead	0.0530	mg/L	0.010	106	90	110			
Manganese	0.269	mg/L	0.010	108	90	110			
Molybdenum	0.0504	mg/L	0.0050	101	90	110			
Silver	0.0270	mg/L	0.0050	108	90	110			
Thallium	0.0525	mg/L	0.10	105	90	110			
Tin	0.0516	mg/L	0.10	103	90	110			
Uranium	0.0511	mg/L	0.00030	102	90	110			
Vanadium	0.0543	mg/L	0.10	109	90	110			
Zinc	0.0536	mg/L	0.010	107	90	110			

<b>Method: E200.8</b>							Batch: R314055			
<b>Lab ID: LRB</b>	Method Blank							Run: ICPMS207-B_190116A		01/16/19 16:54
Aluminum	ND	mg/L	0.0009							
Antimony	ND	mg/L	0.0004							
Arsenic	ND	mg/L	0.0002							
Cadmium	ND	mg/L	0.00002							
Chromium	ND	mg/L	0.0002							
Cobalt	ND	mg/L	0.00004							
Iron	ND	mg/L	0.001							
Lead	ND	mg/L	0.00006							
Manganese	ND	mg/L	0.00010							
Molybdenum	ND	mg/L	0.00005							
Silver	ND	mg/L	0.00002							
Thallium	ND	mg/L	0.00004							
Tin	ND	mg/L	0.001							
Uranium	ND	mg/L	0.00005							
Vanadium	ND	mg/L	0.001							
Zinc	ND	mg/L	0.003							

<b>Lab ID: LFB</b>	Laboratory Fortified Blank							Run: ICPMS207-B_190116A		01/16/19 17:33
Aluminum	0.0451	mg/L	0.10	90	85	115				
Antimony	0.0560	mg/L	0.050	112	85	115				
Arsenic	0.0466	mg/L	0.0050	93	85	115				
Cadmium	0.0477	mg/L	0.0010	95	85	115				
Chromium	0.0467	mg/L	0.010	93	85	115				
Cobalt	0.0483	mg/L	0.010	97	85	115				

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 01/28/19

**Project:** NWP Phase II

**Work Order:** B19010739

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>									
Batch: R314055									
<b>Lab ID:</b>	<b>LFB</b>	Laboratory Fortified Blank			Run: ICPMS207-B_190116A			01/16/19 17:33	
Iron	4.83	mg/L	0.020	97	85	115			
Lead	0.0473	mg/L	0.010	95	85	115			
Manganese	0.0466	mg/L	0.010	93	85	115			
Molybdenum	0.0474	mg/L	0.0050	95	85	115			
Silver	0.0188	mg/L	0.0050	94	85	115			
Thallium	0.0465	mg/L	0.10	93	85	115			
Tin	0.0481	mg/L	0.10	96	85	115			
Uranium	0.0490	mg/L	0.00030	98	85	115			
Vanadium	0.0492	mg/L	0.10	98	85	115			
Zinc	0.0471	mg/L	0.010	94	85	115			
<b>Lab ID:</b>	<b>B19010736-006AMS</b>	Sample Matrix Spike			Run: ICPMS207-B_190116A			01/17/19 09:41	
Aluminum	0.0434	mg/L	0.030	87	70	130			
Antimony	0.0604	mg/L	0.0010	116	70	130			
Arsenic	0.0517	mg/L	0.0010	103	70	130			
Cadmium	0.0475	mg/L	0.0010	95	70	130			
Chromium	0.0501	mg/L	0.0050	100	70	130			
Cobalt	0.0579	mg/L	0.0050	95	70	130			
Iron	5.05	mg/L	0.020	100	70	130			
Lead	0.0495	mg/L	0.0010	99	70	130			
Manganese	0.285	mg/L	0.0010		70	130			A
Molybdenum	0.0664	mg/L	0.0010	99	70	130			
Silver	0.0188	mg/L	0.0010	94	70	130			
Thallium	0.0513	mg/L	0.00050	103	70	130			
Tin	0.0517	mg/L	0.010	103	70	130			
Uranium	0.0592	mg/L	0.00030	98	70	130			
Vanadium	0.0526	mg/L	0.010	105	70	130			
Zinc	0.0568	mg/L	0.010	93	70	130			
<b>Lab ID:</b>	<b>B19010736-006AMSD</b>	Sample Matrix Spike Duplicate			Run: ICPMS207-B_190116A			01/17/19 09:44	
Aluminum	0.0405	mg/L	0.030	81	70	130	7.0	20	
Antimony	0.0576	mg/L	0.0010	110	70	130	4.7	20	
Arsenic	0.0486	mg/L	0.0010	97	70	130	6.2	20	
Cadmium	0.0449	mg/L	0.0010	90	70	130	5.5	20	
Chromium	0.0475	mg/L	0.0050	95	70	130	5.3	20	
Cobalt	0.0558	mg/L	0.0050	91	70	130	3.7	20	
Iron	4.91	mg/L	0.020	97	70	130	2.7	20	
Lead	0.0464	mg/L	0.0010	93	70	130	6.4	20	
Manganese	0.283	mg/L	0.0010		70	130	0.6	20	A
Molybdenum	0.0647	mg/L	0.0010	96	70	130	2.6	20	
Silver	0.0177	mg/L	0.0010	88	70	130	6.1	20	
Thallium	0.0475	mg/L	0.00050	95	70	130	7.8	20	
Tin	0.0485	mg/L	0.010	97	70	130	6.3	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 01/28/19

**Project:** NWP Phase II

**Work Order:** B19010739

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>							Batch: R314055		
<b>Lab ID: B19010736-006AMSD</b>	Sample Matrix Spike Duplicate			Run: ICPMS207-B_190116A			01/17/19 09:44		
Uranium	0.0560	mg/L	0.00030	92	70	130	5.6	20	
Vanadium	0.0494	mg/L	0.010	99	70	130	6.4	20	
Zinc	0.0537	mg/L	0.010	87	70	130	5.7	20	
<b>Lab ID: B19010739-008AMS</b>	Sample Matrix Spike			Run: ICPMS207-B_190116A			01/17/19 11:06		
Aluminum	0.0461	mg/L	0.030	92	70	130			
Antimony	0.0573	mg/L	0.0010	113	70	130			
Arsenic	0.0509	mg/L	0.0010	102	70	130			
Cadmium	0.0472	mg/L	0.0010	94	70	130			
Chromium	0.0509	mg/L	0.0050	101	70	130			
Cobalt	0.0489	mg/L	0.0050	97	70	130			
Iron	4.96	mg/L	0.020	99	70	130			
Lead	0.0479	mg/L	0.0010	96	70	130			
Manganese	0.0579	mg/L	0.0010	99	70	130			
Molybdenum	0.0587	mg/L	0.0010	97	70	130			
Silver	0.0188	mg/L	0.0010	94	70	130			
Thallium	0.0502	mg/L	0.00050	100	70	130			
Tin	0.0507	mg/L	0.010	101	70	130			
Uranium	0.0544	mg/L	0.00030	94	70	130			
Vanadium	0.0545	mg/L	0.010	109	70	130			
Zinc	0.0500	mg/L	0.010	100	70	130			
<b>Lab ID: B19010739-008AMSD</b>	Sample Matrix Spike Duplicate			Run: ICPMS207-B_190116A			01/17/19 11:10		
Aluminum	0.0459	mg/L	0.030	92	70	130	0.3	20	
Antimony	0.0570	mg/L	0.0010	113	70	130	0.4	20	
Arsenic	0.0492	mg/L	0.0010	98	70	130	3.3	20	
Cadmium	0.0468	mg/L	0.0010	94	70	130	0.9	20	
Chromium	0.0495	mg/L	0.0050	98	70	130	2.7	20	
Cobalt	0.0482	mg/L	0.0050	95	70	130	1.3	20	
Iron	4.92	mg/L	0.020	98	70	130	0.9	20	
Lead	0.0479	mg/L	0.0010	96	70	130	0.0	20	
Manganese	0.0565	mg/L	0.0010	96	70	130	2.5	20	
Molybdenum	0.0591	mg/L	0.0010	98	70	130	0.7	20	
Silver	0.0187	mg/L	0.0010	94	70	130	0.6	20	
Thallium	0.0490	mg/L	0.00050	98	70	130	2.4	20	
Tin	0.0500	mg/L	0.010	100	70	130	1.4	20	
Uranium	0.0544	mg/L	0.00030	94	70	130	0.0	20	
Vanadium	0.0526	mg/L	0.010	105	70	130	3.5	20	
Zinc	0.0477	mg/L	0.010	95	70	130	4.8	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.





## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 01/28/19

**Project:** NWP Phase II

**Work Order:** B19010739

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E200.8									Analytical Run: ICPMS207-B_190117A
<b>Lab ID:</b> QCS	Initial Calibration Verification Standard								01/17/19 23:36
Iron	0.248	mg/L	0.020	99	90	110			
<b>Method:</b> E200.8									Batch: R314120
<b>Lab ID:</b> LFB	Laboratory Fortified Blank								01/17/19 18:02
Iron	5.11	mg/L	0.020	102	85	115			Run: ICPMS207-B_190117A
<b>Lab ID:</b> LRB	Method Blank								01/17/19 18:40
Iron	0.01	mg/L	0.001						Run: ICPMS207-B_190117A
<b>Lab ID:</b> B19010804-004BMS	Sample Matrix Spike								01/18/19 08:02
Iron	10.6	mg/L	0.020	102	70	130			Run: ICPMS207-B_190117A
<b>Lab ID:</b> B19010804-004BMSD	Sample Matrix Spike Duplicate								01/18/19 08:06
Iron	10.8	mg/L	0.020	103	70	130	1.6	20	Run: ICPMS207-B_190117A
<b>Method:</b> E200.8									Analytical Run: ICPMS207-B_190121A
<b>Lab ID:</b> QCS	Initial Calibration Verification Standard								01/21/19 12:27
Manganese	0.274	mg/L	0.010	109	90	110			
<b>Method:</b> E200.8									Batch: R314275
<b>Lab ID:</b> LRB	Method Blank								01/21/19 12:40
Manganese	ND	mg/L	0.00010						Run: ICPMS207-B_190121A
<b>Lab ID:</b> LFB	Laboratory Fortified Blank								01/21/19 18:10
Manganese	0.0465	mg/L	0.010	93	85	115			Run: ICPMS207-B_190121A
<b>Lab ID:</b> B19010739-010AMS	Sample Matrix Spike								01/22/19 03:35
Manganese	0.103	mg/L	0.0010	102	70	130			Run: ICPMS207-B_190121A
<b>Lab ID:</b> B19010739-010AMSD	Sample Matrix Spike Duplicate								01/22/19 03:39
Manganese	0.0887	mg/L	0.0010	87	70	130	15	20	Run: ICPMS207-B_190121A

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 01/28/19

**Project:** NWP Phase II

**Work Order:** B19010739

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method:</b> E200.8								Analytical Run: ICPMS207-B_190123A		
<b>Lab ID:</b> QCS	Initial Calibration Verification Standard							01/23/19 15:28		
Aluminum	0.263	mg/L	0.10	105	90	110				
Iron	0.247	mg/L	0.020	99	90	110				
<b>Method:</b> E200.8								Batch: R314372		
<b>Lab ID:</b> LRB	Method Blank							Run: ICPMS207-B_190123A 01/23/19 08:47		
Aluminum	ND	mg/L	0.0009							
Iron	ND	mg/L	0.001							
<b>Lab ID:</b> LFB	Laboratory Fortified Blank							Run: ICPMS207-B_190123A 01/23/19 10:02		
Aluminum	0.0459	mg/L	0.10	92	85	115				
Iron	4.50	mg/L	0.020	90	85	115				
<b>Lab ID:</b> B19010983-002CMS	Sample Matrix Spike							Run: ICPMS207-B_190123A 01/23/19 18:03		
Aluminum	0.0601	mg/L	0.030	89	70	130				
Iron	5.01	mg/L	0.020	100	70	130				
<b>Lab ID:</b> B19010983-002CMSD	Sample Matrix Spike Duplicate							Run: ICPMS207-B_190123A 01/23/19 18:07		
Aluminum	0.0597	mg/L	0.030	88	70	130	0.7	20		
Iron	4.82	mg/L	0.020	96	70	130	3.9	20		

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# Work Order Receipt Checklist

Enviromin Inc

B19010739

Login completed by: Briana G. Sangiuliano

Date Received: 1/9/2019

Reviewed by: BL2000\gmccartney

Received by: slm

Reviewed Date: 1/10/2019

Carrier name: Return-UPS Ground N/C

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	2.6°C Blue Ice		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>

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## Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

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## Contact and Corrective Action Comments:

Selenium Speciation was requested on the Chain of Custody for sample F however the container was received empty. Selenium Speciation analysis is not needed on this container per phone conversation Gerrit Egnew.

The collection date was written as 1/8/18 on the Chain of Custody and the container labels for all samples. The collection date was estimated to be 1/8/19 by laboratory personnel.

# Chain of Custody & Analytical Request Record

www.energylab.com

Comments

Report information of different than Account information

**Account Information (Billing Information)**

Company Name: Environinc, Inc.  
 Contact: Gerrit Egniew  
 Phone: 208-315-4218  
 Mailing Address: 524 Professional Drive  
 City, State, Zip: Bozeman, MT 59718  
 Email: gerritegniew@environinc.com  
 Receive Invoice  Hard Copy  Email   
 Receive Report  Hard Copy  Email   
 Purchase Order: 4093

**Report Information**

Company Name: \_\_\_\_\_  
 Contact: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_  
 City, State, Zip: \_\_\_\_\_  
 Email: \_\_\_\_\_  
 Receive Report  Hard Copy  Email   
 Special Reports/Forms:  LEVEL IV  NELAC  EDDIET (contact laboratory)  Other: \_\_\_\_\_

**Project Information**

Project Name, PWSID, Permit, etc: NWP Phase II  
 Sampler Name: G. Egniew Sampler Phone: \_\_\_\_\_  
 Sample Origin State: \_\_\_\_\_ EPA/State Compliance  Yes  No  
 WARNING CLIENTS, please indicate sample type.  
 If one has been processed or refilled, call before sampling.  
 Byproduct 11 (e)2 materials  Unprocessed ore (NOT ground or refined)

Sample ID	Sample Identification (Name, Location, Interval, etc.)	Collection		Matrix (See Order Amount)
		Date	Time	
1	F	1/8/18	11am	W
2	R1			
3	R2			
4	R3			
5	R4			
6	R5			
7	E1			
8	E2			
9	E3			
10	E4			

**Matrix Codes**

- A - Air
- W - Water
- S - Solid
- S - Solids
- V - Vegetation
- B - Biomass
- O - Other
- DW - Drinking Water

All turnaround times are standard unless marked as RUSH.  
 Energy Laboratories MUST be contacted prior to RUSH sample submission for charges and scheduling - See Instructions Page

Sample ID	Sample Identification	Date	Time	Matrix	Number of Containers	Temp Blank	Temp °C	On Ice	Receipt Type	Amount	Signature	Date/Time	Receipt Number (if Submit only)
1	F	1/8/18	11am	W	2				CC		[Signature]	1/8/18 15:30	934
2	R1										[Signature]		
3	R2										[Signature]		
4	R3										[Signature]		
5	R4										[Signature]		
6	R5										[Signature]		
7	E1										[Signature]		
8	E2										[Signature]		
9	E3										[Signature]		
10	E4										[Signature]		

**Shipped By** \_\_\_\_\_ **Cooler ID(s)** \_\_\_\_\_ **Custody Seals** Y N C B  
**Receipt MUST be signed** by recipient: Gerrit Egniew  
**Received by (print)** \_\_\_\_\_ **Date/Time** \_\_\_\_\_  
**Signature** \_\_\_\_\_ **Date/Time** \_\_\_\_\_  
**Amount** \$ \_\_\_\_\_ **Receipt Number (if Submit only)** \_\_\_\_\_

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly noted on your analytical report.





# ANALYTICAL SUMMARY REPORT

February 05, 2019

Enviromin Inc  
524 Professional Dr  
Bozeman, MT 59718

Work Order: B19011426      Quote ID: B4093 - Enviromin Lab

Project Name: NWP Phase II

Energy Laboratories Inc Billings MT received the following 11 samples for Enviromin Inc on 1/18/2019 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B19011426-001	F	01/17/19 12:00	01/18/19	Aqueous	Metals by ICP/ICPMS, Dissolved Carbon, Dissolved Organic Selenium By CVAA, Total Selenium IV, Total Selenium-VI, Total
B19011426-002	R1	01/17/19 12:00	01/18/19	Aqueous	Same As Above
B19011426-003	R2	01/17/19 12:00	01/18/19	Aqueous	Same As Above
B19011426-004	R3	01/17/19 12:00	01/18/19	Aqueous	Same As Above
B19011426-005	R4	01/17/19 12:00	01/18/19	Aqueous	Same As Above
B19011426-006	R5	01/17/19 12:00	01/18/19	Aqueous	Same As Above
B19011426-007	E1	01/17/19 12:00	01/18/19	Aqueous	Same As Above
B19011426-008	E2	01/17/19 12:00	01/18/19	Aqueous	Same As Above
B19011426-009	E3	01/17/19 12:00	01/18/19	Aqueous	Same As Above
B19011426-010	E4	01/17/19 12:00	01/18/19	Aqueous	Same As Above
B19011426-011	E5	01/17/19 12:00	01/18/19	Aqueous	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:



**CLIENT:** Enviromin Inc  
**Project:** NWP Phase II  
**Work Order:** B19011426

**Report Date:** 02/05/19

## **CASE NARRATIVE**

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Tests associated with analyst identified as ELI-CA were subcontracted to Energy Laboratories, PO Box 247, Casper, WY, EPA Number WY00002.

Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 East Lyndale Ave, Helena, MT, EPA Number MT00945.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19011426-001  
**Client Sample ID:** F

**Report Date:** 02/05/19  
**Collection Date:** 01/17/19 12:00  
**DateReceived:** 01/18/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	2	mg/L	D	2		A5310 C	01/22/19 20:16 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.7	01/22/19 13:50 / rlh
Antimony	ND	mg/L		0.001		E200.8	01/24/19 18:53 / ped
Arsenic	ND	mg/L		0.001		E200.8	01/24/19 03:32 / car
Barium	ND	mg/L		0.05		E200.7	01/22/19 13:50 / rlh
Beryllium	ND	mg/L		0.001		E200.7	01/22/19 13:50 / rlh
Boron	ND	mg/L		0.05		E200.7	01/21/19 19:56 / rlh
Cadmium	ND	mg/L		0.001		E200.8	01/24/19 03:32 / car
Calcium	5	mg/L		1		E200.7	01/23/19 14:57 / rlh
Chromium	ND	mg/L		0.005		E200.8	01/24/19 03:32 / car
Cobalt	ND	mg/L		0.005		E200.8	01/24/19 03:32 / car
Copper	ND	mg/L		0.005		E200.7	01/22/19 13:50 / rlh
Iron	ND	mg/L		0.02		E200.7	01/22/19 13:50 / rlh
Lead	ND	mg/L		0.001		E200.8	01/24/19 03:32 / car
Lithium	ND	mg/L		0.1		E200.7	01/21/19 19:56 / rlh
Magnesium	1	mg/L		1		E200.7	01/21/19 19:56 / rlh
Manganese	ND	mg/L		0.001		E200.8	01/24/19 03:32 / car
Molybdenum	ND	mg/L		0.001		E200.8	01/24/19 18:53 / ped
Nickel	ND	mg/L		0.005		E200.7	01/22/19 13:50 / rlh
Potassium	ND	mg/L		1		E200.7	01/23/19 14:57 / rlh
Silicon	1.6	mg/L		0.1		E200.7	01/21/19 19:56 / rlh
Silver	ND	mg/L		0.001		E200.8	01/24/19 03:32 / car
Sodium	33	mg/L		1		E200.7	01/21/19 19:56 / rlh
Strontium	0.02	mg/L		0.01		E200.7	01/22/19 13:50 / rlh
Thallium	ND	mg/L		0.0005		E200.8	01/26/19 05:37 / ped
Tin	ND	mg/L		0.01		E200.8	01/24/19 03:32 / car
Titanium	ND	mg/L		0.005		E200.7	01/22/19 13:50 / rlh
Uranium	ND	mg/L		0.0003		E200.8	01/24/19 03:32 / car
Vanadium	ND	mg/L		0.01		E200.8	01/24/19 18:53 / ped
Zinc	ND	mg/L		0.01		E200.7	01/21/19 19:56 / rlh
<b>METALS, TOTAL</b>							
Selenium	0.341	mg/L	D	0.002		A3114 C	01/23/19 13:49 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.001	mg/L		0.001		A3114 C	01/22/19 14:25 / eli-h
Selenium-VI	0.340	mg/L		0.002		A3114 C	01/24/19 08:30 / eli-h

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.





### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19011426-002  
**Client Sample ID:** R1

**Report Date:** 02/05/19  
**Collection Date:** 01/17/19 12:00  
**DateReceived:** 01/18/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	10	mg/L	D	4		A5310 C	01/22/19 20:31 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.7	01/22/19 13:54 / rlh
Antimony	ND	mg/L		0.001		E200.8	01/24/19 19:10 / ped
Arsenic	0.001	mg/L		0.001		E200.8	01/24/19 03:49 / car
Barium	ND	mg/L		0.05		E200.7	01/22/19 13:54 / rlh
Beryllium	ND	mg/L		0.001		E200.7	01/22/19 13:54 / rlh
Boron	ND	mg/L		0.05		E200.7	01/21/19 20:00 / rlh
Cadmium	ND	mg/L		0.001		E200.8	01/24/19 03:49 / car
Calcium	5	mg/L		1		E200.7	01/23/19 15:01 / rlh
Chromium	ND	mg/L		0.005		E200.8	01/24/19 03:49 / car
Cobalt	ND	mg/L		0.005		E200.8	01/24/19 03:49 / car
Copper	0.019	mg/L		0.005		E200.7	01/22/19 13:54 / rlh
Iron	0.05	mg/L		0.02		E200.7	01/22/19 13:54 / rlh
Lead	ND	mg/L		0.001		E200.8	01/24/19 03:49 / car
Lithium	ND	mg/L		0.1		E200.7	01/21/19 20:00 / rlh
Magnesium	1	mg/L		1		E200.7	01/21/19 20:00 / rlh
Manganese	0.002	mg/L		0.001		E200.8	01/24/19 03:49 / car
Molybdenum	ND	mg/L		0.001		E200.8	01/24/19 19:10 / ped
Nickel	ND	mg/L		0.005		E200.7	01/22/19 13:54 / rlh
Potassium	ND	mg/L		1		E200.7	01/23/19 15:01 / rlh
Silicon	2.2	mg/L		0.1		E200.7	01/21/19 20:00 / rlh
Silver	ND	mg/L		0.001		E200.8	01/24/19 03:49 / car
Sodium	32	mg/L		1		E200.7	01/21/19 20:00 / rlh
Strontium	0.01	mg/L		0.01		E200.7	01/22/19 13:54 / rlh
Thallium	ND	mg/L		0.0005		E200.8	01/26/19 07:01 / ped
Tin	ND	mg/L		0.01		E200.8	01/24/19 03:49 / car
Titanium	ND	mg/L		0.005		E200.7	01/22/19 13:54 / rlh
Uranium	0.0009	mg/L		0.0003		E200.8	01/24/19 03:49 / car
Vanadium	ND	mg/L		0.01		E200.8	01/24/19 19:10 / ped
Zinc	ND	mg/L		0.01		E200.7	01/21/19 20:00 / rlh
<b>METALS, TOTAL</b>							
Selenium	0.320	mg/L	D	0.002		A3114 C	01/23/19 13:51 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.001	mg/L		0.001		A3114 C	01/22/19 14:27 / eli-h
Selenium-VI	0.319	mg/L		0.002		A3114 C	01/24/19 08:30 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19011426-003  
**Client Sample ID:** R2

**Report Date:** 02/05/19  
**Collection Date:** 01/17/19 12:00  
**DateReceived:** 01/18/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	8	mg/L	D	4		A5310 C	01/22/19 21:22 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.7	01/22/19 13:58 / rlh
Antimony	ND	mg/L		0.001		E200.8	01/24/19 19:14 / ped
Arsenic	0.001	mg/L		0.001		E200.8	01/24/19 03:54 / car
Barium	ND	mg/L		0.05		E200.7	01/22/19 13:58 / rlh
Beryllium	ND	mg/L		0.001		E200.7	01/22/19 13:58 / rlh
Boron	ND	mg/L		0.05		E200.7	01/21/19 20:04 / rlh
Cadmium	ND	mg/L		0.001		E200.8	01/24/19 03:54 / car
Calcium	5	mg/L		1		E200.7	01/23/19 15:05 / rlh
Chromium	ND	mg/L		0.005		E200.8	01/24/19 03:54 / car
Cobalt	ND	mg/L		0.005		E200.8	01/24/19 03:54 / car
Copper	0.021	mg/L		0.005		E200.7	01/22/19 13:58 / rlh
Iron	0.04	mg/L		0.02		E200.7	01/22/19 13:58 / rlh
Lead	ND	mg/L		0.001		E200.8	01/24/19 03:54 / car
Lithium	ND	mg/L		0.1		E200.7	01/21/19 20:04 / rlh
Magnesium	1	mg/L		1		E200.7	01/21/19 20:04 / rlh
Manganese	0.005	mg/L		0.001		E200.8	01/24/19 03:54 / car
Molybdenum	ND	mg/L		0.001		E200.8	01/24/19 19:14 / ped
Nickel	ND	mg/L		0.005		E200.7	01/22/19 13:58 / rlh
Potassium	ND	mg/L		1		E200.7	01/23/19 15:05 / rlh
Silicon	2.3	mg/L		0.1		E200.7	01/21/19 20:04 / rlh
Silver	ND	mg/L		0.001		E200.8	01/24/19 03:54 / car
Sodium	25	mg/L		1		E200.7	01/21/19 20:04 / rlh
Strontium	0.02	mg/L		0.01		E200.7	01/22/19 13:58 / rlh
Thallium	ND	mg/L		0.0005		E200.8	01/26/19 07:06 / ped
Tin	ND	mg/L		0.01		E200.8	01/24/19 03:54 / car
Titanium	ND	mg/L		0.005		E200.7	01/22/19 13:58 / rlh
Uranium	ND	mg/L		0.0003		E200.8	01/24/19 03:54 / car
Vanadium	ND	mg/L		0.01		E200.8	01/24/19 03:54 / car
Zinc	ND	mg/L		0.01		E200.7	01/21/19 20:04 / rlh
<b>METALS, TOTAL</b>							
Selenium	0.233	mg/L	D	0.002		A3114 C	01/23/19 13:53 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.004	mg/L		0.001		A3114 C	01/22/19 14:29 / eli-h
Selenium-VI	0.229	mg/L		0.002		A3114 C	01/24/19 08:30 / eli-h

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



**LABORATORY ANALYTICAL REPORT**

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19011426-004  
**Client Sample ID:** R3

**Report Date:** 02/05/19  
**Collection Date:** 01/17/19 12:00  
**DateReceived:** 01/18/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	7	mg/L	D	2		A5310 C	01/22/19 21:37 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.7	01/22/19 14:03 / rlh
Antimony	ND	mg/L		0.001		E200.8	01/24/19 19:18 / ped
Arsenic	0.002	mg/L		0.001		E200.8	01/24/19 07:05 / car
Barium	ND	mg/L		0.05		E200.7	01/22/19 14:03 / rlh
Beryllium	ND	mg/L		0.001		E200.7	01/22/19 14:03 / rlh
Boron	ND	mg/L		0.05		E200.7	01/21/19 20:08 / rlh
Cadmium	ND	mg/L		0.001		E200.8	01/24/19 07:05 / car
Calcium	3	mg/L		1		E200.7	01/23/19 15:10 / rlh
Chromium	ND	mg/L		0.005		E200.8	01/24/19 07:05 / car
Cobalt	ND	mg/L		0.005		E200.8	01/24/19 07:05 / car
Copper	ND	mg/L		0.005		E200.7	01/22/19 14:03 / rlh
Iron	0.03	mg/L		0.02		E200.7	01/22/19 14:03 / rlh
Lead	ND	mg/L		0.001		E200.8	01/24/19 07:05 / car
Lithium	ND	mg/L		0.1		E200.7	01/21/19 20:08 / rlh
Magnesium	ND	mg/L		1		E200.7	01/21/19 20:08 / rlh
Manganese	ND	mg/L		0.001		E200.8	01/24/19 07:05 / car
Molybdenum	ND	mg/L		0.001		E200.8	01/24/19 19:18 / ped
Nickel	ND	mg/L		0.005		E200.7	01/22/19 14:03 / rlh
Potassium	ND	mg/L		1		E200.7	01/23/19 15:10 / rlh
Silicon	2.3	mg/L		0.1		E200.7	01/21/19 20:08 / rlh
Silver	ND	mg/L		0.001		E200.8	01/24/19 07:05 / car
Sodium	30	mg/L		1		E200.7	01/21/19 20:08 / rlh
Strontium	0.01	mg/L		0.01		E200.7	01/22/19 14:03 / rlh
Thallium	ND	mg/L		0.0005		E200.8	01/26/19 07:10 / ped
Tin	ND	mg/L		0.01		E200.8	01/24/19 07:05 / car
Titanium	ND	mg/L		0.005		E200.7	01/22/19 14:03 / rlh
Uranium	ND	mg/L		0.0003		E200.8	01/24/19 07:05 / car
Vanadium	ND	mg/L		0.01		E200.8	01/24/19 07:05 / car
Zinc	ND	mg/L		0.01		E200.7	01/21/19 20:08 / rlh
<b>METALS, TOTAL</b>							
Selenium	0.296	mg/L	D	0.002		A3114 C	01/23/19 13:54 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 C	01/22/19 14:30 / eli-h
Selenium-VI	0.296	mg/L		0.002		A3114 C	01/24/19 08:30 / eli-h

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19011426-005  
**Client Sample ID:** R4

**Report Date:** 02/05/19  
**Collection Date:** 01/17/19 12:00  
**Date Received:** 01/18/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	6	mg/L	D	4		A5310 C	01/22/19 21:52 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.7	01/22/19 14:07 / rlh
Antimony	ND	mg/L		0.001		E200.8	01/30/19 18:59 / car
Arsenic	0.001	mg/L		0.001		E200.8	01/24/19 04:19 / car
Barium	ND	mg/L		0.05		E200.7	01/22/19 14:07 / rlh
Beryllium	ND	mg/L		0.001		E200.7	01/22/19 14:07 / rlh
Boron	ND	mg/L		0.05		E200.7	01/21/19 20:12 / rlh
Cadmium	ND	mg/L		0.001		E200.8	01/24/19 04:19 / car
Calcium	5	mg/L		1		E200.7	01/23/19 15:14 / rlh
Chromium	ND	mg/L		0.005		E200.8	01/24/19 04:19 / car
Cobalt	ND	mg/L		0.005		E200.8	01/24/19 04:19 / car
Copper	0.008	mg/L		0.005		E200.7	01/22/19 14:07 / rlh
Iron	0.05	mg/L		0.02		E200.7	01/22/19 14:07 / rlh
Lead	ND	mg/L		0.001		E200.8	01/24/19 04:19 / car
Lithium	ND	mg/L		0.1		E200.7	01/21/19 20:12 / rlh
Magnesium	1	mg/L		1		E200.7	01/21/19 20:12 / rlh
Manganese	0.001	mg/L		0.001		E200.8	01/24/19 04:19 / car
Molybdenum	ND	mg/L		0.001		E200.8	01/24/19 19:22 / ped
Nickel	ND	mg/L		0.005		E200.7	01/22/19 14:07 / rlh
Potassium	ND	mg/L		1		E200.7	01/23/19 15:14 / rlh
Silicon	2.1	mg/L		0.1		E200.7	01/21/19 20:12 / rlh
Silver	ND	mg/L		0.001		E200.8	01/24/19 04:19 / car
Sodium	27	mg/L		1		E200.7	01/21/19 20:12 / rlh
Strontium	0.02	mg/L		0.01		E200.7	01/22/19 14:07 / rlh
Thallium	ND	mg/L		0.0005		E200.8	01/26/19 07:14 / ped
Tin	ND	mg/L		0.01		E200.8	01/24/19 04:19 / car
Titanium	ND	mg/L		0.005		E200.7	01/22/19 14:07 / rlh
Uranium	ND	mg/L		0.0003		E200.8	01/24/19 04:19 / car
Vanadium	ND	mg/L		0.01		E200.8	01/24/19 04:19 / car
Zinc	ND	mg/L		0.01		E200.7	01/21/19 20:12 / rlh
<b>METALS, TOTAL</b>							
Selenium	0.258	mg/L	D	0.002		A3114 C	01/23/19 13:56 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 C	01/22/19 14:32 / eli-h
Selenium-VI	0.258	mg/L		0.002		A3114 C	01/24/19 08:30 / eli-h

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19011426-006  
**Client Sample ID:** R5

**Report Date:** 02/05/19  
**Collection Date:** 01/17/19 12:00  
**Date Received:** 01/18/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	5	mg/L	D	2		A5310 C	01/22/19 22:08 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.7	01/22/19 14:11 / rlh
Antimony	ND	mg/L		0.001		E200.8	01/24/19 19:27 / ped
Arsenic	0.001	mg/L		0.001		E200.8	01/24/19 04:24 / car
Barium	ND	mg/L		0.05		E200.7	01/22/19 14:11 / rlh
Beryllium	ND	mg/L		0.001		E200.7	01/22/19 14:11 / rlh
Boron	ND	mg/L		0.05		E200.7	01/22/19 14:11 / rlh
Cadmium	ND	mg/L		0.001		E200.8	01/24/19 04:24 / car
Calcium	2	mg/L		1		E200.7	01/23/19 15:18 / rlh
Chromium	ND	mg/L		0.005		E200.8	01/24/19 04:24 / car
Cobalt	ND	mg/L		0.005		E200.8	01/24/19 04:24 / car
Copper	ND	mg/L		0.005		E200.7	01/22/19 14:11 / rlh
Iron	0.03	mg/L		0.02		E200.7	01/22/19 14:11 / rlh
Lead	ND	mg/L		0.001		E200.8	01/24/19 04:24 / car
Lithium	ND	mg/L		0.1		E200.7	01/21/19 20:33 / rlh
Magnesium	ND	mg/L		1		E200.7	01/21/19 20:33 / rlh
Manganese	ND	mg/L		0.001		E200.8	01/24/19 04:24 / car
Molybdenum	ND	mg/L		0.001		E200.8	01/24/19 19:27 / ped
Nickel	ND	mg/L		0.005		E200.7	01/22/19 14:11 / rlh
Potassium	ND	mg/L		1		E200.7	01/21/19 20:33 / rlh
Silicon	2.5	mg/L		0.1		E200.7	01/22/19 14:11 / rlh
Silver	ND	mg/L		0.001		E200.8	01/24/19 04:24 / car
Sodium	29	mg/L		1		E200.7	01/21/19 20:33 / rlh
Strontium	ND	mg/L		0.01		E200.7	01/22/19 14:11 / rlh
Thallium	ND	mg/L		0.0005		E200.8	01/26/19 07:18 / ped
Tin	ND	mg/L		0.01		E200.8	01/24/19 04:24 / car
Titanium	ND	mg/L		0.005		E200.7	01/22/19 14:11 / rlh
Uranium	ND	mg/L		0.0003		E200.8	01/24/19 04:24 / car
Vanadium	ND	mg/L		0.01		E200.8	01/24/19 04:24 / car
Zinc	ND	mg/L		0.01		E200.7	01/22/19 14:11 / rlh
<b>METALS, TOTAL</b>							
Selenium	0.260	mg/L	D	0.002		A3114 C	01/23/19 13:59 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 C	01/22/19 14:34 / eli-h
Selenium-VI	0.260	mg/L		0.002		A3114 C	01/24/19 08:30 / eli-h

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19011426-007  
**Client Sample ID:** E1

**Report Date:** 02/05/19  
**Collection Date:** 01/17/19 12:00  
**Date Received:** 01/18/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	3	mg/L	D	2		A5310 C	01/22/19 22:23 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.7	01/22/19 14:15 / rlh
Antimony	ND	mg/L		0.001		E200.8	01/24/19 19:31 / ped
Arsenic	ND	mg/L		0.001		E200.8	01/24/19 04:28 / car
Barium	ND	mg/L		0.05		E200.7	01/22/19 14:15 / rlh
Beryllium	ND	mg/L		0.001		E200.7	01/22/19 14:15 / rlh
Boron	ND	mg/L		0.05		E200.7	01/22/19 14:15 / rlh
Cadmium	ND	mg/L		0.001		E200.8	01/24/19 04:28 / car
Calcium	35	mg/L		1		E200.7	01/23/19 15:22 / rlh
Chromium	ND	mg/L		0.005		E200.8	01/24/19 04:28 / car
Cobalt	ND	mg/L		0.005		E200.8	01/24/19 04:28 / car
Copper	ND	mg/L		0.005		E200.7	01/22/19 14:15 / rlh
Iron	0.03	mg/L		0.02		E200.7	01/22/19 14:15 / rlh
Lead	ND	mg/L		0.001		E200.8	01/24/19 04:28 / car
Lithium	ND	mg/L		0.1		E200.7	01/21/19 20:37 / rlh
Magnesium	27	mg/L		1		E200.7	01/21/19 20:37 / rlh
Manganese	0.018	mg/L		0.001		E200.8	01/24/19 04:28 / car
Molybdenum	0.017	mg/L		0.001		E200.8	01/24/19 19:31 / ped
Nickel	ND	mg/L		0.005		E200.7	01/22/19 14:15 / rlh
Potassium	2	mg/L		1		E200.7	01/21/19 20:37 / rlh
Silicon	1.2	mg/L		0.1		E200.7	01/22/19 14:15 / rlh
Silver	ND	mg/L		0.001		E200.8	01/24/19 04:28 / car
Sodium	5	mg/L		1		E200.7	01/21/19 20:37 / rlh
Strontium	0.19	mg/L		0.01		E200.7	01/22/19 14:15 / rlh
Thallium	ND	mg/L		0.0005		E200.8	01/26/19 07:22 / ped
Tin	ND	mg/L		0.01		E200.8	01/24/19 04:28 / car
Titanium	ND	mg/L		0.005		E200.7	01/22/19 14:15 / rlh
Uranium	0.0033	mg/L		0.0003		E200.8	01/24/19 04:28 / car
Vanadium	ND	mg/L		0.01		E200.8	01/24/19 04:28 / car
Zinc	ND	mg/L		0.01		E200.7	01/22/19 14:15 / rlh
<b>METALS, TOTAL</b>							
Selenium	0.038	mg/L		0.001		A3114 C	01/23/19 13:37 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.003	mg/L		0.001		A3114 C	01/22/19 14:39 / eli-h
Selenium-VI	0.035	mg/L		0.001		A3114 C	01/24/19 08:30 / eli-h

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19011426-008  
**Client Sample ID:** E2

**Report Date:** 02/05/19  
**Collection Date:** 01/17/19 12:00  
**Date Received:** 01/18/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	3	mg/L	D	2		A5310 C	01/22/19 22:39 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.7	01/22/19 14:20 / rlh
Antimony	ND	mg/L		0.001		E200.8	01/24/19 19:35 / ped
Arsenic	ND	mg/L		0.001		E200.8	01/24/19 04:32 / car
Barium	ND	mg/L		0.05		E200.7	01/22/19 14:20 / rlh
Beryllium	ND	mg/L		0.001		E200.7	01/22/19 14:20 / rlh
Boron	ND	mg/L		0.05		E200.7	01/22/19 14:20 / rlh
Cadmium	ND	mg/L		0.001		E200.8	01/24/19 04:32 / car
Calcium	51	mg/L		1		E200.7	01/23/19 15:26 / rlh
Chromium	ND	mg/L		0.005		E200.8	01/24/19 04:32 / car
Cobalt	ND	mg/L		0.005		E200.8	01/24/19 04:32 / car
Copper	ND	mg/L		0.005		E200.7	01/22/19 14:20 / rlh
Iron	0.11	mg/L		0.02		E200.7	01/22/19 14:20 / rlh
Lead	ND	mg/L		0.001		E200.8	01/24/19 04:32 / car
Lithium	ND	mg/L		0.1		E200.7	01/21/19 20:41 / rlh
Magnesium	42	mg/L		1		E200.7	01/21/19 20:41 / rlh
Manganese	0.003	mg/L		0.001		E200.8	01/24/19 04:32 / car
Molybdenum	0.012	mg/L		0.001		E200.8	01/24/19 19:35 / ped
Nickel	0.005	mg/L		0.005		E200.7	01/22/19 14:20 / rlh
Potassium	2	mg/L		1		E200.7	01/21/19 20:41 / rlh
Silicon	1.4	mg/L		0.1		E200.7	01/22/19 14:20 / rlh
Silver	ND	mg/L		0.001		E200.8	01/24/19 04:32 / car
Sodium	5	mg/L		1		E200.7	01/21/19 20:41 / rlh
Strontium	0.26	mg/L		0.01		E200.7	01/22/19 14:20 / rlh
Thallium	ND	mg/L		0.0005		E200.8	01/26/19 07:26 / ped
Tin	ND	mg/L		0.01		E200.8	01/24/19 04:32 / car
Titanium	ND	mg/L		0.005		E200.7	01/22/19 14:20 / rlh
Uranium	0.0070	mg/L		0.0003		E200.8	01/24/19 04:32 / car
Vanadium	ND	mg/L		0.01		E200.8	01/24/19 19:35 / ped
Zinc	ND	mg/L		0.01		E200.7	01/22/19 14:20 / rlh
<b>METALS, TOTAL</b>							
Selenium	0.057	mg/L		0.001		A3114 C	01/23/19 13:38 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.002	mg/L		0.001		A3114 C	01/22/19 14:44 / eli-h
Selenium-VI	0.055	mg/L		0.001		A3114 C	01/24/19 08:30 / eli-h

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19011426-009  
**Client Sample ID:** E3

**Report Date:** 02/05/19  
**Collection Date:** 01/17/19 12:00  
**Date Received:** 01/18/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	2	mg/L	D	2		A5310 C	01/22/19 22:55 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.7	01/22/19 15:10 / rlh
Antimony	ND	mg/L		0.001		E200.8	01/24/19 19:57 / ped
Arsenic	ND	mg/L		0.001		E200.8	01/24/19 04:37 / car
Barium	0.05	mg/L		0.05		E200.7	01/22/19 15:10 / rlh
Beryllium	ND	mg/L		0.001		E200.7	01/22/19 15:10 / rlh
Boron	0.06	mg/L		0.05		E200.7	01/22/19 15:10 / rlh
Cadmium	ND	mg/L		0.001		E200.8	01/24/19 04:37 / car
Calcium	50	mg/L		1		E200.7	01/22/19 15:10 / rlh
Chromium	ND	mg/L		0.005		E200.8	01/24/19 04:37 / car
Cobalt	ND	mg/L		0.005		E200.8	01/24/19 04:37 / car
Copper	ND	mg/L		0.005		E200.7	01/22/19 15:10 / rlh
Iron	ND	mg/L		0.02		E200.7	01/22/19 15:10 / rlh
Lead	ND	mg/L		0.001		E200.8	01/24/19 04:37 / car
Lithium	ND	mg/L		0.1		E200.7	01/21/19 20:46 / rlh
Magnesium	72	mg/L		1		E200.7	01/21/19 20:46 / rlh
Manganese	ND	mg/L		0.001		E200.8	01/24/19 04:37 / car
Molybdenum	0.004	mg/L		0.001		E200.8	01/24/19 19:57 / ped
Nickel	ND	mg/L		0.005		E200.7	01/22/19 15:10 / rlh
Potassium	3	mg/L		1		E200.7	01/21/19 20:46 / rlh
Silicon	1.7	mg/L		0.1		E200.7	01/22/19 15:10 / rlh
Silver	ND	mg/L		0.001		E200.8	01/24/19 04:37 / car
Sodium	7	mg/L		1		E200.7	01/21/19 20:46 / rlh
Strontium	0.40	mg/L		0.01		E200.7	01/22/19 15:10 / rlh
Thallium	ND	mg/L		0.0005		E200.8	01/26/19 07:30 / ped
Tin	ND	mg/L		0.01		E200.8	01/24/19 04:37 / car
Titanium	ND	mg/L		0.005		E200.7	01/22/19 15:10 / rlh
Uranium	0.0075	mg/L		0.0003		E200.8	01/24/19 04:37 / car
Vanadium	ND	mg/L		0.01		E200.8	01/24/19 19:57 / ped
Zinc	ND	mg/L		0.01		E200.7	01/22/19 15:10 / rlh
<b>METALS, TOTAL</b>							
Selenium	0.067	mg/L		0.001		A3114 C	01/23/19 13:40 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.004	mg/L		0.001		A3114 C	01/22/19 14:46 / eli-h
Selenium-VI	0.063	mg/L		0.001		A3114 C	01/24/19 08:30 / eli-h

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.





### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19011426-010  
**Client Sample ID:** E4

**Report Date:** 02/05/19  
**Collection Date:** 01/17/19 12:00  
**Date Received:** 01/18/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	3	mg/L	D	2		A5310 C	01/22/19 23:10 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.7	01/22/19 15:14 / rlh
Antimony	ND	mg/L		0.001		E200.8	01/24/19 20:01 / ped
Arsenic	ND	mg/L		0.001		E200.8	01/24/19 04:41 / car
Barium	ND	mg/L		0.05		E200.7	01/22/19 15:14 / rlh
Beryllium	ND	mg/L		0.001		E200.7	01/22/19 15:14 / rlh
Boron	0.06	mg/L		0.05		E200.7	01/22/19 15:14 / rlh
Cadmium	ND	mg/L		0.001		E200.8	01/24/19 04:41 / car
Calcium	51	mg/L		1		E200.7	01/22/19 15:14 / rlh
Chromium	ND	mg/L		0.005		E200.8	01/24/19 04:41 / car
Cobalt	ND	mg/L		0.005		E200.8	01/24/19 04:41 / car
Copper	ND	mg/L		0.005		E200.7	01/22/19 15:14 / rlh
Iron	ND	mg/L		0.02		E200.7	01/22/19 15:14 / rlh
Lead	ND	mg/L		0.001		E200.8	01/24/19 04:41 / car
Lithium	ND	mg/L		0.1		E200.7	01/21/19 20:50 / rlh
Magnesium	76	mg/L		1		E200.7	01/21/19 20:50 / rlh
Manganese	ND	mg/L		0.001		E200.8	01/24/19 04:41 / car
Molybdenum	0.004	mg/L		0.001		E200.8	01/24/19 20:01 / ped
Nickel	ND	mg/L		0.005		E200.7	01/22/19 15:14 / rlh
Potassium	3	mg/L		1		E200.7	01/21/19 20:50 / rlh
Silicon	1.5	mg/L		0.1		E200.7	01/22/19 15:14 / rlh
Silver	ND	mg/L		0.001		E200.8	01/24/19 04:41 / car
Sodium	8	mg/L		1		E200.7	01/21/19 20:50 / rlh
Strontium	0.38	mg/L		0.01		E200.7	01/22/19 15:14 / rlh
Thallium	ND	mg/L		0.0005		E200.8	01/26/19 07:34 / ped
Tin	ND	mg/L		0.01		E200.8	01/24/19 04:41 / car
Titanium	ND	mg/L		0.005		E200.7	01/22/19 15:14 / rlh
Uranium	0.0082	mg/L		0.0003		E200.8	01/24/19 04:41 / car
Vanadium	ND	mg/L		0.01		E200.8	01/24/19 04:41 / car
Zinc	0.01	mg/L		0.01		E200.7	01/22/19 15:14 / rlh
<b>METALS, TOTAL</b>							
Selenium	0.074	mg/L		0.001		A3114 C	01/23/19 13:42 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.001	mg/L		0.001		A3114 C	01/22/19 14:51 / eli-h
Selenium-VI	0.073	mg/L		0.001		A3114 C	01/24/19 08:30 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19011426-011  
**Client Sample ID:** E5

**Report Date:** 02/05/19  
**Collection Date:** 01/17/19 12:00  
**Date Received:** 01/18/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	6	mg/L	D	2		A5310 C	01/23/19 00:00 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.7	01/22/19 15:18 / rlh
Antimony	ND	mg/L		0.001		E200.8	01/24/19 20:05 / ped
Arsenic	ND	mg/L		0.001		E200.8	01/24/19 04:45 / car
Barium	ND	mg/L		0.05		E200.7	01/22/19 15:18 / rlh
Beryllium	ND	mg/L		0.001		E200.7	01/22/19 15:18 / rlh
Boron	ND	mg/L		0.05		E200.7	01/22/19 15:18 / rlh
Cadmium	ND	mg/L		0.001		E200.8	01/24/19 04:45 / car
Calcium	62	mg/L		1		E200.7	01/22/19 15:18 / rlh
Chromium	ND	mg/L		0.005		E200.8	01/24/19 04:45 / car
Cobalt	ND	mg/L		0.005		E200.8	01/24/19 04:45 / car
Copper	ND	mg/L		0.005		E200.7	01/22/19 15:18 / rlh
Iron	ND	mg/L		0.02		E200.7	01/22/19 15:18 / rlh
Lead	ND	mg/L		0.001		E200.8	01/24/19 04:45 / car
Lithium	ND	mg/L		0.1		E200.7	01/21/19 20:54 / rlh
Magnesium	49	mg/L		1		E200.7	01/21/19 20:54 / rlh
Manganese	0.003	mg/L		0.001		E200.8	01/24/19 04:45 / car
Molybdenum	0.062	mg/L		0.001		E200.8	01/24/19 20:05 / ped
Nickel	0.006	mg/L		0.005		E200.7	01/22/19 15:18 / rlh
Potassium	2	mg/L		1		E200.7	01/21/19 20:54 / rlh
Silicon	1.5	mg/L		0.1		E200.7	01/22/19 15:18 / rlh
Silver	ND	mg/L		0.001		E200.8	01/24/19 04:45 / car
Sodium	5	mg/L		1		E200.7	01/21/19 20:54 / rlh
Strontium	0.32	mg/L		0.01		E200.7	01/22/19 15:18 / rlh
Thallium	ND	mg/L		0.0005		E200.8	01/26/19 07:38 / ped
Tin	ND	mg/L		0.01		E200.8	01/24/19 04:45 / car
Titanium	ND	mg/L		0.005		E200.7	01/22/19 15:18 / rlh
Uranium	0.0059	mg/L		0.0003		E200.8	01/24/19 04:45 / car
Vanadium	ND	mg/L		0.01		E200.8	01/24/19 04:45 / car
Zinc	ND	mg/L		0.01		E200.7	01/22/19 15:18 / rlh
<b>METALS, TOTAL</b>							
Selenium	0.054	mg/L		0.001		A3114 C	01/23/19 13:44 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 C	01/22/19 14:53 / eli-h
Selenium-VI	0.054	mg/L		0.001		A3114 C	01/24/19 08:30 / eli-h

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** Enviromin Inc

**Report Date:** 01/24/19

**Project:** NWP Phase II

**Work Order:** B19011426

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method:</b> A5310 C								Analytical Run: TOC3-C_190122A		
<b>Lab ID:</b> CCV-10666	Continuing Calibration Verification Standard									
Organic Carbon, Dissolved (DOC)	4.90	mg/L	0.50	98	90	110			01/22/19 20:10	
<b>Method:</b> A5310 C								Batch: R243495		
<b>Lab ID:</b> LCS-10553	Laboratory Control Sample									
Organic Carbon, Dissolved (DOC)	4.77	mg/L	0.50	95	90	110			Run: TOC3-C_190122A 01/22/19 19:45	
<b>Lab ID:</b> MBLK	Method Blank									
Organic Carbon, Dissolved (DOC)	ND	mg/L	0.5						Run: TOC3-C_190122A 01/22/19 20:00	
<b>Lab ID:</b> B19011426-002CMS	Sample Matrix Spike									
Organic Carbon, Dissolved (DOC)	48.6	mg/L	4.0	97	85	115			Run: TOC3-C_190122A 01/22/19 20:51	
<b>Lab ID:</b> B19011426-002CMSD	Sample Matrix Spike Duplicate									
Organic Carbon, Dissolved (DOC)	48.4	mg/L	4.0	97	85	115	0.3	20	Run: TOC3-C_190122A 01/22/19 21:06	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc

**Report Date:** 01/29/19

**Project:** NWP Phase II

**Work Order:** B19011426

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A3114 C									tical Run: SELENIUM PSA MILLENIUM_190122A
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard								01/22/19 13:37
Selenium-IV	0.0197	mg/L	0.0010	99	90	110			
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								01/22/19 14:10
Selenium-IV	0.0183	mg/L	0.0010	91	90	110			
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								01/22/19 14:37
Selenium-IV	0.0187	mg/L	0.0010	93	90	110			
<b>Method:</b> A3114 C									Batch: 44493
<b>Lab ID:</b> MB-44493	Method Blank								Run: SELENIUM PSA MILLENIUM_ 01/22/19 14:22
Selenium-IV	ND	mg/L	0.0006						
<b>Lab ID:</b> LFB-44493	Laboratory Fortified Blank								Run: SELENIUM PSA MILLENIUM_ 01/22/19 14:24
Selenium-IV	0.0185	mg/L	0.0010	93	85	115			
<b>Lab ID:</b> B19011426-007BMS	Sample Matrix Spike								Run: SELENIUM PSA MILLENIUM_ 01/22/19 14:41
Selenium-IV	0.0409	mg/L	0.0020	95	70	130			
<b>Lab ID:</b> B19011426-007BMSD	Sample Matrix Spike Duplicate								Run: SELENIUM PSA MILLENIUM_ 01/22/19 14:43
Selenium-IV	0.0408	mg/L	0.0020	95	70	130	0.4	20	
<b>Lab ID:</b> B19011426-009BMS	Sample Matrix Spike								Run: SELENIUM PSA MILLENIUM_ 01/22/19 14:48
Selenium-IV	0.0432	mg/L	0.0020	97	70	130			
<b>Lab ID:</b> B19011426-009BMSD	Sample Matrix Spike Duplicate								Run: SELENIUM PSA MILLENIUM_ 01/22/19 14:50
Selenium-IV	0.0435	mg/L	0.0020	98	70	130	0.9	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc

**Report Date:** 01/29/19

**Project:** NWP Phase II

**Work Order:** B19011426

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A3114 C									ritical Run: SELENIUM PSA MILLENIUM_190123A
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard								01/23/19 13:05
Selenium	0.0390	mg/L	0.0010	98	90	110			
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								01/23/19 13:08
Selenium	0.0190	mg/L	0.0010	95	90	110			
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								01/23/19 13:32
Selenium	0.0189	mg/L	0.0010	95	90	110			
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								01/23/19 13:47
Selenium	0.0189	mg/L	0.0010	94	90	110			
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								01/23/19 14:04
Selenium	0.0188	mg/L	0.0010	94	90	110			
<b>Method:</b> A3114 C									Batch: 44500
<b>Lab ID:</b> MB-44500	Method Blank								Run: SELENIUM PSA MILLENIUM_ 01/23/19 13:11
Selenium	ND	mg/L	0.0002						
<b>Lab ID:</b> LFB-44500	Laboratory Fortified Blank								Run: SELENIUM PSA MILLENIUM_ 01/23/19 13:13
Selenium	0.0383	mg/L	0.0010	96	85	115			
<b>Lab ID:</b> B19011426-003BMS	Sample Matrix Spike								Run: SELENIUM PSA MILLENIUM_ 01/23/19 13:21
Selenium	0.317	mg/L	0.0020	113	70	130			
<b>Lab ID:</b> B19011426-003BMSD	Sample Matrix Spike Duplicate								Run: SELENIUM PSA MILLENIUM_ 01/23/19 13:23
Selenium	0.311	mg/L	0.0020	106	70	130	1.9	20	
<b>Lab ID:</b> B19011426-004BMS	Sample Matrix Spike								Run: SELENIUM PSA MILLENIUM_ 01/23/19 13:27
Selenium	0.361	mg/L	0.0020	97	70	130			
<b>Lab ID:</b> B19011426-004BMSD	Sample Matrix Spike Duplicate								Run: SELENIUM PSA MILLENIUM_ 01/23/19 13:28
Selenium	0.359	mg/L	0.0020	95	70	130	0.4	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 02/05/19

**Project:** NWP Phase II

**Work Order:** B19011426

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.7</b>		Analytical Run: ICP203-B_190121A									
<b>Lab ID: ICV</b>	7	Continuing Calibration Verification Standard							01/21/19 13:12		
Boron		2.48	mg/L	0.10	99	95	105				
Lithium		1.21	mg/L	0.10	97	95	105				
Magnesium		24.4	mg/L	1.0	98	95	105				
Potassium		24.4	mg/L	1.0	98	95	105				
Silicon		4.95	mg/L	0.10	99	95	105				
Sodium		24.1	mg/L	1.0	97	95	105				
Zinc		2.46	mg/L	0.010	98	95	105				
<b>Method: E200.7</b>		Batch: R314204									
<b>Lab ID: MB-6500DIS190121A</b>	7	Method Blank							Run: ICP203-B_190121A 01/21/19 11:02		
Boron		ND	mg/L	0.01							
Lithium		ND	mg/L	0.02							
Magnesium		ND	mg/L	0.02							
Potassium		ND	mg/L	0.1							
Silicon		ND	mg/L	0.07							
Sodium		ND	mg/L	0.1							
Zinc		ND	mg/L	0.002							
<b>Lab ID: LFB-6500DIS190121A</b>	7	Laboratory Fortified Blank							Run: ICP203-B_190121A 01/21/19 11:10		
Boron		0.991	mg/L	0.10	99	85	115				
Lithium		1.11	mg/L	0.10	111	85	115				
Magnesium		50.4	mg/L	1.0	101	85	115				
Potassium		55.6	mg/L	1.0	111	85	115				
Silicon		9.76	mg/L	0.10	98	85	115				
Sodium		56.3	mg/L	1.0	113	85	115				
Zinc		0.973	mg/L	0.010	97	85	115				
<b>Lab ID: B19011426-005AMS2</b>	7	Sample Matrix Spike							Run: ICP203-B_190121A 01/21/19 20:16		
Boron		1.82	mg/L	0.050	91	70	130				
Lithium		2.06	mg/L	0.10	103	70	130				
Magnesium		97.3	mg/L	1.0	96	70	130				
Potassium		94.8	mg/L	1.0	95	70	130				
Silicon		20.1	mg/L	0.15	90	70	130				
Sodium		120	mg/L	1.0	93	70	130				
Zinc		1.79	mg/L	0.010	89	70	130				
<b>Lab ID: B19011426-005AMSD</b>	7	Sample Matrix Spike Duplicate							Run: ICP203-B_190121A 01/21/19 20:21		
Boron		1.82	mg/L	0.050	91	70	130	0.1	20		
Lithium		2.03	mg/L	0.10	102	70	130	1.4	20		
Magnesium		97.1	mg/L	1.0	96	70	130	0.3	20		
Potassium		93.1	mg/L	1.0	93	70	130	1.9	20		
Silicon		20.0	mg/L	0.15	89	70	130	0.8	20		
Sodium		119	mg/L	1.0	92	70	130	0.8	20		
Zinc		1.77	mg/L	0.010	88	70	130	1.1	20		

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II

**Report Date:** 02/05/19  
**Work Order:** B19011426

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>										Analytical Run: ICP203-B_190122A
<b>Lab ID: ICV</b>	12 Continuing Calibration Verification Standard									01/22/19 10:05
Aluminum		2.44	mg/L	0.10	97	95	105			
Barium		2.37	mg/L	0.10	95	95	105			
Beryllium		1.26	mg/L	0.010	101	95	105			
Boron		2.50	mg/L	0.10	100	95	105			
Calcium		23.9	mg/L	1.0	96	95	105			
Copper		2.44	mg/L	0.010	98	95	105			
Iron		2.57	mg/L	0.020	103	95	105			
Nickel		2.44	mg/L	0.050	98	95	105			
Silicon		4.98	mg/L	0.10	100	95	105			
Strontium		2.53	mg/L	0.10	101	95	105			
Titanium		2.51	mg/L	0.010	100	95	105			
Zinc		2.56	mg/L	0.010	102	95	105			
<b>Method: E200.7</b>										Batch: R314256
<b>Lab ID: MB-6500DIS190122A</b>	12 Method Blank									Run: ICP203-B_190122A 01/22/19 10:13
Aluminum		ND	mg/L	0.03						
Barium		ND	mg/L	0.0010						
Beryllium		ND	mg/L	0.0005						
Boron		ND	mg/L	0.01						
Calcium		ND	mg/L	0.07						
Copper		ND	mg/L	0.004						
Iron		ND	mg/L	0.02						
Nickel		ND	mg/L	0.02						
Silicon		ND	mg/L	0.07						
Strontium		ND	mg/L	0.001						
Titanium		ND	mg/L	0.006						
Zinc		ND	mg/L	0.002						
<b>Lab ID: LFB-6500DIS190122A</b>	12 Laboratory Fortified Blank									Run: ICP203-B_190122A 01/22/19 10:21
Aluminum		5.20	mg/L	0.10	104	85	115			
Barium		0.910	mg/L	0.10	91	85	115			
Beryllium		0.469	mg/L	0.010	94	85	115			
Boron		1.02	mg/L	0.10	102	85	115			
Calcium		47.0	mg/L	1.0	94	85	115			
Copper		0.987	mg/L	0.010	99	85	115			
Iron		4.77	mg/L	0.020	95	85	115			
Nickel		0.944	mg/L	0.050	94	85	115			
Silicon		10.0	mg/L	0.10	100	85	115			
Strontium		0.964	mg/L	0.10	96	85	115			
Titanium		0.950	mg/L	0.010	95	85	115			
Zinc		1.01	mg/L	0.010	101	85	115			
<b>Lab ID: B19011317-001BMS2</b>	12 Sample Matrix Spike									Run: ICP203-B_190122A 01/22/19 13:00
Aluminum		5.35	mg/L	0.036	107	70	130			
Barium		0.892	mg/L	0.050	87	70	130			

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II

**Report Date:** 02/05/19  
**Work Order:** B19011426

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>										
Batch: R314256										
<b>Lab ID:</b>	<b>B19011317-001BMS2</b>	12 Sample Matrix Spike			Run: ICP203-B_190122A				01/22/19 13:00	
Beryllium		0.407	mg/L	0.0010	81	70	130			
Boron		1.02	mg/L	0.050	100	70	130			
Calcium		103	mg/L	1.0	86	70	130			
Copper		0.997	mg/L	0.0050	100	70	130			
Iron		4.47	mg/L	0.020	89	70	130			
Nickel		0.894	mg/L	0.018	89	70	130			
Silicon		14.8	mg/L	0.10	98	70	130			
Strontium		1.23	mg/L	0.010	91	70	130			
Titanium		0.885	mg/L	0.0066	89	70	130			
Zinc		0.966	mg/L	0.010	97	70	130			
<b>Lab ID:</b>	<b>B19011317-001BMSD</b>	12 Sample Matrix Spike Duplicate			Run: ICP203-B_190122A				01/22/19 13:04	
Aluminum		5.30	mg/L	0.036	106	70	130	1.0	20	
Barium		0.893	mg/L	0.050	88	70	130	0.2	20	
Beryllium		0.407	mg/L	0.0010	81	70	130	0.2	20	
Boron		1.02	mg/L	0.050	100	70	130	0.5	20	
Calcium		102	mg/L	1.0	84	70	130	0.8	20	
Copper		0.996	mg/L	0.0050	100	70	130	0.1	20	
Iron		4.52	mg/L	0.020	90	70	130	1.0	20	
Nickel		0.893	mg/L	0.018	89	70	130	0.2	20	
Silicon		14.6	mg/L	0.10	96	70	130	1.4	20	
Strontium		1.23	mg/L	0.010	91	70	130	0.0	20	
Titanium		0.884	mg/L	0.0066	88	70	130	0.1	20	
Zinc		0.953	mg/L	0.010	95	70	130	1.4	20	
<b>Lab ID:</b>	<b>B19011426-008AMS2</b>	12 Sample Matrix Spike			Run: ICP203-B_190122A				01/22/19 14:24	
Aluminum		5.29	mg/L	0.036	106	70	130			
Barium		0.916	mg/L	0.050	87	70	130			
Beryllium		0.398	mg/L	0.0010	80	70	130			
Boron		1.03	mg/L	0.050	99	70	130			
Calcium		86.3	mg/L	1.0	86	70	130			
Copper		0.998	mg/L	0.0050	100	70	130			
Iron		4.61	mg/L	0.020	90	70	130			
Nickel		0.902	mg/L	0.018	90	70	130			
Silicon		11.6	mg/L	0.10	102	70	130			
Strontium		1.17	mg/L	0.010	91	70	130			
Titanium		0.887	mg/L	0.0066	89	70	130			
Zinc		0.983	mg/L	0.010	98	70	130			
<b>Lab ID:</b>	<b>B19011426-008AMSD</b>	12 Sample Matrix Spike Duplicate			Run: ICP203-B_190122A				01/22/19 14:28	
Aluminum		5.24	mg/L	0.036	105	70	130	0.8	20	
Barium		0.910	mg/L	0.050	87	70	130	0.6	20	
Beryllium		0.395	mg/L	0.0010	79	70	130	0.7	20	
Boron		1.03	mg/L	0.050	98	70	130	0.5	20	
Calcium		85.7	mg/L	1.0	85	70	130	0.8	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.





# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 02/05/19

**Project:** NWP Phase II

**Work Order:** B19011426

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b> <span style="float: right;">Batch: R314256</span>										
<b>Lab ID: B19011426-008AMSD</b>	12	Sample Matrix Spike Duplicate					Run: ICP203-B_190122A			01/22/19 14:28
Copper		0.989	mg/L	0.0050	99	70	130	0.9	20	
Iron		4.58	mg/L	0.020	90	70	130	0.6	20	
Nickel		0.891	mg/L	0.018	89	70	130	1.2	20	
Silicon		11.6	mg/L	0.10	102	70	130	0.0	20	
Strontium		1.16	mg/L	0.010	90	70	130	0.7	20	
Titanium		0.886	mg/L	0.0066	89	70	130	0.0	20	
Zinc		0.965	mg/L	0.010	96	70	130	1.9	20	
<b>Lab ID: B19011540-001CDIL</b>	12	Serial Dilution					Run: ICP203-B_190122A			01/22/19 17:29
Aluminum		ND	mg/L	0.17		0	0		10	
Barium		0.0670	mg/L	0.10		0	0		10	
Beryllium		ND	mg/L	0.010		0	0		10	
Boron		ND	mg/L	0.10		0	0		10	
Calcium		71.9	mg/L	1.0		0	0	5.4	10	
Copper		ND	mg/L	0.018		0	0		10	
Iron		ND	mg/L	0.084		0	0		10	
Nickel		ND	mg/L	0.085		0	0		10	
Silicon		11.1	mg/L	0.37		0	0	2.7	10	
Strontium		0.723	mg/L	0.10		0	0	0.4	10	
Titanium		ND	mg/L	0.032		0	0		10	
Zinc		ND	mg/L	0.012		0	0		10	
<b>Method: E200.7</b> <span style="float: right;">Analytical Run: ICP204-B_190123A</span>										
<b>Lab ID: ICV</b>	2	Continuing Calibration Verification Standard								01/23/19 10:04
Calcium		25.4	mg/L	1.0	101	95	105			
Potassium		26.1	mg/L	1.0	104	95	105			
<b>Method: E200.7</b> <span style="float: right;">Batch: R314323</span>										
<b>Lab ID: MB-7400DIS180123A</b>	2	Method Blank					Run: ICP204-B_190123A			01/23/19 10:13
Calcium		ND	mg/L	0.07						
Potassium		ND	mg/L	0.1						
<b>Lab ID: LFB-7400DIS180123A</b>	2	Laboratory Fortified Blank					Run: ICP204-B_190123A			01/23/19 10:21
Calcium		50.0	mg/L	1.0	100	85	115			
Potassium		50.5	mg/L	1.0	101	85	115			
<b>Lab ID: B19011426-008AMS2</b>	2	Sample Matrix Spike					Run: ICP204-B_190123A			01/23/19 15:31
Calcium		299	mg/L	1.0	99	70	130			
Potassium		256	mg/L	1.0	101	70	130			
<b>Lab ID: B19011426-008AMSD</b>	2	Sample Matrix Spike Duplicate					Run: ICP204-B_190123A			01/23/19 15:43
Calcium		290	mg/L	1.0	95	70	130	3.3	20	
Potassium		259	mg/L	1.0	103	70	130	1.2	20	

**Qualifiers:**

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ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II

**Report Date:** 02/05/19  
**Work Order:** B19011426

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.8</b>								Analytical Run: ICPMS206-B_190123A			
<b>Lab ID: QCS</b>	10 Initial Calibration Verification Standard							01/23/19 23:28			
Arsenic		0.0495	mg/L	0.0050	99	90	110				
Cadmium		0.0251	mg/L	0.0010	100	90	110				
Chromium		0.0507	mg/L	0.010	101	90	110				
Cobalt		0.0533	mg/L	0.010	107	90	110				
Lead		0.0502	mg/L	0.010	100	90	110				
Manganese		0.269	mg/L	0.010	107	90	110				
Silver		0.0254	mg/L	0.0050	101	90	110				
Tin		0.0495	mg/L	0.10	99	90	110				
Uranium		0.0505	mg/L	0.00030	101	90	110				
Vanadium		0.0511	mg/L	0.10	102	90	110				
<hr/>											
<b>Method: E200.8</b>								Batch: R314357			
<b>Lab ID: LRB</b>	10 Method Blank							Run: ICPMS206-B_190123A		01/23/19 13:20	
Arsenic		ND	mg/L	0.0002							
Cadmium		ND	mg/L	0.00003							
Chromium		ND	mg/L	0.0002							
Cobalt		ND	mg/L	0.00004							
Lead		ND	mg/L	0.00005							
Manganese		0.0001	mg/L	0.00010							
Silver		ND	mg/L	0.00002							
Tin		ND	mg/L	0.001							
Uranium		ND	mg/L	0.00005							
Vanadium		ND	mg/L	0.001							
<hr/>											
<b>Lab ID: LFB</b>	10 Laboratory Fortified Blank							Run: ICPMS206-B_190123A		01/23/19 13:42	
Arsenic		0.0493	mg/L	0.0050	99	85	115				
Cadmium		0.0491	mg/L	0.0010	98	85	115				
Chromium		0.0499	mg/L	0.010	100	85	115				
Cobalt		0.0473	mg/L	0.010	95	85	115				
Lead		0.0491	mg/L	0.010	98	85	115				
Manganese		0.0484	mg/L	0.010	97	85	115				
Silver		0.0194	mg/L	0.0050	97	85	115				
Tin		0.0507	mg/L	0.10	101	85	115				
Uranium		0.0487	mg/L	0.00030	97	85	115				
Vanadium		0.0459	mg/L	0.10	92	85	115				
<hr/>											
<b>Lab ID: B19011426-001AMS</b>	10 Sample Matrix Spike							Run: ICPMS206-B_190123A		01/24/19 03:37	
Arsenic		0.0509	mg/L	0.0010	101	70	130				
Cadmium		0.0519	mg/L	0.0010	104	70	130				
Chromium		0.0523	mg/L	0.0050	105	70	130				
Cobalt		0.0517	mg/L	0.0050	103	70	130				
Lead		0.0522	mg/L	0.0010	104	70	130				
Manganese		0.0512	mg/L	0.0010	102	70	130				
Silver		0.0208	mg/L	0.0010	104	70	130				
Tin		0.0534	mg/L	0.010	107	70	130				

**Qualifiers:**

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ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 02/05/19

**Project:** NWP Phase II

**Work Order:** B19011426

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>										
Batch: R314357										
<b>Lab ID:</b>	<b>B19011426-001AMS</b>	10 Sample Matrix Spike					Run: ICPMS206-B_190123A		01/24/19 03:37	
Uranium		0.0539	mg/L	0.00030	108	70	130			
Vanadium		0.0568	mg/L	0.010	114	70	130			
<b>Lab ID:</b>	<b>B19011426-001AMSD</b>	10 Sample Matrix Spike Duplicate					Run: ICPMS206-B_190123A		01/24/19 03:41	
Arsenic		0.0502	mg/L	0.0010	100	70	130	1.3	20	
Cadmium		0.0498	mg/L	0.0010	100	70	130	4.1	20	
Chromium		0.0505	mg/L	0.0050	101	70	130	3.6	20	
Cobalt		0.0515	mg/L	0.0050	103	70	130	0.4	20	
Lead		0.0509	mg/L	0.0010	102	70	130	2.6	20	
Manganese		0.0502	mg/L	0.0010	100	70	130	2.0	20	
Silver		0.0203	mg/L	0.0010	102	70	130	2.1	20	
Tin		0.0530	mg/L	0.010	106	70	130	0.8	20	
Uranium		0.0522	mg/L	0.00030	104	70	130	3.2	20	
Vanadium		0.0565	mg/L	0.010	113	70	130	0.6	20	
<b>Lab ID:</b>	<b>B19011426-011AMS</b>	10 Sample Matrix Spike					Run: ICPMS206-B_190123A		01/24/19 04:50	
Arsenic		0.0501	mg/L	0.0010	100	70	130			
Cadmium		0.0530	mg/L	0.0010	106	70	130			
Chromium		0.0508	mg/L	0.0050	101	70	130			
Cobalt		0.0532	mg/L	0.0050	106	70	130			
Lead		0.0529	mg/L	0.0010	106	70	130			
Manganese		0.0532	mg/L	0.0010	101	70	130			
Silver		0.0214	mg/L	0.0010	107	70	130			
Tin		0.0576	mg/L	0.010	107	70	130			
Uranium		0.0606	mg/L	0.00030	109	70	130			
Vanadium		0.0553	mg/L	0.010	111	70	130			
<b>Lab ID:</b>	<b>B19011426-011AMSD</b>	10 Sample Matrix Spike Duplicate					Run: ICPMS206-B_190123A		01/24/19 04:54	
Arsenic		0.0543	mg/L	0.0010	109	70	130	8.1	20	
Cadmium		0.0517	mg/L	0.0010	103	70	130	2.3	20	
Chromium		0.0558	mg/L	0.0050	111	70	130	9.4	20	
Cobalt		0.0525	mg/L	0.0050	104	70	130	1.4	20	
Lead		0.0517	mg/L	0.0010	103	70	130	2.4	20	
Manganese		0.0574	mg/L	0.0010	109	70	130	7.5	20	
Silver		0.0210	mg/L	0.0010	105	70	130	1.8	20	
Tin		0.0620	mg/L	0.010	116	70	130	7.4	20	
Uranium		0.0591	mg/L	0.00030	107	70	130	2.4	20	
Vanadium		0.0547	mg/L	0.010	109	70	130	1.2	20	

**Qualifiers:**

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# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II

**Report Date:** 02/05/19  
**Work Order:** B19011426

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.8</b>								Analytical Run: ICPMS206-B_190124A			
<b>Lab ID: Sb QCS</b>	Initial Calibration Verification Standard									01/24/19 14:04	
Antimony		0.0462	mg/L	0.050	92	90	110				
<b>Lab ID: QCS</b>	2 Initial Calibration Verification Standard									01/24/19 14:08	
Molybdenum		0.0452	mg/L	0.0050	90	90	110				
Vanadium		0.0486	mg/L	0.10	97	90	110				
<b>Method: E200.8</b>								Batch: R314430			
<b>Lab ID: LRB</b>	3 Method Blank									Run: ICPMS206-B_190124A	01/24/19 14:38
Antimony		ND	mg/L	0.0004							
Molybdenum		ND	mg/L	0.00005							
Vanadium		ND	mg/L	0.001							
<b>Lab ID: LFB</b>	3 Laboratory Fortified Blank									Run: ICPMS206-B_190124A	01/24/19 14:42
Antimony		0.0432	mg/L	0.050	86	85	115				
Molybdenum		0.0496	mg/L	0.0050	99	85	115				
Vanadium		0.0472	mg/L	0.10	94	85	115				
<b>Lab ID: B19011426-001AMS</b>	3 Sample Matrix Spike									Run: ICPMS206-B_190124A	01/24/19 18:57
Antimony		0.0459	mg/L	0.0010	92	70	130				
Molybdenum		0.0537	mg/L	0.0010	107	70	130				
Vanadium		0.0498	mg/L	0.010	100	70	130				
<b>Lab ID: B19011426-001AMSD</b>	3 Sample Matrix Spike Duplicate									Run: ICPMS206-B_190124A	01/24/19 19:01
Antimony		0.0461	mg/L	0.0010	92	70	130	0.5	20		
Molybdenum		0.0553	mg/L	0.0010	110	70	130	2.9	20		
Vanadium		0.0499	mg/L	0.010	100	70	130	0.3	20		
<b>Lab ID: B19011453-001BMS</b>	3 Sample Matrix Spike									Run: ICPMS206-B_190124A	01/24/19 20:14
Antimony		0.0485	mg/L	0.0010	97	70	130				
Molybdenum		0.0517	mg/L	0.0010	99	70	130				
Vanadium		0.0590	mg/L	0.010	100	70	130				
<b>Lab ID: B19011453-001BMSD</b>	3 Sample Matrix Spike Duplicate									Run: ICPMS206-B_190124A	01/24/19 20:18
Antimony		0.0504	mg/L	0.0010	101	70	130	3.8	20		
Molybdenum		0.0547	mg/L	0.0010	105	70	130	5.6	20		
Vanadium		0.0634	mg/L	0.010	109	70	130	7.2	20		

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 02/05/19

**Project:** NWP Phase II

**Work Order:** B19011426

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.8</b>								Analytical Run: ICPMS206-B_190130A			
<b>Lab ID: QCS</b>	Initial Calibration Verification Standard										
Antimony		0.0478	mg/L	0.050	96	90	110			01/30/19 18:05	
<b>Method: E200.8</b>								Batch: R314693			
<b>Lab ID: LRB</b>	Method Blank										
Antimony		ND	mg/L	0.0004						01/30/19 14:05	
<b>Lab ID: LFB</b>	Laboratory Fortified Blank										
Antimony		0.0466	mg/L	0.050	93	85	115			01/30/19 14:15	
<b>Lab ID: B19012059-004BMS</b>	Sample Matrix Spike										
Antimony		0.0476	mg/L	0.0010	95	70	130			01/30/19 18:44	
<b>Lab ID: B19012059-004BMSD</b>	Sample Matrix Spike Duplicate										
Antimony		0.0469	mg/L	0.0010	94	70	130	1.5	20	01/30/19 18:49	
<b>Method: E200.8</b>								Analytical Run: ICPMS207-B_190125B			
<b>Lab ID: QCS</b>	Initial Calibration Verification Standard										
Thallium		0.0504	mg/L	0.10	101	90	110			01/26/19 01:03	
<b>Method: E200.8</b>								Batch: R314490			
<b>Lab ID: LRB</b>	Method Blank										
Thallium		ND	mg/L	0.00004						01/25/19 19:17	
<b>Lab ID: LFB</b>	Laboratory Fortified Blank										
Thallium		0.0526	mg/L	0.10	105	85	115			01/25/19 19:21	
<b>Lab ID: B19011426-001AMS</b>	Sample Matrix Spike										
Thallium		0.101	mg/L	0.00050	101	70	130			01/26/19 05:41	
<b>Lab ID: B19011426-001AMSD</b>	Sample Matrix Spike Duplicate										
Thallium		0.102	mg/L	0.00050	102	70	130	1.0	20	01/26/19 05:45	
<b>Lab ID: B19011426-011AMS</b>	Sample Matrix Spike										
Thallium		0.0522	mg/L	0.00050	104	70	130			01/26/19 07:59	
<b>Lab ID: B19011426-011AMSD</b>	Sample Matrix Spike Duplicate										
Thallium		0.0510	mg/L	0.00050	102	70	130	2.5	20	01/26/19 08:03	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# Work Order Receipt Checklist

Enviromin Inc

B19011426

Login completed by: Briana G. Sangiuliano

Date Received: 1/18/2019

Reviewed by: BL2000\gmccartney

Received by: qej

Reviewed Date: 1/18/2019

Carrier name: Return-UPS Ground

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	2.4°C Blue Ice		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>

## Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

## Contact and Corrective Action Comments:

A custody seal was received but not intact on shipping container.

# Chain of Custody & Analytical Request Record

Report information if different than account information

**Account Information (calling information)**

Company Name: Environmental, Inc.  
 Contact: Gerrit Eganew  
 Phone: 208-315-4218  
 Mailing Address: 524 Professional Drive  
 City, State, Zip: Bozeman, MT 59718  
 Email: gerriteganew@environmental.com  
 Receive Invoice  Hard Copy  Email   
 Purchase Order: 4093  Quota  Bottles Order

Company Name: \_\_\_\_\_  
 Contact: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_  
 City, State, Zip: \_\_\_\_\_  
 Email: \_\_\_\_\_  
 Receive Report  Hard Copy  Email   
 Special Report/Order:  LEVEL IV  NELAC  EDDEBT (contact laboratory)  Other

**Comments**  
 Run ES for same  
 as pg. 1 of CA  
 Per Gerrit. SE  
 Ec. 3/11/819

**Project Information**

Project Name, PWSID, Permit, etc.: NWR Phase II  
 Sampler Name: \_\_\_\_\_  
 EPA/State Compliance:  Yes  No  
 Sample Origin State: \_\_\_\_\_  
 MINGING CLIENTS, please indicate sample type.  
 \*If one has been processed or retested, call before sending.  
 Byproduct 11 (e2 material)  Unprocessed ore (NOT ground or retest)

**Analysis Requested**

Matrix Codes:  
 A - Air  
 W - Water  
 S - Solids  
 V - Vegetation  
 B - Biomass  
 O - Other  
 DW - Water

Number of Containers: 1 Matrix Code: W

Sample Identification (Name, Location, Interval, etc.)	Collection		Date	Time	Matrix Code	Number of Containers	Matrix Code	Analysis Requested
	Date	Time						
F	1/17/19	12:00 PM			W	1	W	X Selenium Spec. X Discolored Metals
R1								
R2								
R3								
R4								
R5								
E1								
E2								
E3								
E4								

See Attached

All turnaround times are standard unless marked as RUSH.  
 Energy Laboratories MUST be contacted prior to RUSH sample submittal for changes and scheduling - See Instructions Page

**Customer Information**

Customer Name: Gerrit Eganew  
 Date/Time: 1/17/19 15:30  
 Receipt Temp: \_\_\_\_\_ °C  
 Receipt Temp: \_\_\_\_\_ °F  
 Receipt Temp: \_\_\_\_\_ °C  
 Receipt Temp: \_\_\_\_\_ °F

**Signature**  
 Signature: \_\_\_\_\_  
 Date/Time: \_\_\_\_\_

Amount: \_\_\_\_\_  
 Payment Type: \_\_\_\_\_  
 Cash  Check  CC   
 Receipt Number (attach back only)

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.







# ANALYTICAL SUMMARY REPORT

February 15, 2019

Enviromin Inc  
524 Professional Dr  
Bozeman, MT 59718

Work Order: B19020227      Quote ID: B4093 - Enviromin Lab

Project Name: NWP Phase II

Energy Laboratories Inc Billings MT received the following 14 samples for Enviromin Inc on 2/5/2019 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B19020227-001	F	01/31/19 15:00	02/05/19	Aqueous	Metals by ICP/ICPMS, Dissolved Carbon, Dissolved Organic Selenium By CVAA, Total Selenium IV, Total Selenium-VI, Total
B19020227-002	R1	01/31/19 15:00	02/05/19	Aqueous	Same As Above
B19020227-003	R2	01/31/19 15:00	02/05/19	Aqueous	Same As Above
B19020227-004	R3	01/31/19 15:00	02/05/19	Aqueous	Metals by ICP/ICPMS, Dissolved Selenium By CVAA, Total Selenium IV, Total Selenium-VI, Total
B19020227-005	R4	01/31/19 15:00	02/05/19	Aqueous	Same As Above
B19020227-006	R5	01/31/19 15:00	02/05/19	Aqueous	Same As Above
B19020227-007	E1	01/31/19 15:00	02/05/19	Aqueous	Metals by ICP/ICPMS, Dissolved Carbon, Dissolved Organic Selenium By CVAA, Total Selenium IV, Total Selenium-VI, Total
B19020227-008	E2	01/31/19 15:00	02/05/19	Aqueous	Same As Above
B19020227-009	E3	01/31/19 15:00	02/05/19	Aqueous	Same As Above
B19020227-010	E4	01/31/19 15:00	02/05/19	Aqueous	Same As Above
B19020227-011	E5	01/31/19 15:00	02/05/19	Aqueous	Same As Above
B19020227-012	R3	01/31/19 0:00	02/06/19	Aqueous	Carbon, Dissolved Organic
B19020227-013	R4	01/31/19 0:00	02/06/19	Aqueous	Same As Above
B19020227-014	R5	01/31/19 0:00	02/06/19	Aqueous	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:



**CLIENT:** Enviromin Inc  
**Project:** NWP Phase II  
**Work Order:** B19020227

**Report Date:** 02/15/19

## CASE NARRATIVE

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Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 East Lyndale Ave, Helena, MT, EPA Number MT00945.

Tests associated with analyst identified as ELI-CA were subcontracted to Energy Laboratories, PO Box 247, Casper, WY, EPA Number WY00002.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19020227-001  
**Client Sample ID:** F

**Report Date:** 02/15/19  
**Collection Date:** 01/31/19 15:00  
**Date Received:** 02/05/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	2	mg/L	D	2		A5310 C	02/08/19 06:48 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	02/07/19 18:07 / jdl
Antimony	ND	mg/L		0.001		E200.8	02/09/19 06:07 / ped
Arsenic	ND	mg/L		0.001		E200.8	02/07/19 18:07 / jdl
Barium	0.05	mg/L		0.05		E200.8	02/07/19 18:07 / jdl
Beryllium	ND	mg/L		0.001		E200.8	02/07/19 18:07 / jdl
Boron	ND	mg/L		0.05		E200.8	02/07/19 18:07 / jdl
Cadmium	ND	mg/L		0.001		E200.8	02/07/19 18:07 / jdl
Calcium	5	mg/L		1		E200.8	02/07/19 18:07 / jdl
Chromium	ND	mg/L		0.005		E200.8	02/07/19 18:07 / jdl
Cobalt	ND	mg/L		0.005		E200.8	02/07/19 18:07 / jdl
Copper	ND	mg/L		0.005		E200.7	02/07/19 15:49 / rlh
Iron	ND	mg/L		0.02		E200.8	02/07/19 18:07 / jdl
Lead	ND	mg/L		0.001		E200.8	02/07/19 18:07 / jdl
Lithium	ND	mg/L		0.1		E200.7	02/07/19 15:49 / rlh
Magnesium	1	mg/L		1		E200.8	02/07/19 18:07 / jdl
Manganese	ND	mg/L		0.001		E200.8	02/07/19 18:07 / jdl
Molybdenum	ND	mg/L		0.001		E200.8	02/07/19 18:07 / jdl
Nickel	ND	mg/L		0.005		E200.8	02/07/19 18:07 / jdl
Potassium	ND	mg/L		1		E200.8	02/07/19 18:07 / jdl
Silicon	1.8	mg/L		0.1		E200.8	02/07/19 18:07 / jdl
Silver	ND	mg/L		0.001		E200.8	02/09/19 06:07 / ped
Sodium	35	mg/L		1		E200.8	02/07/19 18:07 / jdl
Strontium	0.02	mg/L		0.01		E200.8	02/07/19 18:07 / jdl
Thallium	ND	mg/L		0.0005		E200.8	02/07/19 18:07 / jdl
Tin	ND	mg/L		0.01		E200.8	02/07/19 18:07 / jdl
Titanium	ND	mg/L		0.005		E200.7	02/07/19 15:49 / rlh
Uranium	ND	mg/L		0.0003		E200.8	02/07/19 18:07 / jdl
Vanadium	ND	mg/L		0.01		E200.8	02/07/19 18:07 / jdl
Zinc	ND	mg/L		0.01		E200.8	02/07/19 18:07 / jdl
<b>METALS, TOTAL</b>							
Selenium	0.372	mg/L	D	0.003		A3114 C	02/12/19 14:44 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 C	02/12/19 11:41 / eli-h
Selenium-VI	0.371	mg/L		0.001		A3114 C	02/12/19 15:21 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19020227-002  
**Client Sample ID:** R1

**Report Date:** 02/15/19  
**Collection Date:** 01/31/19 15:00  
**Date Received:** 02/05/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	22	mg/L	D	4		A5310 C	02/08/19 07:04 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.05	mg/L		0.03		E200.8	02/07/19 18:11 / jdl
Antimony	ND	mg/L		0.001		E200.8	02/09/19 06:12 / ped
Arsenic	0.003	mg/L		0.001		E200.8	02/07/19 18:11 / jdl
Barium	ND	mg/L		0.05		E200.8	02/07/19 18:11 / jdl
Beryllium	ND	mg/L		0.001		E200.8	02/07/19 18:11 / jdl
Boron	ND	mg/L		0.05		E200.8	02/07/19 18:11 / jdl
Cadmium	ND	mg/L		0.001		E200.8	02/07/19 18:11 / jdl
Calcium	3	mg/L		1		E200.8	02/07/19 18:11 / jdl
Chromium	ND	mg/L		0.005		E200.8	02/07/19 18:11 / jdl
Cobalt	ND	mg/L		0.005		E200.8	02/07/19 18:11 / jdl
Copper	0.057	mg/L		0.005		E200.7	02/07/19 15:53 / rlh
Iron	0.11	mg/L		0.02		E200.8	02/07/19 18:11 / jdl
Lead	ND	mg/L		0.001		E200.8	02/07/19 18:11 / jdl
Lithium	ND	mg/L		0.1		E200.7	02/07/19 15:53 / rlh
Magnesium	1	mg/L		1		E200.8	02/07/19 18:11 / jdl
Manganese	ND	mg/L		0.001		E200.8	02/07/19 18:11 / jdl
Molybdenum	ND	mg/L		0.001		E200.8	02/07/19 18:11 / jdl
Nickel	ND	mg/L		0.005		E200.8	02/07/19 18:11 / jdl
Potassium	ND	mg/L		1		E200.8	02/07/19 18:11 / jdl
Silicon	3.3	mg/L		0.1		E200.8	02/07/19 18:11 / jdl
Silver	ND	mg/L		0.001		E200.8	02/09/19 06:12 / ped
Sodium	35	mg/L		1		E200.8	02/07/19 18:11 / jdl
Strontium	0.01	mg/L		0.01		E200.8	02/07/19 18:11 / jdl
Thallium	ND	mg/L		0.0005		E200.8	02/07/19 18:11 / jdl
Tin	ND	mg/L		0.01		E200.8	02/07/19 18:11 / jdl
Titanium	ND	mg/L		0.005		E200.7	02/07/19 15:53 / rlh
Uranium	0.0009	mg/L		0.0003		E200.8	02/07/19 18:11 / jdl
Vanadium	ND	mg/L		0.01		E200.8	02/07/19 18:11 / jdl
Zinc	0.02	mg/L		0.01		E200.8	02/07/19 18:11 / jdl
<b>METALS, TOTAL</b>							
Selenium	0.277	mg/L	D	0.002		A3114 C	02/12/19 14:39 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.005	mg/L		0.001		A3114 C	02/12/19 11:46 / eli-h
Selenium-VI	0.272	mg/L		0.001		A3114 C	02/12/19 15:21 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19020227-003  
**Client Sample ID:** R2

**Report Date:** 02/15/19  
**Collection Date:** 01/31/19 15:00  
**Date Received:** 02/05/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	13	mg/L	D	4		A5310 C	02/08/19 07:19 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	02/07/19 18:16 / jdl
Antimony	ND	mg/L		0.001		E200.8	02/09/19 06:16 / ped
Arsenic	0.001	mg/L		0.001		E200.8	02/07/19 18:16 / jdl
Barium	ND	mg/L		0.05		E200.8	02/07/19 18:16 / jdl
Beryllium	ND	mg/L		0.001		E200.8	02/07/19 18:16 / jdl
Boron	0.07	mg/L		0.05		E200.8	02/07/19 18:16 / jdl
Cadmium	ND	mg/L		0.001		E200.8	02/07/19 18:16 / jdl
Calcium	3	mg/L		1		E200.8	02/07/19 18:16 / jdl
Chromium	ND	mg/L		0.005		E200.8	02/07/19 18:16 / jdl
Cobalt	ND	mg/L		0.005		E200.8	02/07/19 18:16 / jdl
Copper	0.036	mg/L		0.005		E200.7	02/07/19 15:58 / rlh
Iron	0.03	mg/L		0.02		E200.8	02/07/19 18:16 / jdl
Lead	ND	mg/L		0.001		E200.8	02/07/19 18:16 / jdl
Lithium	ND	mg/L		0.1		E200.7	02/07/19 15:58 / rlh
Magnesium	1	mg/L		1		E200.8	02/07/19 18:16 / jdl
Manganese	ND	mg/L		0.001		E200.8	02/07/19 18:16 / jdl
Molybdenum	ND	mg/L		0.001		E200.8	02/07/19 18:16 / jdl
Nickel	ND	mg/L		0.005		E200.8	02/07/19 18:16 / jdl
Potassium	ND	mg/L		1		E200.8	02/07/19 18:16 / jdl
Silicon	3.0	mg/L		0.1		E200.8	02/07/19 18:16 / jdl
Silver	ND	mg/L		0.001		E200.8	02/09/19 06:16 / ped
Sodium	29	mg/L		1		E200.8	02/07/19 18:16 / jdl
Strontium	0.01	mg/L		0.01		E200.8	02/07/19 18:16 / jdl
Thallium	ND	mg/L		0.0005		E200.8	02/07/19 18:16 / jdl
Tin	ND	mg/L		0.01		E200.8	02/07/19 18:16 / jdl
Titanium	ND	mg/L		0.005		E200.7	02/07/19 15:58 / rlh
Uranium	ND	mg/L		0.0003		E200.8	02/07/19 18:16 / jdl
Vanadium	ND	mg/L		0.01		E200.8	02/07/19 18:16 / jdl
Zinc	ND	mg/L		0.01		E200.8	02/07/19 18:16 / jdl
<b>METALS, TOTAL</b>							
Selenium	0.254	mg/L	D	0.002		A3114 C	02/13/19 13:59 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.002	mg/L		0.001		A3114 C	02/12/19 11:52 / eli-h
Selenium-VI	0.252	mg/L		0.001		A3114 C	02/14/19 08:44 / eli-h

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19020227-004  
**Client Sample ID:** R3

**Report Date:** 02/15/19  
**Collection Date:** 01/31/19 15:00  
**DateReceived:** 02/05/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	02/07/19 18:21 / jdl
Antimony	ND	mg/L		0.001		E200.8	02/09/19 06:21 / ped
Arsenic	0.005	mg/L		0.001		E200.8	02/07/19 18:21 / jdl
Barium	ND	mg/L		0.05		E200.8	02/07/19 18:21 / jdl
Beryllium	ND	mg/L		0.001		E200.8	02/07/19 18:21 / jdl
Boron	0.06	mg/L		0.05		E200.8	02/07/19 18:21 / jdl
Cadmium	ND	mg/L		0.001		E200.8	02/07/19 18:21 / jdl
Calcium	5	mg/L		1		E200.8	02/07/19 18:21 / jdl
Chromium	ND	mg/L		0.005		E200.8	02/07/19 18:21 / jdl
Cobalt	ND	mg/L		0.005		E200.8	02/07/19 18:21 / jdl
Copper	ND	mg/L		0.005		E200.8	02/07/19 18:21 / jdl
Iron	ND	mg/L		0.02		E200.8	02/07/19 18:21 / jdl
Lead	ND	mg/L		0.001		E200.8	02/07/19 18:21 / jdl
Lithium	ND	mg/L		0.1		E200.7	02/07/19 16:02 / rlh
Magnesium	2	mg/L		1		E200.8	02/07/19 18:21 / jdl
Manganese	ND	mg/L		0.001		E200.8	02/07/19 18:21 / jdl
Molybdenum	ND	mg/L		0.001		E200.8	02/07/19 18:21 / jdl
Nickel	ND	mg/L		0.005		E200.8	02/07/19 18:21 / jdl
Potassium	ND	mg/L		1		E200.8	02/07/19 18:21 / jdl
Silicon	3.5	mg/L		0.1		E200.8	02/07/19 18:21 / jdl
Silver	ND	mg/L		0.001		E200.8	02/09/19 06:21 / ped
Sodium	36	mg/L		1		E200.8	02/07/19 18:21 / jdl
Strontium	0.01	mg/L		0.01		E200.8	02/07/19 18:21 / jdl
Thallium	ND	mg/L		0.0005		E200.8	02/07/19 18:21 / jdl
Tin	ND	mg/L		0.01		E200.8	02/07/19 18:21 / jdl
Titanium	ND	mg/L		0.005		E200.7	02/07/19 16:02 / rlh
Uranium	ND	mg/L		0.0003		E200.8	02/07/19 18:21 / jdl
Vanadium	ND	mg/L		0.01		E200.8	02/07/19 18:21 / jdl
Zinc	ND	mg/L		0.01		E200.8	02/07/19 18:21 / jdl
<b>METALS, TOTAL</b>							
Selenium	0.273	mg/L	D	0.002		A3114 C	02/12/19 14:57 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.001	mg/L		0.001		A3114 C	02/12/19 11:54 / eli-h
Selenium-VI	0.271	mg/L		0.001		A3114 C	02/12/19 15:21 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19020227-005  
**Client Sample ID:** R4

**Report Date:** 02/15/19  
**Collection Date:** 01/31/19 15:00  
**Date Received:** 02/05/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	02/07/19 18:45 / jdl
Antimony	ND	mg/L		0.001		E200.8	02/09/19 06:26 / ped
Arsenic	0.001	mg/L		0.001		E200.8	02/07/19 18:45 / jdl
Barium	ND	mg/L		0.05		E200.8	02/07/19 18:45 / jdl
Beryllium	ND	mg/L		0.001		E200.8	02/07/19 18:45 / jdl
Boron	ND	mg/L		0.05		E200.8	02/07/19 18:45 / jdl
Cadmium	ND	mg/L		0.001		E200.8	02/07/19 18:45 / jdl
Calcium	3	mg/L		1		E200.8	02/07/19 18:45 / jdl
Chromium	ND	mg/L		0.005		E200.8	02/07/19 18:45 / jdl
Cobalt	ND	mg/L		0.005		E200.8	02/07/19 18:45 / jdl
Copper	0.021	mg/L		0.005		E200.7	02/07/19 16:06 / rlh
Iron	0.03	mg/L		0.02		E200.8	02/07/19 18:45 / jdl
Lead	ND	mg/L		0.001		E200.8	02/07/19 18:45 / jdl
Lithium	ND	mg/L		0.1		E200.7	02/07/19 16:06 / rlh
Magnesium	1	mg/L		1		E200.8	02/07/19 18:45 / jdl
Manganese	ND	mg/L		0.001		E200.8	02/07/19 18:45 / jdl
Molybdenum	ND	mg/L		0.001		E200.8	02/07/19 18:45 / jdl
Nickel	ND	mg/L		0.005		E200.8	02/07/19 18:45 / jdl
Potassium	ND	mg/L		1		E200.8	02/07/19 18:45 / jdl
Silicon	0.7	mg/L		0.1		E200.8	02/07/19 18:45 / jdl
Silver	ND	mg/L		0.001		E200.8	02/09/19 06:26 / ped
Sodium	29	mg/L		1		E200.8	02/07/19 18:45 / jdl
Strontium	0.01	mg/L		0.01		E200.8	02/07/19 18:45 / jdl
Thallium	ND	mg/L		0.0005		E200.8	02/07/19 18:45 / jdl
Tin	ND	mg/L		0.01		E200.8	02/07/19 18:45 / jdl
Titanium	ND	mg/L		0.005		E200.7	02/07/19 16:06 / rlh
Uranium	ND	mg/L		0.0003		E200.8	02/07/19 18:45 / jdl
Vanadium	ND	mg/L		0.01		E200.8	02/07/19 18:45 / jdl
Zinc	ND	mg/L		0.01		E200.8	02/07/19 18:45 / jdl
<b>METALS, TOTAL</b>							
Selenium	0.261	mg/L	D	0.002		A3114 C	02/12/19 14:58 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 C	02/12/19 11:55 / eli-h
Selenium-VI	0.260	mg/L		0.001		A3114 C	02/12/19 15:21 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19020227-006  
**Client Sample ID:** R5

**Report Date:** 02/15/19  
**Collection Date:** 01/31/19 15:00  
**DateReceived:** 02/05/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, DISSOLVED</b>							
Aluminum	0.09	mg/L		0.03		E200.8	02/07/19 18:50 / jdl
Antimony	ND	mg/L		0.001		E200.8	02/09/19 06:31 / ped
Arsenic	0.002	mg/L		0.001		E200.8	02/07/19 18:50 / jdl
Barium	ND	mg/L		0.05		E200.8	02/07/19 18:50 / jdl
Beryllium	ND	mg/L		0.001		E200.8	02/07/19 18:50 / jdl
Boron	0.06	mg/L		0.05		E200.8	02/07/19 18:50 / jdl
Cadmium	ND	mg/L		0.001		E200.8	02/07/19 18:50 / jdl
Calcium	ND	mg/L		1		E200.8	02/07/19 18:50 / jdl
Chromium	ND	mg/L		0.005		E200.8	02/07/19 18:50 / jdl
Cobalt	ND	mg/L		0.005		E200.8	02/07/19 18:50 / jdl
Copper	ND	mg/L		0.005		E200.7	02/07/19 16:10 / rlh
Iron	0.06	mg/L		0.02		E200.8	02/07/19 18:50 / jdl
Lead	ND	mg/L		0.001		E200.8	02/07/19 18:50 / jdl
Lithium	ND	mg/L		0.1		E200.7	02/07/19 16:10 / rlh
Magnesium	ND	mg/L		1		E200.8	02/07/19 18:50 / jdl
Manganese	ND	mg/L		0.001		E200.8	02/07/19 18:50 / jdl
Molybdenum	ND	mg/L		0.001		E200.8	02/07/19 18:50 / jdl
Nickel	ND	mg/L		0.005		E200.8	02/07/19 18:50 / jdl
Potassium	ND	mg/L		1		E200.8	02/07/19 18:50 / jdl
Silicon	0.6	mg/L		0.1		E200.8	02/07/19 18:50 / jdl
Silver	ND	mg/L		0.001		E200.8	02/09/19 06:31 / ped
Sodium	31	mg/L		1		E200.8	02/07/19 18:50 / jdl
Strontium	ND	mg/L		0.01		E200.8	02/07/19 18:50 / jdl
Thallium	ND	mg/L		0.0005		E200.8	02/07/19 18:50 / jdl
Tin	ND	mg/L		0.01		E200.8	02/07/19 18:50 / jdl
Titanium	ND	mg/L		0.005		E200.7	02/07/19 16:10 / rlh
Uranium	ND	mg/L		0.0003		E200.8	02/07/19 18:50 / jdl
Vanadium	ND	mg/L		0.01		E200.8	02/07/19 18:50 / jdl
Zinc	ND	mg/L		0.01		E200.8	02/07/19 18:50 / jdl
<b>METALS, TOTAL</b>							
Selenium	0.267	mg/L	D	0.002		A3114 C	02/12/19 15:00 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.002	mg/L		0.001		A3114 C	02/12/19 11:57 / eli-h
Selenium-VI	0.266	mg/L		0.001		A3114 C	02/12/19 15:21 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.





### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19020227-007  
**Client Sample ID:** E1

**Report Date:** 02/15/19  
**Collection Date:** 01/31/19 15:00  
**Date Received:** 02/05/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	4	mg/L	D	2		A5310 C	02/08/19 07:34 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	02/09/19 06:36 / ped
Antimony	ND	mg/L		0.001		E200.8	02/09/19 06:36 / ped
Arsenic	ND	mg/L		0.001		E200.8	02/09/19 06:36 / ped
Barium	ND	mg/L		0.05		E200.8	02/09/19 06:36 / ped
Beryllium	ND	mg/L		0.001		E200.8	02/09/19 06:36 / ped
Boron	ND	mg/L		0.05		E200.7	02/07/19 16:14 / rlh
Cadmium	ND	mg/L		0.001		E200.8	02/09/19 06:36 / ped
Calcium	30	mg/L		1		E200.7	02/07/19 16:14 / rlh
Chromium	ND	mg/L		0.005		E200.8	02/09/19 06:36 / ped
Cobalt	ND	mg/L		0.005		E200.8	02/09/19 06:36 / ped
Copper	ND	mg/L		0.005		E200.8	02/09/19 06:36 / ped
Iron	ND	mg/L		0.02		E200.7	02/07/19 16:14 / rlh
Lead	ND	mg/L		0.001		E200.8	02/09/19 06:36 / ped
Lithium	ND	mg/L		0.1		E200.7	02/07/19 16:14 / rlh
Magnesium	22	mg/L		1		E200.7	02/07/19 16:14 / rlh
Manganese	0.009	mg/L		0.001		E200.8	02/09/19 06:36 / ped
Molybdenum	0.031	mg/L		0.001		E200.8	02/09/19 06:36 / ped
Nickel	ND	mg/L		0.005		E200.8	02/09/19 06:36 / ped
Potassium	1	mg/L		1		E200.8	02/09/19 06:36 / ped
Silicon	1.1	mg/L		0.1		E200.8	02/09/19 06:36 / ped
Silver	ND	mg/L		0.001		E200.8	02/09/19 06:36 / ped
Sodium	5	mg/L		1		E200.7	02/07/19 16:14 / rlh
Strontium	0.15	mg/L		0.01		E200.7	02/07/19 16:14 / rlh
Thallium	ND	mg/L		0.0005		E200.8	02/09/19 06:36 / ped
Tin	ND	mg/L		0.01		E200.8	02/09/19 06:36 / ped
Titanium	ND	mg/L		0.005		E200.7	02/07/19 16:14 / rlh
Uranium	0.0012	mg/L		0.0003		E200.8	02/09/19 06:36 / ped
Vanadium	ND	mg/L		0.01		E200.8	02/09/19 06:36 / ped
Zinc	ND	mg/L		0.01		E200.8	02/09/19 06:36 / ped
<b>METALS, TOTAL</b>							
Selenium	0.017	mg/L		0.001		A3114 C	02/12/19 14:11 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.003	mg/L		0.001		A3114 C	02/12/19 11:59 / eli-h
Selenium-VI	0.014	mg/L		0.001		A3114 C	02/12/19 15:21 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19020227-008  
**Client Sample ID:** E2

**Report Date:** 02/15/19  
**Collection Date:** 01/31/19 15:00  
**Date Received:** 02/05/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	4	mg/L	D	2		A5310 C	02/08/19 07:50 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	02/07/19 19:14 / jdl
Antimony	ND	mg/L		0.001		E200.8	02/09/19 06:41 / ped
Arsenic	ND	mg/L		0.001		E200.8	02/07/19 19:14 / jdl
Barium	ND	mg/L		0.05		E200.8	02/07/19 19:14 / jdl
Beryllium	ND	mg/L		0.001		E200.8	02/07/19 19:14 / jdl
Boron	ND	mg/L		0.05		E200.8	02/07/19 19:14 / jdl
Cadmium	ND	mg/L		0.001		E200.8	02/07/19 19:14 / jdl
Calcium	46	mg/L		1		E200.8	02/07/19 19:14 / jdl
Chromium	ND	mg/L		0.005		E200.8	02/07/19 19:14 / jdl
Cobalt	ND	mg/L		0.005		E200.8	02/07/19 19:14 / jdl
Copper	ND	mg/L		0.005		E200.7	02/07/19 16:19 / rlh
Iron	ND	mg/L		0.02		E200.8	02/07/19 19:14 / jdl
Lead	ND	mg/L		0.001		E200.8	02/07/19 19:14 / jdl
Lithium	ND	mg/L		0.1		E200.7	02/07/19 16:19 / rlh
Magnesium	44	mg/L		1		E200.8	02/07/19 19:14 / jdl
Manganese	ND	mg/L		0.001		E200.8	02/07/19 19:14 / jdl
Molybdenum	0.011	mg/L		0.001		E200.8	02/07/19 19:14 / jdl
Nickel	ND	mg/L		0.005		E200.8	02/07/19 19:14 / jdl
Potassium	2	mg/L		1		E200.8	02/07/19 19:14 / jdl
Silicon	1.2	mg/L		0.1		E200.8	02/07/19 19:14 / jdl
Silver	ND	mg/L		0.001		E200.8	02/09/19 06:41 / ped
Sodium	6	mg/L		1		E200.8	02/07/19 19:14 / jdl
Strontium	0.25	mg/L		0.01		E200.8	02/07/19 19:14 / jdl
Thallium	ND	mg/L		0.0005		E200.8	02/07/19 19:14 / jdl
Tin	ND	mg/L		0.01		E200.8	02/07/19 19:14 / jdl
Titanium	ND	mg/L		0.005		E200.7	02/07/19 16:19 / rlh
Uranium	0.0061	mg/L		0.0003		E200.8	02/07/19 19:14 / jdl
Vanadium	ND	mg/L		0.01		E200.8	02/07/19 19:14 / jdl
Zinc	ND	mg/L		0.01		E200.8	02/07/19 19:14 / jdl
<b>METALS, TOTAL</b>							
Selenium	0.051	mg/L		0.001		A3114 C	02/12/19 14:12 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.001	mg/L		0.001		A3114 C	02/12/19 12:00 / eli-h
Selenium-VI	0.050	mg/L		0.001		A3114 C	02/12/19 15:21 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19020227-009  
**Client Sample ID:** E3

**Report Date:** 02/15/19  
**Collection Date:** 01/31/19 15:00  
**Date Received:** 02/05/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	2	mg/L	D	2		A5310 C	02/08/19 08:35 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	02/07/19 19:19 / jdl
Antimony	ND	mg/L		0.001		E200.8	02/09/19 07:19 / ped
Arsenic	ND	mg/L		0.001		E200.8	02/07/19 19:19 / jdl
Barium	ND	mg/L		0.05		E200.8	02/07/19 19:19 / jdl
Beryllium	ND	mg/L		0.001		E200.8	02/07/19 19:19 / jdl
Boron	0.06	mg/L		0.05		E200.8	02/07/19 19:19 / jdl
Cadmium	ND	mg/L		0.001		E200.8	02/07/19 19:19 / jdl
Calcium	43	mg/L		1		E200.8	02/07/19 19:19 / jdl
Chromium	ND	mg/L		0.005		E200.8	02/07/19 19:19 / jdl
Cobalt	ND	mg/L		0.005		E200.8	02/07/19 19:19 / jdl
Copper	ND	mg/L		0.005		E200.7	02/07/19 16:23 / rlh
Iron	ND	mg/L		0.02		E200.8	02/07/19 19:19 / jdl
Lead	ND	mg/L		0.001		E200.8	02/07/19 19:19 / jdl
Lithium	ND	mg/L		0.1		E200.7	02/07/19 16:23 / rlh
Magnesium	76	mg/L		1		E200.8	02/07/19 19:19 / jdl
Manganese	ND	mg/L		0.001		E200.8	02/07/19 19:19 / jdl
Molybdenum	0.005	mg/L		0.001		E200.8	02/07/19 19:19 / jdl
Nickel	ND	mg/L		0.005		E200.8	02/07/19 19:19 / jdl
Potassium	3	mg/L		1		E200.8	02/07/19 19:19 / jdl
Silicon	1.5	mg/L		0.1		E200.8	02/07/19 19:19 / jdl
Silver	ND	mg/L		0.001		E200.8	02/09/19 07:19 / ped
Sodium	7	mg/L		1		E200.8	02/07/19 19:19 / jdl
Strontium	0.37	mg/L		0.01		E200.8	02/07/19 19:19 / jdl
Thallium	ND	mg/L		0.0005		E200.8	02/07/19 19:19 / jdl
Tin	ND	mg/L		0.01		E200.8	02/07/19 19:19 / jdl
Titanium	ND	mg/L		0.005		E200.7	02/07/19 16:23 / rlh
Uranium	0.0070	mg/L		0.0003		E200.8	02/07/19 19:19 / jdl
Vanadium	ND	mg/L		0.01		E200.8	02/07/19 19:19 / jdl
Zinc	ND	mg/L		0.01		E200.8	02/07/19 19:19 / jdl
<b>METALS, TOTAL</b>							
Selenium	0.067	mg/L		0.001		A3114 C	02/12/19 14:14 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.002	mg/L		0.001		A3114 C	02/12/19 12:02 / eli-h
Selenium-VI	0.065	mg/L		0.001		A3114 C	02/12/19 15:21 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19020227-010  
**Client Sample ID:** E4

**Report Date:** 02/15/19  
**Collection Date:** 01/31/19 15:00  
**Date Received:** 02/05/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	7	mg/L	D	2		A5310 C	02/08/19 08:51 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	02/07/19 19:24 / jdl
Antimony	ND	mg/L	D	0.002		E200.8	02/13/19 14:04 / jdl
Arsenic	ND	mg/L		0.001		E200.8	02/07/19 19:24 / jdl
Barium	ND	mg/L		0.05		E200.8	02/07/19 19:24 / jdl
Beryllium	ND	mg/L		0.001		E200.8	02/07/19 19:24 / jdl
Boron	0.06	mg/L		0.05		E200.8	02/07/19 19:24 / jdl
Cadmium	ND	mg/L		0.001		E200.8	02/07/19 19:24 / jdl
Calcium	40	mg/L		1		E200.8	02/07/19 19:24 / jdl
Chromium	ND	mg/L		0.005		E200.8	02/07/19 19:24 / jdl
Cobalt	ND	mg/L		0.005		E200.8	02/07/19 19:24 / jdl
Copper	ND	mg/L		0.005		E200.7	02/07/19 16:27 / rlh
Iron	ND	mg/L		0.02		E200.8	02/07/19 19:24 / jdl
Lead	ND	mg/L		0.001		E200.8	02/07/19 19:24 / jdl
Lithium	ND	mg/L		0.1		E200.7	02/07/19 16:27 / rlh
Magnesium	72	mg/L		1		E200.8	02/07/19 19:24 / jdl
Manganese	ND	mg/L		0.001		E200.8	02/07/19 19:24 / jdl
Molybdenum	0.005	mg/L		0.001		E200.8	02/07/19 19:24 / jdl
Nickel	ND	mg/L		0.005		E200.8	02/07/19 19:24 / jdl
Potassium	3	mg/L		1		E200.8	02/07/19 19:24 / jdl
Silicon	1.3	mg/L		0.1		E200.8	02/07/19 19:24 / jdl
Silver	ND	mg/L		0.001		E200.8	02/09/19 07:24 / ped
Sodium	8	mg/L		1		E200.8	02/07/19 19:24 / jdl
Strontium	0.32	mg/L		0.01		E200.8	02/07/19 19:24 / jdl
Thallium	ND	mg/L		0.0005		E200.8	02/07/19 19:24 / jdl
Tin	ND	mg/L		0.01		E200.8	02/07/19 19:24 / jdl
Titanium	ND	mg/L		0.005		E200.7	02/07/19 16:27 / rlh
Uranium	0.0071	mg/L		0.0003		E200.8	02/07/19 19:24 / jdl
Vanadium	ND	mg/L		0.01		E200.8	02/07/19 19:24 / jdl
Zinc	ND	mg/L		0.01		E200.8	02/07/19 19:24 / jdl
<b>METALS, TOTAL</b>							
Selenium	0.082	mg/L		0.001		A3114 C	02/12/19 14:16 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	0.001	mg/L		0.001		A3114 C	02/12/19 12:04 / eli-h
Selenium-VI	0.081	mg/L		0.001		A3114 C	02/12/19 15:21 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19020227-011  
**Client Sample ID:** E5

**Report Date:** 02/15/19  
**Collection Date:** 01/31/19 15:00  
**Date Received:** 02/05/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	4	mg/L	D	2		A5310 C	02/08/19 09:06 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	02/07/19 19:29 / jdl
Antimony	ND	mg/L		0.001		E200.8	02/09/19 07:29 / ped
Arsenic	ND	mg/L		0.001		E200.8	02/07/19 19:29 / jdl
Barium	ND	mg/L		0.05		E200.8	02/07/19 19:29 / jdl
Beryllium	ND	mg/L		0.001		E200.8	02/07/19 19:29 / jdl
Boron	0.05	mg/L		0.05		E200.8	02/07/19 19:29 / jdl
Cadmium	ND	mg/L		0.001		E200.8	02/07/19 19:29 / jdl
Calcium	80	mg/L		1		E200.8	02/07/19 19:29 / jdl
Chromium	ND	mg/L		0.005		E200.8	02/07/19 19:29 / jdl
Cobalt	ND	mg/L		0.005		E200.8	02/07/19 19:29 / jdl
Copper	ND	mg/L		0.005		E200.7	02/07/19 16:48 / rlh
Iron	ND	mg/L		0.02		E200.8	02/07/19 19:29 / jdl
Lead	ND	mg/L		0.001		E200.8	02/07/19 19:29 / jdl
Lithium	ND	mg/L		0.1		E200.7	02/07/19 16:48 / rlh
Magnesium	54	mg/L		1		E200.8	02/07/19 19:29 / jdl
Manganese	ND	mg/L		0.001		E200.8	02/07/19 19:29 / jdl
Molybdenum	0.043	mg/L		0.001		E200.8	02/07/19 19:29 / jdl
Nickel	ND	mg/L		0.005		E200.8	02/07/19 19:29 / jdl
Potassium	2	mg/L		1		E200.8	02/07/19 19:29 / jdl
Silicon	1.5	mg/L		0.1		E200.8	02/07/19 19:29 / jdl
Silver	ND	mg/L		0.001		E200.8	02/09/19 07:29 / ped
Sodium	5	mg/L		1		E200.8	02/07/19 19:29 / jdl
Strontium	0.31	mg/L		0.01		E200.8	02/07/19 19:29 / jdl
Thallium	ND	mg/L		0.0005		E200.8	02/07/19 19:29 / jdl
Tin	ND	mg/L		0.01		E200.8	02/07/19 19:29 / jdl
Titanium	ND	mg/L		0.005		E200.7	02/07/19 16:48 / rlh
Uranium	0.0064	mg/L		0.0003		E200.8	02/07/19 19:29 / jdl
Vanadium	ND	mg/L		0.01		E200.8	02/07/19 19:29 / jdl
Zinc	ND	mg/L		0.01		E200.8	02/07/19 19:29 / jdl
<b>METALS, TOTAL</b>							
Selenium	0.046	mg/L		0.001		A3114 C	02/12/19 14:18 / eli-h
<b>METALS, SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 C	02/12/19 12:09 / eli-h
Selenium-VI	0.045	mg/L		0.001		A3114 C	02/12/19 15:21 / eli-h

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19020227-012  
**Client Sample ID:** R3

**Report Date:** 02/15/19  
**Collection Date:** 01/31/19  
**Date Received:** 02/06/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	49	mg/L	D	2		A5310 C	02/08/19 22:22 / eli-ca

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19020227-013  
**Client Sample ID:** R4

**Report Date:** 02/15/19  
**Collection Date:** 01/31/19  
**Date Received:** 02/06/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	9	mg/L	D	2		A5310 C	02/08/19 22:39 / eli-ca

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II  
**Lab ID:** B19020227-014  
**Client Sample ID:** R5

**Report Date:** 02/15/19  
**Collection Date:** 01/31/19  
**Date Received:** 02/06/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	8	mg/L	D	2		A5310 C	02/08/19 22:54 / eli-ca

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.





## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** Enviromin Inc

**Report Date:** 02/12/19

**Project:** NWP Phase II

**Work Order:** B19020227

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: A5310 C</b>							Analytical Run: TOC3-C_190207B		
<b>Lab ID: CCV-10666</b>	Continuing Calibration Verification Standard								
Organic Carbon, Dissolved (DOC)	4.75	mg/L	0.50	95	90	110			02/08/19 04:42
<b>Method: A5310 C</b>							Batch: R244004		
<b>Lab ID: LCS-10553</b>	Laboratory Control Sample								
Organic Carbon, Dissolved (DOC)	4.72	mg/L	0.50	94	90	110			Run: TOC3-C_190207B 02/08/19 04:11
<b>Lab ID: MBLK</b>	Method Blank								
Organic Carbon, Dissolved (DOC)	ND	mg/L	0.5						Run: TOC3-C_190207B 02/08/19 04:26
<b>Lab ID: C19020134-001CMS</b>	Sample Matrix Spike								
Organic Carbon, Dissolved (DOC)	6.64	mg/L	0.50	98	85	115			Run: TOC3-C_190207B 02/08/19 05:13
<b>Lab ID: C19020134-001CMSD</b>	Sample Matrix Spike Duplicate								
Organic Carbon, Dissolved (DOC)	6.67	mg/L	0.50	99	85	115	0.5	20	Run: TOC3-C_190207B 02/08/19 05:29
<b>Method: A5310 C</b>							Analytical Run: TOC3-C_190208A		
<b>Lab ID: CCV-10666</b>	Continuing Calibration Verification Standard								
Organic Carbon, Dissolved (DOC)	4.76	mg/L	0.50	95	90	110			02/08/19 22:06
<b>Method: A5310 C</b>							Batch: R244022		
<b>Lab ID: LCS-10553</b>	Laboratory Control Sample								
Organic Carbon, Dissolved (DOC)	4.78	mg/L	0.50	96	90	110			Run: TOC3-C_190208A 02/08/19 21:32
<b>Lab ID: MBLK</b>	Method Blank								
Organic Carbon, Dissolved (DOC)	ND	mg/L	0.5						Run: TOC3-C_190208A 02/08/19 21:47
<b>Lab ID: C19020180-001CMS</b>	Sample Matrix Spike								
Organic Carbon, Dissolved (DOC)	10.7	mg/L	0.50	93	85	115			Run: TOC3-C_190208A 02/08/19 23:45
<b>Lab ID: C19020180-001CMSD</b>	Sample Matrix Spike Duplicate								
Organic Carbon, Dissolved (DOC)	10.5	mg/L	0.50	90	85	115	1.6	20	Run: TOC3-C_190208A 02/09/19 00:07

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** Enviromin Inc

**Report Date:** 02/14/19

**Project:** NWP Phase II

**Work Order:** B19020227

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A3114 C									tical Run: SELENIUM PSA MILLENIUM_190212A
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard								
Selenium-IV	0.0193	mg/L	0.0010	97	90	110			02/12/19 11:33
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								
Selenium-IV	0.0189	mg/L	0.0010	95	90	110			02/12/19 11:35
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								
Selenium-IV	0.0197	mg/L	0.0010	99	90	110			02/12/19 12:07
<b>Method:</b> A3114 C									Batch: 44664
<b>Lab ID:</b> MB-44664	Method Blank								
Selenium-IV	ND	mg/L	0.0006						Run: SELENIUM PSA MILLENIUM_ 02/12/19 11:38
<b>Lab ID:</b> LFB-44664	Laboratory Fortified Blank								
Selenium-IV	0.0186	mg/L	0.0010	93	85	115			Run: SELENIUM PSA MILLENIUM_ 02/12/19 11:40
<b>Lab ID:</b> B19020227-001BMS	Sample Matrix Spike								
Selenium-IV	0.0194	mg/L	0.0010	93	70	130			Run: SELENIUM PSA MILLENIUM_ 02/12/19 11:43
<b>Lab ID:</b> B19020227-001BMSD	Sample Matrix Spike Duplicate								
Selenium-IV	0.0192	mg/L	0.0010	92	70	130	1.1	20	Run: SELENIUM PSA MILLENIUM_ 02/12/19 11:44
<b>Lab ID:</b> B19020227-002BMS	Sample Matrix Spike								
Selenium-IV	0.0238	mg/L	0.0010	94	70	130			Run: SELENIUM PSA MILLENIUM_ 02/12/19 11:48
<b>Lab ID:</b> B19020227-002BMSD	Sample Matrix Spike Duplicate								
Selenium-IV	0.0235	mg/L	0.0010	92	70	130	1.4	20	Run: SELENIUM PSA MILLENIUM_ 02/12/19 11:49

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Enviromin Inc

Report Date: 02/14/19

Project: NWP Phase II

Work Order: B19020227

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A3114 C									tical Run: SELENIUM PSA MILLENIUM_190212C
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard								02/12/19 13:41
Selenium	0.0392	mg/L	0.0010	98	90	110			
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								02/12/19 13:43
Selenium	0.0196	mg/L	0.0010	98	90	110			
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								02/12/19 14:03
Selenium	0.0194	mg/L	0.0010	97	90	110			
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								02/12/19 14:37
Selenium	0.0193	mg/L	0.0010	97	90	110			
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								02/12/19 14:51
Selenium	0.0203	mg/L	0.0010	102	90	110			
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								02/12/19 15:03
Selenium	0.0201	mg/L	0.0010	101	90	110			
<b>Method:</b> A3114 C									Batch: 44666
<b>Lab ID:</b> MB-44666	Method Blank								Run: SELENIUM PSA MILLENIUM_ 02/12/19 13:46
Selenium	ND	mg/L	0.0002						
<b>Lab ID:</b> B19020227-002BMS	Sample Matrix Spike								Run: SELENIUM PSA MILLENIUM_ 02/12/19 14:40
Selenium	0.328	mg/L	0.0020	64	70	130			S
<b>Lab ID:</b> B19020227-002BMSD	Sample Matrix Spike Duplicate								Run: SELENIUM PSA MILLENIUM_ 02/12/19 14:42
Selenium	0.311	mg/L	0.0020	42	70	130	5.4	20	S
<b>Lab ID:</b> B19020227-001BMS	Sample Matrix Spike								Run: SELENIUM PSA MILLENIUM_ 02/12/19 14:46
Selenium	0.418	mg/L	0.0030	39	70	130			S
<b>Lab ID:</b> B19020227-001BMSD	Sample Matrix Spike Duplicate								Run: SELENIUM PSA MILLENIUM_ 02/12/19 14:48
Selenium	0.410	mg/L	0.0030	31	70	130	2.1	20	S
<b>Method:</b> A3114 C									tical Run: SELENIUM PSA MILLENIUM_190213B
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard								02/13/19 13:50
Selenium	0.0398	mg/L	0.0010	99	90	110			
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								02/13/19 13:52
Selenium	0.0195	mg/L	0.0010	97	90	110			
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								02/13/19 14:47
Selenium	0.0191	mg/L	0.0010	95	90	110			

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II

**Report Date:** 02/14/19  
**Work Order:** B19020227

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.7</b>										Analytical Run: ICP204-B_190207A	
<b>Lab ID: ICV</b>	9	Continuing Calibration Verification Standard							02/07/19 13:08		
Boron		2.45	mg/L	0.10	98	95	105				
Calcium		25.4	mg/L	1.0	102	95	105				
Copper		2.42	mg/L	0.010	97	95	105				
Iron		2.52	mg/L	0.020	101	95	105				
Lithium		1.26	mg/L	0.10	101	95	105				
Magnesium		25.3	mg/L	1.0	101	95	105				
Sodium		25.1	mg/L	1.0	101	95	105				
Strontium		2.51	mg/L	0.10	100	95	105				
Titanium		2.47	mg/L	0.010	99	95	105				
<b>Method: E200.7</b>										Batch: R315093	
<b>Lab ID: MB-7400DIS180207A</b>	9	Method Blank							Run: ICP204-B_190207A 02/07/19 13:17		
Boron		ND	mg/L	0.01							
Calcium		ND	mg/L	0.07							
Copper		ND	mg/L	0.004							
Iron		ND	mg/L	0.02							
Lithium		ND	mg/L	0.02							
Magnesium		ND	mg/L	0.02							
Sodium		ND	mg/L	0.1							
Strontium		ND	mg/L	0.001							
Titanium		ND	mg/L	0.006							
<b>Lab ID: LFB-7400DIS180207A</b>	9	Laboratory Fortified Blank							Run: ICP204-B_190207A 02/07/19 13:25		
Boron		0.984	mg/L	0.10	98	85	115				
Calcium		50.4	mg/L	1.0	101	85	115				
Copper		0.951	mg/L	0.010	95	85	115				
Iron		5.03	mg/L	0.020	101	85	115				
Lithium		1.00	mg/L	0.10	100	85	115				
Magnesium		50.1	mg/L	1.0	100	85	115				
Sodium		49.9	mg/L	1.0	100	85	115				
Strontium		0.990	mg/L	0.10	99	85	115				
Titanium		0.979	mg/L	0.010	98	85	115				
<b>Lab ID: B19011974-002CDIL</b>	9	Serial Dilution							Run: ICP204-B_190207A 02/07/19 15:28		
Boron		0.0671	mg/L	0.10		0	0		10	N	
Calcium		112	mg/L	1.0		0	0	3.8	10		
Copper		ND	mg/L	0.018		0	0		10		
Iron		ND	mg/L	0.084		0	0		10		
Lithium		ND	mg/L	0.10		0	0		10		
Magnesium		31.0	mg/L	1.0		0	0	1.5	10		
Sodium		31.8	mg/L	1.0		0	0	0.9	10		
Strontium		1.58	mg/L	0.10		0	0	0.6	10		
Titanium		ND	mg/L	0.032		0	0		10		

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II

**Report Date:** 02/14/19  
**Work Order:** B19020227

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>										
Batch: R315093										
<b>Lab ID:</b>	<b>B19011974-002CMS2</b>	9	Sample Matrix Spike							
										Run: ICP204-B_190207A 02/07/19 15:32
Boron		1.09	mg/L	0.10	102	70	130			
Calcium		154	mg/L	1.0	93	70	130			
Copper		0.977	mg/L	0.010	98	70	130			
Iron		5.20	mg/L	0.020	103	70	130			
Lithium		1.07	mg/L	0.10	104	70	130			
Magnesium		77.9	mg/L	1.0	95	70	130			
Sodium		84.7	mg/L	1.0	106	70	130			
Strontium		2.51	mg/L	0.10	94	70	130			
Titanium		1.02	mg/L	0.010	102	70	130			
<b>Lab ID:</b>	<b>B19011974-002CMSD</b>	9	Sample Matrix Spike Duplicate							
										Run: ICP204-B_190207A 02/07/19 15:37
Boron		1.11	mg/L	0.10	104	70	130	1.6	20	
Calcium		155	mg/L	1.0	94	70	130	0.3	20	
Copper		0.997	mg/L	0.010	100	70	130	2.0	20	
Iron		5.27	mg/L	0.020	104	70	130	1.3	20	
Lithium		1.10	mg/L	0.10	107	70	130	2.4	20	
Magnesium		79.6	mg/L	1.0	98	70	130	2.2	20	
Sodium		85.4	mg/L	1.0	108	70	130	0.8	20	
Strontium		2.55	mg/L	0.10	98	70	130	1.5	20	
Titanium		1.04	mg/L	0.010	104	70	130	1.4	20	
<b>Lab ID:</b>	<b>B19020227-010AMS2</b>	9	Sample Matrix Spike							
										Run: ICP204-B_190207A 02/07/19 16:40
Boron		1.08	mg/L	0.050	103	70	130			
Calcium		91.8	mg/L	1.0	98	70	130			
Copper		0.989	mg/L	0.0050	99	70	130			
Iron		5.26	mg/L	0.020	105	70	130			
Lithium		1.10	mg/L	0.10	107	70	130			
Magnesium		127	mg/L	1.0	99	70	130			
Sodium		59.2	mg/L	1.0	101	70	130			
Strontium		1.35	mg/L	0.010	100	70	130			
Titanium		1.04	mg/L	0.0066	104	70	130			
<b>Lab ID:</b>	<b>B19020227-010AMSD</b>	9	Sample Matrix Spike Duplicate							
										Run: ICP204-B_190207A 02/07/19 16:44
Boron		1.09	mg/L	0.050	104	70	130	0.5	20	
Calcium		91.9	mg/L	1.0	98	70	130	0.1	20	
Copper		0.992	mg/L	0.0050	99	70	130	0.3	20	
Iron		5.29	mg/L	0.020	106	70	130	0.5	20	
Lithium		1.11	mg/L	0.10	107	70	130	0.4	20	
Magnesium		126	mg/L	1.0	98	70	130	0.3	20	
Sodium		59.2	mg/L	1.0	101	70	130	0.0	20	
Strontium		1.35	mg/L	0.010	100	70	130	0.0	20	
Titanium		1.04	mg/L	0.0066	104	70	130	0.2	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II

**Report Date:** 02/14/19  
**Work Order:** B19020227

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.8</b>										Analytical Run: ICPMS206-B_190207A	
<b>Lab ID: QCS</b>	25	Initial Calibration Verification Standard							02/07/19 14:31		
Aluminum		0.251	mg/L	0.10	100	90	110				
Arsenic		0.0489	mg/L	0.0050	98	90	110				
Barium		0.0483	mg/L	0.10	97	90	110				
Beryllium		0.0247	mg/L	0.0010	99	90	110				
Boron		0.0513	mg/L	0.10	103	90	110				
Cadmium		0.0239	mg/L	0.0010	96	90	110				
Calcium		2.36	mg/L	0.50	94	90	110				
Chromium		0.0496	mg/L	0.010	99	90	110				
Cobalt		0.0507	mg/L	0.010	101	90	110				
Copper		0.0473	mg/L	0.010	95	90	110				
Iron		0.242	mg/L	0.020	97	90	110				
Lead		0.0491	mg/L	0.010	98	90	110				
Magnesium		2.45	mg/L	0.50	98	90	110				
Manganese		0.255	mg/L	0.010	102	90	110				
Molybdenum		0.0484	mg/L	0.0050	97	90	110				
Nickel		0.0501	mg/L	0.010	100	90	110				
Potassium		2.54	mg/L	0.50	102	90	110				
Silicon		0.486	mg/L	0.10	97	90	110				
Sodium		2.49	mg/L	0.50	100	90	110				
Strontium		0.0488	mg/L	0.10	98	90	110				
Thallium		0.0475	mg/L	0.10	95	90	110				
Tin		0.0490	mg/L	0.10	98	90	110				
Uranium		0.0496	mg/L	0.00030	99	90	110				
Vanadium		0.0504	mg/L	0.10	101	90	110				
Zinc		0.0507	mg/L	0.010	101	90	110				

<b>Method: E200.8</b>										Batch: R315121	
<b>Lab ID: LRB</b>	25	Method Blank							Run: ICPMS206-B_190207A 02/07/19 16:11		
Aluminum		ND	mg/L	0.0008							
Arsenic		ND	mg/L	0.0002							
Barium		ND	mg/L	0.00004							
Beryllium		ND	mg/L	0.0001							
Boron		ND	mg/L	0.006							
Cadmium		ND	mg/L	0.00003							
Calcium		ND	mg/L	0.06							
Chromium		ND	mg/L	0.0002							
Cobalt		ND	mg/L	0.00004							
Copper		ND	mg/L	0.0003							
Iron		ND	mg/L	0.001							
Lead		ND	mg/L	0.00005							
Magnesium		0.02	mg/L	0.006							
Manganese		ND	mg/L	0.0002							
Molybdenum		0.00005	mg/L	0.00005							
Nickel		ND	mg/L	0.0006							

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 02/14/19

**Project:** NWP Phase II

**Work Order:** B19020227

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>										
Batch: R315121										
<b>Lab ID: LRB</b>	25	Method Blank								
Run: ICPMS206-B_190207A      02/07/19 16:11										
Potassium		ND	mg/L	0.08						
Silicon		ND	mg/L	0.01						
Sodium		ND	mg/L	0.02						
Strontium		ND	mg/L	0.0001						
Thallium		ND	mg/L	0.00007						
Tin		ND	mg/L	0.001						
Uranium		ND	mg/L	0.00005						
Vanadium		ND	mg/L	0.001						
Zinc		ND	mg/L	0.003						
<b>Lab ID: LFB</b>										
25 Laboratory Fortified Blank										
Run: ICPMS206-B_190207A      02/07/19 16:16										
Aluminum		0.0549	mg/L	0.10	110	85	115			
Arsenic		0.0505	mg/L	0.0050	101	85	115			
Barium		0.0562	mg/L	0.10	112	85	115			
Beryllium		0.0505	mg/L	0.0010	101	85	115			
Boron		0.0531	mg/L	0.10	106	85	115			
Cadmium		0.0549	mg/L	0.0010	110	85	115			
Calcium		48.4	mg/L	0.50	97	85	115			
Chromium		0.0506	mg/L	0.010	101	85	115			
Cobalt		0.0530	mg/L	0.010	106	85	115			
Copper		0.0482	mg/L	0.010	96	85	115			
Iron		5.05	mg/L	0.020	101	85	115			
Lead		0.0560	mg/L	0.010	112	85	115			
Magnesium		49.8	mg/L	0.50	100	85	115			
Manganese		0.0542	mg/L	0.010	108	85	115			
Molybdenum		0.0575	mg/L	0.0050	115	85	115			
Nickel		0.0506	mg/L	0.010	101	85	115			
Potassium		48.1	mg/L	0.50	96	85	115			
Silicon		0.194	mg/L	0.10	97	85	115			
Sodium		50.4	mg/L	0.50	101	85	115			
Strontium		0.0537	mg/L	0.10	107	85	115			
Thallium		0.0489	mg/L	0.10	98	85	115			
Tin		0.0563	mg/L	0.10	113	85	115			
Uranium		0.0552	mg/L	0.00030	110	85	115			
Vanadium		0.0525	mg/L	0.10	105	85	115			
Zinc		0.0527	mg/L	0.010	105	85	115			
<b>Lab ID: B19020175-001BMS</b>										
25 Sample Matrix Spike										
Run: ICPMS206-B_190207A      02/07/19 17:37										
Aluminum		0.372	mg/L	0.030	122	70	130			
Arsenic		0.322	mg/L	0.0010	106	70	130			
Barium		0.877	mg/L	0.050	131	70	130			S
Beryllium		0.264	mg/L	0.0010	106	70	130			
Boron		3.08	mg/L	0.050		70	130			A
Cadmium		0.268	mg/L	0.0010	107	70	130			
Calcium		310	mg/L	1.0	89	70	130			

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 02/14/19

**Project:** NWP Phase II

**Work Order:** B19020227

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>										
Batch: R315121										
<b>Lab ID:</b>	<b>B19020175-001BMS</b>	25 Sample Matrix Spike			Run: ICPMS206-B_190207A				02/07/19 17:37	
Chromium		0.254	mg/L	0.0050	102	70	130			
Cobalt		0.257	mg/L	0.0050	103	70	130			
Copper		0.240	mg/L	0.0050	96	70	130			
Iron		23.9	mg/L	0.020	95	70	130			
Lead		0.342	mg/L	0.0010	137	70	130			S
Magnesium		281	mg/L	1.0	102	70	130			
Manganese		0.347	mg/L	0.0010	101	70	130			
Molybdenum		0.295	mg/L	0.0010	115	70	130			
Nickel		0.258	mg/L	0.0050	103	70	130			
Potassium		265	mg/L	1.0	93	70	130			
Silicon		21.4	mg/L	0.10		70	130			A
Sodium		583	mg/L	1.0	105	70	130			
Strontium		1.81	mg/L	0.010		70	130			A
Thallium		0.358	mg/L	0.00050	143	70	130			S
Tin		0.281	mg/L	0.014	113	70	130			
Uranium		0.346	mg/L	0.00030	138	70	130			S
Vanadium		0.278	mg/L	0.010	98	70	130			
Zinc		0.262	mg/L	0.014	105	70	130			
<b>Lab ID:</b>	<b>B19020175-001BMSD</b>	25 Sample Matrix Spike Duplicate			Run: ICPMS206-B_190207A				02/07/19 17:42	
Aluminum		0.336	mg/L	0.030	108	70	130	10	20	
Arsenic		0.311	mg/L	0.0010	102	70	130	3.5	20	
Barium		0.887	mg/L	0.050	135	70	130	1.2	20	S
Beryllium		0.256	mg/L	0.0010	102	70	130	3.3	20	
Boron		3.05	mg/L	0.050		70	130	0.8	20	A
Cadmium		0.271	mg/L	0.0010	108	70	130	0.9	20	
Calcium		312	mg/L	1.0	90	70	130	0.5	20	
Chromium		0.243	mg/L	0.0050	97	70	130	4.7	20	
Cobalt		0.246	mg/L	0.0050	98	70	130	4.2	20	
Copper		0.229	mg/L	0.0050	92	70	130	4.8	20	
Iron		23.9	mg/L	0.020	96	70	130	0.3	20	
Lead		0.371	mg/L	0.0010	148	70	130	8.0	20	S
Magnesium		269	mg/L	1.0	97	70	130	4.2	20	
Manganese		0.333	mg/L	0.0010	95	70	130	4.1	20	
Molybdenum		0.281	mg/L	0.0010	109	70	130	5.0	20	
Nickel		0.248	mg/L	0.0050	99	70	130	4.1	20	
Potassium		259	mg/L	1.0	91	70	130	2.4	20	
Silicon		21.1	mg/L	0.10		70	130	1.4	20	A
Sodium		559	mg/L	1.0	95	70	130	4.3	20	
Strontium		1.77	mg/L	0.010		70	130	2.1	20	A
Thallium		0.354	mg/L	0.00050	141	70	130	1.2	20	S
Tin		0.268	mg/L	0.014	107	70	130	4.8	20	
Uranium		0.362	mg/L	0.00030	145	70	130	4.7	20	S
Vanadium		0.268	mg/L	0.010	94	70	130	3.6	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 02/14/19

**Project:** NWP Phase II

**Work Order:** B19020227

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>										
Batch: R315121										
<b>Lab ID:</b>	<b>B19020175-001BMSD</b>	25	Sample Matrix Spike Duplicate							
	Zinc	0.247	mg/L	0.014	99	70	130	6.0	20	
Run: ICPMS206-B_190207A 02/07/19 17:42										
<b>Lab ID:</b>	<b>B19020227-007AMS</b>	25	Sample Matrix Spike							
Run: ICPMS206-B_190207A 02/07/19 19:00										
Aluminum		0.0639	mg/L	0.030	113	70	130			
Arsenic		0.0519	mg/L	0.0010	104	70	130			
Barium		0.0710	mg/L	0.050	113	70	130			
Beryllium		0.0524	mg/L	0.0010	105	70	130			
Boron		0.0761	mg/L	0.050	113	70	130			
Cadmium		0.0542	mg/L	0.0010	108	70	130			
Calcium		59.5	mg/L	1.0	91	70	130			
Chromium		0.0503	mg/L	0.0050	101	70	130			
Cobalt		0.0534	mg/L	0.0050	106	70	130			
Copper		0.0502	mg/L	0.0050	100	70	130			
Iron		4.91	mg/L	0.020	98	70	130			
Lead		0.0544	mg/L	0.0010	109	70	130			
Magnesium		59.2	mg/L	1.0	98	70	130			
Manganese		0.0533	mg/L	0.0010	98	70	130			
Molybdenum		0.0715	mg/L	0.0010	113	70	130			
Nickel		0.0518	mg/L	0.0050	104	70	130			
Potassium		49.0	mg/L	1.0	97	70	130			
Silicon		0.742	mg/L	0.10	98	70	130			
Sodium		52.6	mg/L	1.0	100	70	130			
Strontium		0.116	mg/L	0.010	93	70	130			
Thallium		0.0481	mg/L	0.00050	96	70	130			
Tin		0.0536	mg/L	0.010	107	70	130			
Uranium		0.0541	mg/L	0.00030	107	70	130			
Vanadium		0.0538	mg/L	0.010	108	70	130			
Zinc		0.0555	mg/L	0.010	106	70	130			
<b>Lab ID:</b>	<b>B19020227-007AMSD</b>	25	Sample Matrix Spike Duplicate							
Run: ICPMS206-B_190207A 02/07/19 19:04										
Aluminum		0.0583	mg/L	0.030	102	70	130	9.1	20	
Arsenic		0.0510	mg/L	0.0010	102	70	130	1.7	20	
Barium		0.0653	mg/L	0.050	101	70	130	8.4	20	
Beryllium		0.0488	mg/L	0.0010	98	70	130	7.1	20	
Boron		0.0702	mg/L	0.050	102	70	130	8.1	20	
Cadmium		0.0498	mg/L	0.0010	100	70	130	8.4	20	
Calcium		88.8	mg/L	1.0	149	70	130	39	20	SR
Chromium		0.0499	mg/L	0.0050	100	70	130	0.6	20	
Cobalt		0.0492	mg/L	0.0050	98	70	130	8.1	20	
Copper		0.0492	mg/L	0.0050	98	70	130	1.9	20	
Iron		7.20	mg/L	0.020	144	70	130	38	20	SR
Lead		0.0499	mg/L	0.0010	100	70	130	8.6	20	
Magnesium		58.0	mg/L	1.0	95	70	130	2.2	20	
Manganese		0.0525	mg/L	0.0010	96	70	130	1.4	20	
Molybdenum		0.0720	mg/L	0.0010	114	70	130	0.8	20	

**Qualifiers:**

RL - Analyte reporting limit.  
R - RPD exceeds advisory limit.

ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II

**Report Date:** 02/14/19  
**Work Order:** B19020227

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method:</b> E200.8								Batch: R315121			
<b>Lab ID:</b> B19020227-007AMSD		25 Sample Matrix Spike Duplicate				Run: ICPMS206-B_190207A			02/07/19 19:04		
Nickel		0.0505	mg/L	0.0050	101	70	130	2.4	20		
Potassium		47.7	mg/L	1.0	94	70	130	2.7	20		
Silicon		1.12	mg/L	0.10	288	70	130	41	20	SR	
Sodium		50.4	mg/L	1.0	96	70	130	4.2	20		
Strontium		0.114	mg/L	0.010	90	70	130	1.2	20		
Thallium		0.0481	mg/L	0.00050	96	70	130	0.1	20		
Tin		0.0537	mg/L	0.010	107	70	130	0.2	20		
Uranium		0.0503	mg/L	0.00030	100	70	130	7.1	20		
Vanadium		0.0487	mg/L	0.010	97	70	130	10.0	20		
Zinc		0.0504	mg/L	0.010	95	70	130	9.7	20		

**Qualifiers:**

RL - Analyte reporting limit.  
R - RPD exceeds advisory limit.

ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 02/14/19

**Project:** NWP Phase II

**Work Order:** B19020227

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method:</b> E200.8										Analytical Run: ICPMS206-B_190208A	
<b>Lab ID:</b> QCS	21	Initial Calibration Verification Standard							02/08/19 20:31		
Aluminum		0.247	mg/L	0.10	99	90	110				
Antimony		0.0452	mg/L	0.050	90	90	110				
Arsenic		0.0487	mg/L	0.0050	97	90	110				
Barium		0.0474	mg/L	0.10	95	90	110				
Beryllium		0.0244	mg/L	0.0010	98	90	110				
Cadmium		0.0236	mg/L	0.0010	95	90	110				
Chromium		0.0491	mg/L	0.010	98	90	110				
Cobalt		0.0499	mg/L	0.010	100	90	110				
Copper		0.0504	mg/L	0.010	101	90	110				
Lead		0.0474	mg/L	0.010	95	90	110				
Manganese		0.244	mg/L	0.010	98	90	110				
Molybdenum		0.0479	mg/L	0.0050	96	90	110				
Nickel		0.0500	mg/L	0.010	100	90	110				
Potassium		2.49	mg/L	0.50	100	90	110				
Silicon		0.502	mg/L	0.10	100	90	110				
Silver		0.0240	mg/L	0.0050	96	90	110				
Thallium		0.0485	mg/L	0.10	97	90	110				
Tin		0.0494	mg/L	0.10	99	90	110				
Uranium		0.0469	mg/L	0.00030	94	90	110				
Vanadium		0.0501	mg/L	0.10	100	90	110				
Zinc		0.0486	mg/L	0.010	97	90	110				

<b>Method:</b> E200.8										Batch: R315200	
<b>Lab ID:</b> LFB	21	Laboratory Fortified Blank							Run: ICPMS206-B_190208A		02/08/19 13:17
Aluminum		0.0521	mg/L	0.10	104	85	115				
Antimony		0.0538	mg/L	0.050	108	85	115				
Arsenic		0.0509	mg/L	0.0050	102	85	115				
Barium		0.0526	mg/L	0.10	105	85	115				
Beryllium		0.0522	mg/L	0.0010	104	85	115				
Cadmium		0.0533	mg/L	0.0010	107	85	115				
Chromium		0.0511	mg/L	0.010	102	85	115				
Cobalt		0.0503	mg/L	0.010	101	85	115				
Copper		0.0515	mg/L	0.010	103	85	115				
Lead		0.0527	mg/L	0.010	105	85	115				
Manganese		0.0508	mg/L	0.010	102	85	115				
Molybdenum		0.0566	mg/L	0.0050	113	85	115				
Nickel		0.0520	mg/L	0.010	104	85	115				
Potassium		49.7	mg/L	0.50	99	85	115				
Silicon		0.204	mg/L	0.10	102	85	115				
Silver		0.0203	mg/L	0.0050	101	85	115				
Thallium		0.0476	mg/L	0.10	95	85	115				
Tin		0.0574	mg/L	0.10	115	85	115				
Uranium		0.0533	mg/L	0.00030	107	85	115				
Vanadium		0.0560	mg/L	0.10	112	85	115				

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Phase II

**Report Date:** 02/14/19  
**Work Order:** B19020227

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>										
Batch: R315200										
<b>Lab ID: LFB</b>	21	Laboratory Fortified Blank								
		Zinc			0.0499	mg/L	0.010	100	85	115
										Run: ICPMS206-B_190208A
										02/08/19 13:17
<b>Lab ID: LRB</b>	21	Method Blank								
		Aluminum			ND	mg/L	0.0008			
		Antimony			ND	mg/L	0.0004			
		Arsenic			ND	mg/L	0.0002			
		Barium			ND	mg/L	0.00004			
		Beryllium			ND	mg/L	0.0001			
		Cadmium			0.00003	mg/L	0.00003			
		Chromium			ND	mg/L	0.0002			
		Cobalt			ND	mg/L	0.00004			
		Copper			ND	mg/L	0.0003			
		Lead			ND	mg/L	0.00005			
		Manganese			0.0009	mg/L	0.00010			
		Molybdenum			0.00006	mg/L	0.00005			
		Nickel			ND	mg/L	0.0006			
		Potassium			0.1	mg/L	0.08			
		Silicon			ND	mg/L	0.01			
		Silver			0.00003	mg/L	0.00002			
		Thallium			ND	mg/L	0.00007			
		Tin			ND	mg/L	0.001			
		Uranium			ND	mg/L	0.00005			
		Vanadium			ND	mg/L	0.001			
		Zinc			ND	mg/L	0.003			
<b>Lab ID: B19020227-008AMS</b>	21	Sample Matrix Spike								
		Aluminum			0.0500	mg/L	0.030	94	70	130
		Antimony			0.0620	mg/L	0.0010	123	70	130
		Arsenic			0.0510	mg/L	0.0010	102	70	130
		Barium			0.0881	mg/L	0.050	95	70	130
		Beryllium			0.0495	mg/L	0.0010	99	70	130
		Cadmium			0.0496	mg/L	0.0010	99	70	130
		Chromium			0.0518	mg/L	0.0050	103	70	130
		Cobalt			0.0490	mg/L	0.0050	98	70	130
		Copper			0.0563	mg/L	0.0050	111	70	130
		Lead			0.0486	mg/L	0.0010	97	70	130
		Manganese			0.0517	mg/L	0.0010	103	70	130
		Molybdenum			0.0680	mg/L	0.0010	113	70	130
		Nickel			0.0521	mg/L	0.0050	100	70	130
		Potassium			56.7	mg/L	1.0	109	70	130
		Silicon			1.52	mg/L	0.10		70	130
		Silver			0.0189	mg/L	0.0010	95	70	130
		Thallium			0.0464	mg/L	0.00050	93	70	130
		Tin			0.0548	mg/L	0.010	110	70	130
		Uranium			0.0546	mg/L	0.00030	97	70	130

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 02/14/19

**Project:** NWP Phase II

**Work Order:** B19020227

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>								Batch: R315200		
<b>Lab ID: B19020227-008AMS</b>	21	Sample Matrix Spike			Run: ICPMS206-B_190208A			02/09/19 06:45		
Vanadium		0.0488	mg/L	0.010	98	70	130			
Zinc		0.0489	mg/L	0.010	98	70	130			
<b>Lab ID: B19020227-008AMSD</b>	21	Sample Matrix Spike Duplicate			Run: ICPMS206-B_190208A			02/09/19 06:50		
Aluminum		0.0489	mg/L	0.030	92	70	130	2.2	20	
Antimony		0.0627	mg/L	0.0010	124	70	130	1.0	20	
Arsenic		0.0504	mg/L	0.0010	101	70	130	1.2	20	
Barium		0.0876	mg/L	0.050	95	70	130	0.5	20	
Beryllium		0.0479	mg/L	0.0010	96	70	130	3.3	20	
Cadmium		0.0490	mg/L	0.0010	98	70	130	1.2	20	
Chromium		0.0514	mg/L	0.0050	102	70	130	0.8	20	
Cobalt		0.0485	mg/L	0.0050	97	70	130	1.0	20	
Copper		0.0547	mg/L	0.0050	108	70	130	2.9	20	
Lead		0.0483	mg/L	0.0010	97	70	130	0.6	20	
Manganese		0.0511	mg/L	0.0010	102	70	130	1.2	20	
Molybdenum		0.0665	mg/L	0.0010	110	70	130	2.2	20	
Nickel		0.0512	mg/L	0.0050	98	70	130	1.7	20	
Potassium		55.4	mg/L	1.0	107	70	130	2.1	20	
Silicon		1.51	mg/L	0.10		70	130	0.9	20	A
Silver		0.0190	mg/L	0.0010	95	70	130	0.3	20	
Thallium		0.0453	mg/L	0.00050	91	70	130	2.4	20	
Tin		0.0530	mg/L	0.010	106	70	130	3.4	20	
Uranium		0.0542	mg/L	0.00030	96	70	130	0.7	20	
Vanadium		0.0500	mg/L	0.010	100	70	130	2.4	20	
Zinc		0.0482	mg/L	0.010	96	70	130	1.4	20	
<b>Method: E200.8</b>								Analytical Run: ICPMS207-B_190212A		
<b>Lab ID: QCS</b>		Initial Calibration Verification Standard						02/12/19 23:30		
Antimony		0.0510	mg/L	0.050	102	90	110			
<b>Method: E200.8</b>								Batch: R315360		
<b>Lab ID: LRB</b>		Method Blank			Run: ICPMS207-B_190212A			02/12/19 17:33		
Antimony		ND	mg/L	0.0004						
<b>Lab ID: LFB</b>		Laboratory Fortified Blank			Run: ICPMS207-B_190212A			02/12/19 17:37		
Antimony		0.0479	mg/L	0.050	96	85	115			
<b>Lab ID: B19020170-001BMS</b>		Sample Matrix Spike			Run: ICPMS207-B_190212A			02/13/19 13:39		
Antimony		0.0505	mg/L	0.0010	101	70	130			
<b>Lab ID: B19020170-001BMSD</b>		Sample Matrix Spike Duplicate			Run: ICPMS207-B_190212A			02/13/19 13:44		
Antimony		0.0489	mg/L	0.0010	98	70	130	3.1	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.



# Work Order Receipt Checklist

Enviromin Inc

B19020227

Login completed by: Tabitha Edwards

Date Received: 2/5/2019

Reviewed by: BL2000\raschim

Received by: bgs

Reviewed Date: 2/7/2019

Carrier name: Return-UPS Ground

- Shipping container/cooler in good condition? Yes  No  Not Present
- Custody seals intact on all shipping container(s)/cooler(s)? Yes  No  Not Present
- Custody seals intact on all sample bottles? Yes  No  Not Present
- Chain of custody present? Yes  No
- Chain of custody signed when relinquished and received? Yes  No
- Chain of custody agrees with sample labels? Yes  No
- Samples in proper container/bottle? Yes  No
- Sample containers intact? Yes  No
- Sufficient sample volume for indicated test? Yes  No
- All samples received within holding time?  
(Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.) Yes  No
- Temp Blank received in all shipping container(s)/cooler(s)? Yes  No  Not Applicable
- Container/Temp Blank temperature: 0.0°C Blue Ice
- Water - VOA vials have zero headspace? Yes  No  No VOA vials submitted
- Water - pH acceptable upon receipt? Yes  No  Not Applicable

## Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

## Contact and Corrective Action Comments:

The following issues were resolved per phone conversation with Gerrit Egnew:

Dissolved Organic Carbon analysis was indicated on the Chain of Custody for samples R3, R4 and R5 however a 250mL Amber Glass Phosphoric preserved container was not received for each of these samples. Cancelled the Dissolved Organic Carbon analysis for samples R3, R4 and R5, these will arrive at a later date.

Two 250mL Amber Glass Phosphoric preserved containers were received labeled as E1 and one container had a 1 on the lid and the other had a 4 on the lid however a 250mL Amber Glass Phosphoric preserved container was not received labeled as E4. Proceeded with the 250mL Amber Glass Phosphoric preserved container with the 4 indicated on the lid as sample E4.

The Chain of Custody indicates a collection date of 2/1/19 and all container labels indicate 1/31/2019. Proceeded with the collection date as 1/31/2019.



## Work Order Receipt Checklist - Continued

Enviromin Inc

B19020227

The containers for Dissolved Organic Carbon analysis for samples R3, R4 and R5 were received on on 2/6/19 by Quincee Jones at 1.6°C blue ice from Return-UPS Ground N/C.

The containers for Dissolved Organic Carbon analysis for samples R3, R4 and R5 indicate 1/31/2019 as the collection date and the Chain of Custody indicates a collection date of 1/30/19. Proceeded with the collection date as 1/31/2019 per phone conversation with Gerrit Egnew.

# Chain of Custody & Analytical Request Record

www.energylab.com

### Account Information (Billing Information)

Company Name: Environmin, Inc.  
 Contact: Gerrit Egnew  
 Phone: 208-315-4218  
 Mailing Address: 524 Professional Drive  
 City, State, Zip: Bozeman, MT 59718  
 Email: gerritegnew@environmin.com  
 Receive Invoice:  Hard Copy  Email  Hard Copy  Email  
 Purchase Order: 4093  Bottle Order

### Report Information (if different than Account Information)

Company Name: \_\_\_\_\_  
 Contact: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_  
 City, State, Zip: \_\_\_\_\_  
 Email: \_\_\_\_\_  
 Receive Report:  Hard Copy  Email  
 Special Report/Feeback:  LEVEL IV  NELAC  EDD/EDT (contact laboratory)  Other

### Comments

please return cooler full of empty red-capped bottles to metals and ~50 HCl capsules

### Project Information

Project Name, PWSID, Permit, etc.: NWP Phase II  
 Sampler Name: G. Egnew Sampler Phone: \_\_\_\_\_  
 Sample Origin State: \_\_\_\_\_ EPA/State Compliance:  Yes  No  
 BILLING CLIENTS, please indicate sample type.  
 If one has been processed or refilled, call before sending.  
 Byproduct 11 (e)2 material  Unprocessed ore (NOT ground or refined)

### Analysis Requested

Matrix Codes:  
 A - Air  
 W - Water  
 S - Soils  
 V - Vegetation  
 B - Biomass  
 O - Other  
 DW - Drinking Water

Number of Containers: 3 Matrix (See Code Key): W

Collection Date/Time: 4/17/15 1500

Analysis Requested:  
 Specific Metals  
 Schedule A Metals  
 DOC

All turnaround times are standard unless marked as RUSH.  
 Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling - See Instructions Page

Sample ID	Sample Identification (Name, Location, Interval, etc.)	Collection Date/Time	Number of Containers	Matrix (See Code Key)	On Ice	Temp. Shk.	Receipt Temp. °C	Initial	Cooler D/E	Custody Seal	Shipped By	Received by (print)	Date/Time	Signature	Amount \$	Receipt Number (attach only)
1	F	4/17/15 1500	3	W	Y	N			Y	N	CC	Cash				
2	R1				Y	N			Y	N						
3	R2				Y	N			Y	N						
4	R3				Y	N			Y	N						
5	R4				Y	N			Y	N						
6	R5				Y	N			Y	N						
7	E1				Y	N			Y	N						
8	E2				Y	N			Y	N						
9	E3				Y	N			Y	N						
10	E4				Y	N			Y	N						

Company Name: Environmin, Inc.  
 Contact: Gerrit Egnew  
 Phone: 208-315-4218  
 Mailing Address: 524 Professional Drive  
 City, State, Zip: Bozeman, MT 59718  
 Email: gerritegnew@environmin.com  
 Receive Invoice:  Hard Copy  Email  Hard Copy  Email  
 Purchase Order: 4093  Bottle Order

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.



# Chain of Custody & Analytical Request Record

www.energylab.com

### Account Information (enter information)

Company Name: Envirominc, Inc.  
 Contact: Gerrit Eganew  
 Phone: 208-315-4418  
 Mailing Address: 524 Professional Drive  
 City, State, Zip: Bozeman, MT 59718  
 Email: gerriteganew@envirominc.com  
 Receive Invoice  Hard Copy  Email   
 Purchase Order: 4093  Hard Copy  Email   
 Special Request/Facilitate:  LEVEL IV  NELAC  EDNET (contact laboratory)  Other

### Comments

Company Name: \_\_\_\_\_  
 Contact: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_  
 City, State, Zip: \_\_\_\_\_  
 Email: \_\_\_\_\_  
 Receive Report  Hard Copy  Email  
 Special Request/Facilitate:  LEVEL IV  NELAC  EDNET (contact laboratory)  Other

### Project Information

Project Name, PWSID, Permit, etc.: \_\_\_\_\_  
 Sampler Name: \_\_\_\_\_ Sampler Phone: \_\_\_\_\_  
 Sample Origin State: \_\_\_\_\_ EPA/State Compliance  Yes  No  
 ILLUINOIS CLIENTS, please indicate sample type.  
 Byproduct 11 (p2 material)  Unprocessed ore (NOT ground or refined)

Matrix Codes

- A - Air
- W - Water
- S - Solids
- V - Vegetation
- B - Biomass
- O - Other
- DW - Drinking Water

### Analysis Requested

Matrix Code	Number of Containers	Matrix (See Code Above)	Collection		Date	Time	Signature
			Intact	Temp			
A	1	↓	↓	↓	↓	↓	↓
W	1	↓	↓	↓	↓	↓	↓
S	1	↓	↓	↓	↓	↓	↓
V	1	↓	↓	↓	↓	↓	↓
B	1	↓	↓	↓	↓	↓	↓
O	1	↓	↓	↓	↓	↓	↓
DW	1	↓	↓	↓	↓	↓	↓

All turnaround times are standard unless marked as RUSH.  
 Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling - See Instructions Page

Signature: \_\_\_\_\_  
 Date/Time: \_\_\_\_\_  
 Amount: \$ \_\_\_\_\_  
 Receipt Number (attach only): \_\_\_\_\_

Shipped By: \_\_\_\_\_  
 Cooler ID(s): \_\_\_\_\_  
 Custody Seals: Y N C B  
 Receipt Temp: \_\_\_\_\_ °C  
 Temp Blank: Y N  
 On Ice: Y N  
 Payment Type: CC Cash Check  
 Received by (print): \_\_\_\_\_  
 Received by (signature): \_\_\_\_\_  
 Date/Time: \_\_\_\_\_  
 Signature: \_\_\_\_\_

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.



# ANALYTICAL SUMMARY REPORT

March 07, 2019

Enviromin Inc  
524 Professional Dr  
Bozeman, MT 59718

Work Order: B19021083                      Quote ID: B4093 - Enviromin Lab

Project Name: NWP Column Study Phase 2

Energy Laboratories Inc Billings MT received the following 10 samples for Enviromin Inc on 2/15/2019 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B19021083-001	R1	02/14/19 12:00	02/15/19	Aqueous	Metals by ICP/ICPMS, Dissolved Carbon, Dissolved Organic
B19021083-002	R2	02/14/19 12:00	02/15/19	Aqueous	Same As Above
B19021083-003	R3	02/14/19 12:00	02/15/19	Aqueous	Same As Above
B19021083-004	R4	02/14/19 12:00	02/15/19	Aqueous	Same As Above
B19021083-005	R5	02/14/19 12:00	02/15/19	Aqueous	Same As Above
B19021083-006	E1	02/14/19 12:00	02/15/19	Aqueous	Same As Above
B19021083-007	E2	02/14/19 12:00	02/15/19	Aqueous	Same As Above
B19021083-008	E3	02/14/19 12:00	02/15/19	Aqueous	Same As Above
B19021083-009	E4	02/14/19 12:00	02/15/19	Aqueous	Same As Above
B19021083-010	E5	02/14/19 12:00	02/15/19	Aqueous	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:



**CLIENT:** Enviromin Inc  
**Project:** NWP Column Study Phase 2  
**Work Order:** B19021083

**Report Date:** 03/07/19

## CASE NARRATIVE

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Tests associated with analyst identified as ELI-CA were subcontracted to Energy Laboratories, PO Box 247, Casper, WY, EPA Number WY00002.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study Phase 2  
**Lab ID:** B19021083-001  
**Client Sample ID:** R1

**Report Date:** 03/07/19  
**Collection Date:** 02/14/19 12:00  
**Date Received:** 02/15/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	59	mg/L	D	2		A5310 C	02/25/19 15:49 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	3.6	mg/L	D	0.2		E200.7	02/19/19 17:25 / r/h
Antimony	ND	mg/L		0.001		E200.8	02/24/19 01:43 / car
Arsenic	0.006	mg/L		0.001		E200.8	02/24/19 01:43 / car
Barium	0.08	mg/L		0.05		E200.7	02/19/19 17:25 / r/h
Beryllium	ND	mg/L		0.001		E200.8	02/24/19 01:43 / car
Boron	ND	mg/L		0.05		E200.7	02/19/19 17:25 / r/h
Cadmium	ND	mg/L		0.001		E200.8	02/24/19 01:43 / car
Calcium	6	mg/L		1		E200.7	02/19/19 17:25 / r/h
Chromium	ND	mg/L		0.005		E200.8	02/24/19 01:43 / car
Cobalt	ND	mg/L		0.005		E200.8	02/25/19 23:29 / jdl
Copper	0.157	mg/L		0.005		E200.8	02/24/19 01:43 / car
Iron	2.33	mg/L	D	0.08		E200.7	02/19/19 17:25 / r/h
Lead	0.002	mg/L		0.001		E200.8	02/24/19 01:43 / car
Lithium	ND	mg/L		0.1		E200.7	02/19/19 17:25 / r/h
Magnesium	2	mg/L		1		E200.7	02/19/19 17:25 / r/h
Manganese	0.015	mg/L		0.001		E200.8	02/25/19 23:29 / jdl
Molybdenum	ND	mg/L		0.001		E200.8	02/24/19 01:43 / car
Nickel	ND	mg/L	L	0.009		E200.8	02/25/19 23:29 / jdl
Potassium	10	mg/L		1		E200.7	02/19/19 17:25 / r/h
Selenium	0.563	mg/L		0.001		E200.8	02/24/19 01:43 / car
Silicon	12.9	mg/L	D	0.3		E200.7	02/19/19 17:25 / r/h
Silver	0.002	mg/L		0.001		E200.8	02/24/19 01:43 / car
Sodium	57	mg/L		1		E200.7	02/19/19 17:25 / r/h
Strontium	0.03	mg/L		0.01		E200.7	02/19/19 17:25 / r/h
Thallium	ND	mg/L		0.0005		E200.8	02/24/19 01:43 / car
Tin	ND	mg/L		0.01		E200.8	02/24/19 01:43 / car
Titanium	0.23	mg/L	D	0.03		E200.7	02/19/19 17:25 / r/h
Uranium	0.0011	mg/L		0.0003		E200.8	02/24/19 01:43 / car
Vanadium	ND	mg/L		0.01		E200.8	02/24/19 01:43 / car
Zinc	0.13	mg/L		0.01		E200.8	02/24/19 01:43 / car

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
L - Lowest available reporting limit for the analytical method used.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study Phase 2  
**Lab ID:** B19021083-002  
**Client Sample ID:** R2

**Report Date:** 03/07/19  
**Collection Date:** 02/14/19 12:00  
**DateReceived:** 02/15/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	15	mg/L	D	2		A5310 C	02/25/19 16:05 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.15	mg/L		0.03		E200.8	02/24/19 01:48 / car
Antimony	ND	mg/L		0.001		E200.8	02/24/19 01:48 / car
Arsenic	0.001	mg/L		0.001		E200.8	02/24/19 01:48 / car
Barium	ND	mg/L		0.05		E200.7	02/19/19 17:29 / rlh
Beryllium	ND	mg/L		0.001		E200.8	02/24/19 01:48 / car
Boron	ND	mg/L		0.05		E200.7	02/19/19 17:29 / rlh
Cadmium	ND	mg/L		0.001		E200.8	02/24/19 01:48 / car
Calcium	4	mg/L		1		E200.7	02/19/19 17:29 / rlh
Chromium	ND	mg/L		0.005		E200.8	02/24/19 01:48 / car
Cobalt	ND	mg/L		0.005		E200.8	02/25/19 23:33 / jdl
Copper	0.040	mg/L		0.005		E200.8	02/24/19 01:48 / car
Iron	0.19	mg/L	D	0.08		E200.7	02/19/19 17:29 / rlh
Lead	ND	mg/L		0.001		E200.8	02/24/19 01:48 / car
Lithium	ND	mg/L		0.1		E200.7	02/19/19 17:29 / rlh
Magnesium	1	mg/L		1		E200.7	02/19/19 17:29 / rlh
Manganese	0.002	mg/L		0.001		E200.8	02/24/19 01:48 / car
Molybdenum	ND	mg/L		0.001		E200.8	02/24/19 01:48 / car
Nickel	ND	mg/L		0.005		E200.8	02/25/19 23:33 / jdl
Potassium	ND	mg/L		1		E200.7	02/19/19 17:29 / rlh
Selenium	0.197	mg/L		0.001		E200.8	02/24/19 01:48 / car
Silicon	3.6	mg/L	D	0.3		E200.7	02/19/19 17:29 / rlh
Silver	ND	mg/L		0.001		E200.8	02/24/19 01:48 / car
Sodium	29	mg/L		1		E200.7	02/19/19 17:29 / rlh
Strontium	0.01	mg/L		0.01		E200.7	02/19/19 17:29 / rlh
Thallium	ND	mg/L		0.0005		E200.8	02/24/19 01:48 / car
Tin	ND	mg/L		0.01		E200.8	02/24/19 01:48 / car
Titanium	0.009	mg/L		0.005		E200.8	02/24/19 01:48 / car
Uranium	0.0004	mg/L		0.0003		E200.8	02/24/19 01:48 / car
Vanadium	ND	mg/L		0.01		E200.8	02/24/19 01:48 / car
Zinc	ND	mg/L		0.01		E200.8	02/24/19 01:48 / car

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study Phase 2  
**Lab ID:** B19021083-003  
**Client Sample ID:** R3

**Report Date:** 03/07/19  
**Collection Date:** 02/14/19 12:00  
**DateReceived:** 02/15/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	11	mg/L	D	2		A5310 C	02/25/19 16:25 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.57	mg/L		0.03		E200.8	02/24/19 01:53 / car
Antimony	ND	mg/L		0.001		E200.8	02/24/19 01:53 / car
Arsenic	0.005	mg/L		0.001		E200.8	02/24/19 01:53 / car
Barium	ND	mg/L		0.05		E200.7	02/19/19 17:34 / rlh
Beryllium	ND	mg/L		0.001		E200.8	02/24/19 01:53 / car
Boron	ND	mg/L		0.05		E200.7	02/19/19 17:34 / rlh
Cadmium	ND	mg/L		0.001		E200.8	02/24/19 01:53 / car
Calcium	7	mg/L		1		E200.7	02/19/19 17:34 / rlh
Chromium	ND	mg/L		0.005		E200.8	02/24/19 01:53 / car
Cobalt	ND	mg/L		0.005		E200.8	02/25/19 23:37 / jdl
Copper	0.012	mg/L		0.005		E200.8	02/24/19 01:53 / car
Iron	0.22	mg/L	D	0.08		E200.7	02/19/19 17:34 / rlh
Lead	ND	mg/L		0.001		E200.8	02/24/19 01:53 / car
Lithium	ND	mg/L		0.1		E200.7	02/19/19 17:34 / rlh
Magnesium	2	mg/L		1		E200.7	02/19/19 17:34 / rlh
Manganese	0.002	mg/L		0.001		E200.8	02/25/19 23:37 / jdl
Molybdenum	ND	mg/L		0.001		E200.8	02/24/19 01:53 / car
Nickel	ND	mg/L		0.005		E200.8	02/25/19 23:37 / jdl
Potassium	ND	mg/L		1		E200.7	02/19/19 17:34 / rlh
Selenium	0.351	mg/L		0.001		E200.8	02/24/19 01:53 / car
Silicon	4.9	mg/L	D	0.3		E200.7	02/19/19 17:34 / rlh
Silver	ND	mg/L		0.001		E200.8	02/24/19 01:53 / car
Sodium	42	mg/L		1		E200.7	02/19/19 17:34 / rlh
Strontium	0.02	mg/L		0.01		E200.7	02/19/19 17:34 / rlh
Thallium	ND	mg/L		0.0005		E200.8	02/24/19 01:53 / car
Tin	ND	mg/L		0.01		E200.8	02/24/19 01:53 / car
Titanium	0.014	mg/L		0.005		E200.8	02/24/19 01:53 / car
Uranium	ND	mg/L		0.0003		E200.8	02/24/19 01:53 / car
Vanadium	ND	mg/L		0.01		E200.8	02/24/19 01:53 / car
Zinc	0.20	mg/L		0.01		E200.8	02/24/19 01:53 / car

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study Phase 2  
**Lab ID:** B19021083-004  
**Client Sample ID:** R4

**Report Date:** 03/07/19  
**Collection Date:** 02/14/19 12:00  
**Date Received:** 02/15/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	15	mg/L	D	2		A5310 C	02/25/19 16:44 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.67	mg/L		0.03		E200.8	02/24/19 01:57 / car
Antimony	ND	mg/L		0.001		E200.8	02/24/19 01:57 / car
Arsenic	0.002	mg/L		0.001		E200.8	02/24/19 01:57 / car
Barium	ND	mg/L		0.05		E200.7	02/19/19 17:38 / rlh
Beryllium	ND	mg/L		0.001		E200.8	02/24/19 01:57 / car
Boron	ND	mg/L		0.05		E200.7	02/25/19 14:27 / rlh
Cadmium	ND	mg/L		0.001		E200.8	02/24/19 01:57 / car
Calcium	4	mg/L		1		E200.7	02/19/19 17:38 / rlh
Chromium	ND	mg/L		0.005		E200.8	02/24/19 01:57 / car
Cobalt	ND	mg/L		0.005		E200.8	02/25/19 23:59 / jdl
Copper	0.030	mg/L		0.005		E200.8	02/24/19 01:57 / car
Iron	0.45	mg/L	D	0.08		E200.7	02/19/19 17:38 / rlh
Lead	ND	mg/L		0.001		E200.8	02/24/19 01:57 / car
Lithium	ND	mg/L		0.1		E200.7	02/19/19 17:38 / rlh
Magnesium	1	mg/L		1		E200.7	02/19/19 17:38 / rlh
Manganese	0.001	mg/L		0.001		E200.8	02/25/19 23:59 / jdl
Molybdenum	ND	mg/L		0.001		E200.8	02/24/19 01:57 / car
Nickel	ND	mg/L		0.005		E200.8	02/25/19 23:59 / jdl
Potassium	ND	mg/L		1		E200.7	02/19/19 17:38 / rlh
Selenium	0.235	mg/L		0.001		E200.8	02/24/19 01:57 / car
Silicon	5.1	mg/L	D	0.3		E200.7	02/19/19 17:38 / rlh
Silver	ND	mg/L		0.001		E200.8	02/24/19 01:57 / car
Sodium	25	mg/L		1		E200.7	02/19/19 17:38 / rlh
Strontium	0.01	mg/L		0.01		E200.7	02/19/19 17:38 / rlh
Thallium	ND	mg/L		0.0005		E200.8	02/24/19 01:57 / car
Tin	ND	mg/L		0.01		E200.8	02/24/19 01:57 / car
Titanium	0.024	mg/L		0.005		E200.8	02/24/19 01:57 / car
Uranium	ND	mg/L		0.0003		E200.8	02/24/19 01:57 / car
Vanadium	ND	mg/L		0.01		E200.8	02/24/19 01:57 / car
Zinc	0.04	mg/L		0.01		E200.8	02/24/19 01:57 / car

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study Phase 2  
**Lab ID:** B19021083-005  
**Client Sample ID:** R5

**Report Date:** 03/07/19  
**Collection Date:** 02/14/19 12:00  
**DateReceived:** 02/15/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	14	mg/L	D	2		A5310 C	02/25/19 17:04 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	0.82	mg/L		0.03		E200.8	02/24/19 02:02 / car
Antimony	ND	mg/L		0.001		E200.8	02/24/19 02:02 / car
Arsenic	0.002	mg/L		0.001		E200.8	02/24/19 02:02 / car
Barium	ND	mg/L		0.05		E200.7	02/19/19 17:42 / rlh
Beryllium	ND	mg/L		0.001		E200.8	02/24/19 02:02 / car
Boron	ND	mg/L		0.05		E200.7	02/19/19 17:42 / rlh
Cadmium	ND	mg/L		0.001		E200.8	02/24/19 02:02 / car
Calcium	4	mg/L		1		E200.7	02/19/19 17:42 / rlh
Chromium	ND	mg/L		0.005		E200.8	02/24/19 02:02 / car
Cobalt	ND	mg/L		0.005		E200.8	02/26/19 00:03 / jdl
Copper	0.032	mg/L		0.005		E200.8	02/24/19 02:02 / car
Iron	0.67	mg/L	D	0.08		E200.7	02/19/19 17:42 / rlh
Lead	ND	mg/L		0.001		E200.8	02/24/19 02:02 / car
Lithium	ND	mg/L		0.1		E200.7	02/19/19 17:42 / rlh
Magnesium	1	mg/L		1		E200.7	02/19/19 17:42 / rlh
Manganese	0.002	mg/L		0.001		E200.8	02/24/19 02:02 / car
Molybdenum	ND	mg/L		0.001		E200.8	02/24/19 02:02 / car
Nickel	ND	mg/L		0.005		E200.8	02/26/19 00:03 / jdl
Potassium	ND	mg/L		1		E200.7	02/19/19 17:42 / rlh
Selenium	0.232	mg/L		0.001		E200.8	02/24/19 02:02 / car
Silicon	5.6	mg/L	D	0.3		E200.7	02/19/19 17:42 / rlh
Silver	ND	mg/L		0.001		E200.8	02/24/19 02:02 / car
Sodium	25	mg/L		1		E200.7	02/19/19 17:42 / rlh
Strontium	0.02	mg/L		0.01		E200.7	02/19/19 17:42 / rlh
Thallium	ND	mg/L		0.0005		E200.8	02/24/19 02:02 / car
Tin	ND	mg/L		0.01		E200.8	02/24/19 02:02 / car
Titanium	0.060	mg/L		0.005		E200.8	02/24/19 02:02 / car
Uranium	ND	mg/L		0.0003		E200.8	02/24/19 02:02 / car
Vanadium	ND	mg/L		0.01		E200.8	02/24/19 02:02 / car
Zinc	0.05	mg/L		0.01		E200.8	02/24/19 02:02 / car

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.





### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study Phase 2  
**Lab ID:** B19021083-006  
**Client Sample ID:** E1

**Report Date:** 03/07/19  
**Collection Date:** 02/14/19 12:00  
**Date Received:** 02/15/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	4	mg/L	D	2		A5310 C	02/25/19 17:24 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	02/27/19 19:45 / jdl
Antimony	ND	mg/L		0.001		E200.8	02/26/19 00:20 / jdl
Arsenic	ND	mg/L		0.001		E200.8	02/26/19 00:20 / jdl
Barium	ND	mg/L		0.05		E200.7	02/19/19 18:06 / rlh
Beryllium	ND	mg/L	D	0.002		E200.7	02/19/19 18:06 / rlh
Boron	ND	mg/L		0.05		E200.7	02/19/19 18:06 / rlh
Cadmium	ND	mg/L		0.001		E200.8	02/26/19 00:20 / jdl
Calcium	30	mg/L		1		E200.7	02/19/19 18:06 / rlh
Chromium	ND	mg/L		0.005		E200.8	02/26/19 00:20 / jdl
Cobalt	ND	mg/L		0.005		E200.8	02/26/19 00:20 / jdl
Copper	ND	mg/L		0.005		E200.8	02/26/19 00:20 / jdl
Iron	ND	mg/L		0.02		E200.8	02/26/19 00:20 / jdl
Lead	ND	mg/L		0.001		E200.8	02/26/19 00:20 / jdl
Lithium	ND	mg/L		0.1		E200.7	02/19/19 18:06 / rlh
Magnesium	21	mg/L		1		E200.7	02/19/19 18:06 / rlh
Manganese	0.005	mg/L		0.001		E200.8	02/26/19 00:20 / jdl
Molybdenum	0.033	mg/L		0.001		E200.8	02/26/19 00:20 / jdl
Nickel	ND	mg/L		0.005		E200.8	02/26/19 00:20 / jdl
Potassium	1	mg/L		1		E200.7	02/19/19 18:06 / rlh
Selenium	0.021	mg/L		0.001		E200.8	02/26/19 00:20 / jdl
Silicon	1.2	mg/L	D	0.3		E200.7	02/19/19 18:06 / rlh
Silver	ND	mg/L		0.001		E200.8	02/26/19 00:20 / jdl
Sodium	4	mg/L		1		E200.7	02/19/19 18:06 / rlh
Strontium	0.15	mg/L		0.01		E200.7	02/19/19 18:06 / rlh
Thallium	ND	mg/L		0.0005		E200.8	02/26/19 00:20 / jdl
Tin	ND	mg/L		0.01		E200.8	02/26/19 00:20 / jdl
Titanium	ND	mg/L		0.005		E200.8	02/27/19 19:45 / jdl
Uranium	0.0013	mg/L		0.0003		E200.8	02/26/19 00:20 / jdl
Vanadium	ND	mg/L		0.01		E200.8	02/26/19 00:20 / jdl
Zinc	ND	mg/L		0.01		E200.8	02/26/19 00:20 / jdl

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study Phase 2  
**Lab ID:** B19021083-007  
**Client Sample ID:** E2

**Report Date:** 03/07/19  
**Collection Date:** 02/14/19 12:00  
**DateReceived:** 02/15/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	3	mg/L	D	2		A5310 C	02/25/19 17:39 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	02/24/19 02:44 / car
Antimony	ND	mg/L		0.001		E200.8	02/24/19 02:44 / car
Arsenic	ND	mg/L		0.001		E200.8	02/24/19 02:44 / car
Barium	ND	mg/L		0.05		E200.7	02/19/19 18:11 / rlh
Beryllium	ND	mg/L		0.001		E200.8	02/24/19 02:44 / car
Boron	ND	mg/L		0.05		E200.7	02/19/19 18:11 / rlh
Cadmium	ND	mg/L		0.001		E200.8	02/24/19 02:44 / car
Calcium	57	mg/L		1		E200.7	02/19/19 18:11 / rlh
Chromium	ND	mg/L		0.005		E200.8	02/24/19 02:44 / car
Cobalt	ND	mg/L		0.005		E200.8	02/26/19 00:24 / jdl
Copper	ND	mg/L		0.005		E200.8	02/24/19 02:44 / car
Iron	0.14	mg/L	D	0.08		E200.7	02/19/19 18:11 / rlh
Lead	ND	mg/L		0.001		E200.8	02/24/19 02:44 / car
Lithium	ND	mg/L		0.1		E200.7	02/19/19 18:11 / rlh
Magnesium	47	mg/L		1		E200.7	02/19/19 18:11 / rlh
Manganese	ND	mg/L		0.001		E200.8	02/24/19 02:44 / car
Molybdenum	0.011	mg/L		0.001		E200.8	02/24/19 02:44 / car
Nickel	ND	mg/L		0.005		E200.8	02/26/19 00:24 / jdl
Potassium	2	mg/L		1		E200.7	02/19/19 18:11 / rlh
Selenium	0.051	mg/L		0.001		E200.8	02/24/19 02:44 / car
Silicon	1.4	mg/L	D	0.3		E200.7	02/19/19 18:11 / rlh
Silver	ND	mg/L		0.001		E200.8	02/24/19 02:44 / car
Sodium	5	mg/L		1		E200.7	02/19/19 18:11 / rlh
Strontium	0.28	mg/L		0.01		E200.7	02/19/19 18:11 / rlh
Thallium	ND	mg/L		0.0005		E200.8	02/24/19 02:44 / car
Tin	ND	mg/L		0.01		E200.8	02/24/19 02:44 / car
Titanium	ND	mg/L		0.005		E200.8	02/24/19 02:44 / car
Uranium	0.0058	mg/L		0.0003		E200.8	02/24/19 02:44 / car
Vanadium	ND	mg/L		0.01		E200.8	02/24/19 02:44 / car
Zinc	0.02	mg/L		0.01		E200.8	02/24/19 02:44 / car

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study Phase 2  
**Lab ID:** B19021083-008  
**Client Sample ID:** E3

**Report Date:** 03/07/19  
**Collection Date:** 02/14/19 12:00  
**Date Received:** 02/15/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	2	mg/L	D	2		A5310 C	02/25/19 17:55 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	02/24/19 02:49 / car
Antimony	ND	mg/L		0.001		E200.8	02/24/19 02:49 / car
Arsenic	ND	mg/L		0.001		E200.8	02/24/19 02:49 / car
Barium	ND	mg/L		0.05		E200.7	02/19/19 18:15 / rlh
Beryllium	ND	mg/L		0.001		E200.8	02/24/19 02:49 / car
Boron	ND	mg/L		0.05		E200.7	02/19/19 18:15 / rlh
Cadmium	ND	mg/L		0.001		E200.8	02/24/19 02:49 / car
Calcium	55	mg/L		1		E200.7	02/19/19 18:15 / rlh
Chromium	ND	mg/L		0.005		E200.8	02/24/19 02:49 / car
Cobalt	ND	mg/L		0.005		E200.8	02/26/19 00:28 / jdl
Copper	ND	mg/L		0.005		E200.8	02/24/19 02:49 / car
Iron	ND	mg/L		0.02		E200.8	02/24/19 02:49 / car
Lead	ND	mg/L		0.001		E200.8	02/24/19 02:49 / car
Lithium	ND	mg/L		0.1		E200.7	02/19/19 18:15 / rlh
Magnesium	82	mg/L		1		E200.7	02/19/19 18:15 / rlh
Manganese	ND	mg/L		0.001		E200.8	02/24/19 02:49 / car
Molybdenum	0.004	mg/L		0.001		E200.8	02/24/19 02:49 / car
Nickel	ND	mg/L		0.005		E200.8	02/26/19 00:28 / jdl
Potassium	3	mg/L		1		E200.7	02/19/19 18:15 / rlh
Selenium	0.070	mg/L		0.001		E200.8	02/24/19 02:49 / car
Silicon	1.7	mg/L	D	0.3		E200.7	02/19/19 18:15 / rlh
Silver	ND	mg/L		0.001		E200.8	02/24/19 02:49 / car
Sodium	7	mg/L		1		E200.7	02/19/19 18:15 / rlh
Strontium	0.41	mg/L		0.01		E200.7	02/19/19 18:15 / rlh
Thallium	ND	mg/L		0.0005		E200.8	02/24/19 02:49 / car
Tin	ND	mg/L		0.01		E200.8	02/24/19 02:49 / car
Titanium	ND	mg/L		0.005		E200.8	02/24/19 02:49 / car
Uranium	0.0061	mg/L		0.0003		E200.8	02/24/19 02:49 / car
Vanadium	ND	mg/L		0.01		E200.8	02/24/19 02:49 / car
Zinc	ND	mg/L		0.01		E200.8	02/24/19 02:49 / car

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study Phase 2  
**Lab ID:** B19021083-009  
**Client Sample ID:** E4

**Report Date:** 03/07/19  
**Collection Date:** 02/14/19 12:00  
**DateReceived:** 02/15/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	3	mg/L	D	2		A5310 C	02/25/19 18:10 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	02/24/19 02:54 / car
Antimony	ND	mg/L		0.001		E200.8	02/24/19 02:54 / car
Arsenic	ND	mg/L		0.001		E200.8	02/24/19 02:54 / car
Barium	ND	mg/L		0.05		E200.7	02/19/19 18:19 / rlh
Beryllium	ND	mg/L		0.001		E200.8	02/24/19 02:54 / car
Boron	ND	mg/L		0.05		E200.7	02/19/19 18:19 / rlh
Cadmium	ND	mg/L		0.001		E200.8	02/24/19 02:54 / car
Calcium	60	mg/L		1		E200.7	02/19/19 18:19 / rlh
Chromium	ND	mg/L		0.005		E200.8	02/24/19 02:54 / car
Cobalt	ND	mg/L		0.005		E200.8	02/26/19 00:32 / jdl
Copper	ND	mg/L		0.005		E200.8	02/24/19 02:54 / car
Iron	ND	mg/L		0.02		E200.8	02/24/19 02:54 / car
Lead	ND	mg/L		0.001		E200.8	02/24/19 02:54 / car
Lithium	ND	mg/L		0.1		E200.7	02/19/19 18:19 / rlh
Magnesium	57	mg/L		1		E200.7	02/19/19 18:19 / rlh
Manganese	ND	mg/L		0.001		E200.8	02/24/19 02:54 / car
Molybdenum	0.007	mg/L		0.001		E200.8	02/24/19 02:54 / car
Nickel	ND	mg/L		0.005		E200.8	02/26/19 00:32 / jdl
Potassium	2	mg/L		1		E200.7	02/19/19 18:19 / rlh
Selenium	0.077	mg/L		0.001		E200.8	02/24/19 02:54 / car
Silicon	1.0	mg/L	D	0.3		E200.7	02/19/19 18:19 / rlh
Silver	ND	mg/L		0.001		E200.8	02/24/19 02:54 / car
Sodium	6	mg/L		1		E200.7	02/19/19 18:19 / rlh
Strontium	0.31	mg/L		0.01		E200.7	02/19/19 18:19 / rlh
Thallium	ND	mg/L		0.0005		E200.8	02/24/19 02:54 / car
Tin	ND	mg/L		0.01		E200.8	02/24/19 02:54 / car
Titanium	ND	mg/L		0.005		E200.8	02/24/19 02:54 / car
Uranium	0.0045	mg/L		0.0003		E200.8	02/24/19 02:54 / car
Vanadium	ND	mg/L		0.01		E200.8	02/24/19 02:54 / car
Zinc	0.13	mg/L		0.01		E200.8	02/24/19 02:54 / car

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Enviromin Inc  
**Project:** NWP Column Study Phase 2  
**Lab ID:** B19021083-010  
**Client Sample ID:** E5

**Report Date:** 03/07/19  
**Collection Date:** 02/14/19 12:00  
**Date Received:** 02/15/19  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>AGGREGATE ORGANICS</b>							
Organic Carbon, Dissolved (DOC)	6	mg/L	D	2		A5310 C	02/25/19 18:26 / eli-ca
<b>METALS, DISSOLVED</b>							
Aluminum	ND	mg/L		0.03		E200.8	02/24/19 02:58 / car
Antimony	ND	mg/L		0.001		E200.8	02/24/19 02:58 / car
Arsenic	ND	mg/L		0.001		E200.8	02/24/19 02:58 / car
Barium	ND	mg/L		0.05		E200.7	02/19/19 18:23 / rlh
Beryllium	ND	mg/L		0.001		E200.8	02/24/19 02:58 / car
Boron	ND	mg/L		0.05		E200.7	02/19/19 18:23 / rlh
Cadmium	ND	mg/L		0.001		E200.8	02/24/19 02:58 / car
Calcium	67	mg/L		1		E200.7	02/19/19 18:23 / rlh
Chromium	ND	mg/L		0.005		E200.8	02/24/19 02:58 / car
Cobalt	ND	mg/L		0.005		E200.8	02/26/19 00:36 / jdl
Copper	ND	mg/L		0.005		E200.8	02/24/19 02:58 / car
Iron	ND	mg/L		0.02		E200.8	02/24/19 02:58 / car
Lead	ND	mg/L		0.001		E200.8	02/24/19 02:58 / car
Lithium	ND	mg/L		0.1		E200.7	02/19/19 18:23 / rlh
Magnesium	59	mg/L		1		E200.7	02/19/19 18:23 / rlh
Manganese	ND	mg/L		0.001		E200.8	02/24/19 02:58 / car
Molybdenum	0.037	mg/L		0.001		E200.8	02/24/19 02:58 / car
Nickel	ND	mg/L		0.005		E200.8	02/26/19 00:36 / jdl
Potassium	2	mg/L		1		E200.7	02/19/19 18:23 / rlh
Selenium	0.055	mg/L		0.001		E200.8	02/24/19 02:58 / car
Silicon	1.4	mg/L	D	0.3		E200.7	02/19/19 18:23 / rlh
Silver	ND	mg/L		0.001		E200.8	02/24/19 02:58 / car
Sodium	5	mg/L		1		E200.7	02/19/19 18:23 / rlh
Strontium	0.33	mg/L		0.01		E200.7	02/19/19 18:23 / rlh
Thallium	ND	mg/L		0.0005		E200.8	02/24/19 02:58 / car
Tin	ND	mg/L		0.01		E200.8	02/24/19 02:58 / car
Titanium	ND	mg/L		0.005		E200.8	02/24/19 02:58 / car
Uranium	0.0058	mg/L		0.0003		E200.8	02/24/19 02:58 / car
Vanadium	ND	mg/L		0.01		E200.8	02/24/19 02:58 / car
Zinc	ND	mg/L		0.01		E200.8	02/24/19 02:58 / car

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 03/07/19

**Project:** NWP Column Study Phase 2

**Work Order:** B19021083

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: A5310 C</b>								Analytical Run: SUB-C244398			
<b>Lab ID: CCV-10666</b>	Continuing Calibration Verification Standard										
Organic Carbon, Dissolved (DOC)		4.71	mg/L	0.50	94	90	110			02/25/19 15:32	
<b>Method: A5310 C</b>								Batch: C_R244398			
<b>Lab ID: LCS-10553</b>	Laboratory Control Sample										
Organic Carbon, Dissolved (DOC)		4.64	mg/L	0.50	93	90	110			Run: SUB-C244398 02/25/19 15:02	
<b>Lab ID: MBLK</b>	Method Blank										
Organic Carbon, Dissolved (DOC)		ND	mg/L	0.5						Run: SUB-C244398 02/25/19 15:17	
<b>Lab ID: B19021118-003E</b>	Sample Matrix Spike										
Organic Carbon, Dissolved (DOC)		542	mg/L	40	96	85	115			Run: SUB-C244398 02/25/19 19:28	
<b>Lab ID: B19021118-003E</b>	Sample Matrix Spike Duplicate										
Organic Carbon, Dissolved (DOC)		543	mg/L	40	96	85	115	0.2	20	Run: SUB-C244398 02/25/19 19:44	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 03/07/19

**Project:** NWP Column Study Phase 2

**Work Order:** B19021083

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.7</b>								Analytical Run: ICP203-B_190225A			
<b>Lab ID:</b>	<b>ICV</b>	Continuing Calibration Verification Standard								02/25/19 10:58	
Boron		2.51	mg/L	0.10	101	95	105				
<b>Method: E200.7</b>								Batch: R315897			
<b>Lab ID:</b>	<b>MB-6500DIS190225A</b>	Method Blank						Run: ICP203-B_190225A		02/25/19 11:06	
Boron		ND	mg/L	0.01							
<b>Lab ID:</b>	<b>LFB-6500DIS190225A</b>	Laboratory Fortified Blank						Run: ICP203-B_190225A		02/25/19 11:14	
Boron		0.997	mg/L	0.10	100	85	115				
<b>Lab ID:</b>	<b>B19021468-002BMS2</b>	Sample Matrix Spike						Run: ICP203-B_190225A		02/25/19 14:40	
Boron		1.02	mg/L	0.050	100	70	130				
<b>Lab ID:</b>	<b>B19021468-002BMSD</b>	Sample Matrix Spike Duplicate						Run: ICP203-B_190225A		02/25/19 14:43	
Boron		1.03	mg/L	0.050	100	70	130	0.7	20		

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 03/07/19

**Project:** NWP Column Study Phase 2

**Work Order:** B19021083

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.7</b>								Analytical Run: ICP204-B_190219A			
<b>Lab ID: ICV</b>	13 Continuing Calibration Verification Standard								02/19/19 09:43		
Aluminum		2.45	mg/L	0.10	98	95	105				
Barium		2.47	mg/L	0.10	99	95	105				
Beryllium		1.25	mg/L	0.010	100	95	105				
Boron		2.48	mg/L	0.10	99	95	105				
Calcium		24.8	mg/L	1.0	99	95	105				
Iron		2.46	mg/L	0.020	98	95	105				
Lithium		1.24	mg/L	0.10	99	95	105				
Magnesium		24.7	mg/L	1.0	99	95	105				
Potassium		24.6	mg/L	1.0	98	95	105				
Silicon		5.02	mg/L	0.10	100	95	105				
Sodium		24.7	mg/L	1.0	99	95	105				
Strontium		2.45	mg/L	0.10	98	95	105				
Titanium		2.50	mg/L	0.010	100	95	105				
<b>Method: E200.7</b>								Batch: R315587			
<b>Lab ID: MB-7400DIS180219A</b>	13 Method Blank								Run: ICP204-B_190219A		02/19/19 09:52
Aluminum		ND	mg/L	0.03							
Barium		ND	mg/L	0.0010							
Beryllium		ND	mg/L	0.0005							
Boron		ND	mg/L	0.01							
Calcium		0.1	mg/L	0.07							
Iron		ND	mg/L	0.02							
Lithium		ND	mg/L	0.02							
Magnesium		ND	mg/L	0.02							
Potassium		ND	mg/L	0.1							
Silicon		ND	mg/L	0.07							
Sodium		ND	mg/L	0.1							
Strontium		ND	mg/L	0.001							
Titanium		ND	mg/L	0.006							
<b>Lab ID: LFB-7400DIS180219A</b>	13 Laboratory Fortified Blank								Run: ICP204-B_190219A		02/19/19 10:00
Aluminum		4.89	mg/L	0.10	98	85	115				
Barium		0.982	mg/L	0.10	98	85	115				
Beryllium		0.496	mg/L	0.010	99	85	115				
Boron		0.998	mg/L	0.10	100	85	115				
Calcium		48.9	mg/L	1.0	97	85	115				
Iron		4.93	mg/L	0.020	99	85	115				
Lithium		0.985	mg/L	0.10	99	85	115				
Magnesium		48.5	mg/L	1.0	97	85	115				
Potassium		48.7	mg/L	1.0	97	85	115				
Silicon		10.1	mg/L	0.10	101	85	115				
Sodium		49.2	mg/L	1.0	98	85	115				
Strontium		0.958	mg/L	0.10	96	85	115				
Titanium		1.01	mg/L	0.010	101	85	115				

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.





# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 03/07/19

**Project:** NWP Column Study Phase 2

**Work Order:** B19021083

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b> <span style="float: right;">Batch: R315587</span>										
<b>Lab ID:</b>	<b>B19021083-005AMS2</b>	13	Sample Matrix Spike							
						Run: ICP204-B_190219A				02/19/19 17:59
Aluminum		26.0	mg/L	0.18	100	70	130			
Barium		5.02	mg/L	0.050	100	70	130			
Beryllium		2.56	mg/L	0.0024	102	70	130			
Boron		5.17	mg/L	0.065	103	70	130			
Calcium		259	mg/L	1.0	102	70	130			
Iron		26.4	mg/L	0.086	103	70	130			
Lithium		5.09	mg/L	0.10	102	70	130			
Magnesium		253	mg/L	1.0	101	70	130			
Potassium		254	mg/L	1.0	102	70	130			
Silicon		58.5	mg/L	0.38	106	70	130			
Sodium		283	mg/L	1.0	103	70	130			
Strontium		4.99	mg/L	0.010	99	70	130			
Titanium		5.35	mg/L	0.033	105	70	130			
<b>Lab ID:</b>	<b>B19021083-005AMSD</b>	13	Sample Matrix Spike Duplicate							
						Run: ICP204-B_190219A				02/19/19 18:03
Aluminum		26.1	mg/L	0.18	100	70	130	0.0	20	
Barium		5.02	mg/L	0.050	100	70	130	0.0	20	
Beryllium		2.56	mg/L	0.0024	102	70	130	0.1	20	
Boron		5.15	mg/L	0.065	103	70	130	0.3	20	
Calcium		259	mg/L	1.0	102	70	130	0.2	20	
Iron		26.4	mg/L	0.086	103	70	130	0.0	20	
Lithium		5.10	mg/L	0.10	102	70	130	0.1	20	
Magnesium		253	mg/L	1.0	101	70	130	0.0	20	
Potassium		254	mg/L	1.0	101	70	130	0.2	20	
Silicon		58.6	mg/L	0.38	106	70	130	0.1	20	
Sodium		284	mg/L	1.0	104	70	130	0.4	20	
Strontium		4.98	mg/L	0.010	99	70	130	0.2	20	
Titanium		5.36	mg/L	0.033	106	70	130	0.1	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 03/07/19

**Project:** NWP Column Study Phase 2

**Work Order:** B19021083

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method:</b> E200.8										Analytical Run: ICPMS206-B_190222A	
<b>Lab ID:</b> QCS	19	Initial Calibration Verification Standard							02/23/19 20:19		
Aluminum		0.235	mg/L	0.10	94	90	110				
Antimony		0.0466	mg/L	0.050	93	90	110				
Arsenic		0.0490	mg/L	0.0050	98	90	110				
Beryllium		0.0232	mg/L	0.0010	93	90	110				
Cadmium		0.0239	mg/L	0.0010	95	90	110				
Chromium		0.0494	mg/L	0.010	99	90	110				
Copper		0.0491	mg/L	0.010	98	90	110				
Iron		0.261	mg/L	0.020	104	90	110				
Lead		0.0469	mg/L	0.010	94	90	110				
Manganese		0.240	mg/L	0.010	96	90	110				
Molybdenum		0.0477	mg/L	0.0050	95	90	110				
Selenium		0.0493	mg/L	0.0050	99	90	110				
Silver		0.0238	mg/L	0.0050	95	90	110				
Thallium		0.0485	mg/L	0.10	97	90	110				
Tin		0.0479	mg/L	0.10	96	90	110				
Titanium		0.0477	mg/L	0.010	95	90	110				
Uranium		0.0467	mg/L	0.00030	93	90	110				
Vanadium		0.0499	mg/L	0.10	100	90	110				
Zinc		0.0485	mg/L	0.010	97	90	110				
<b>Method:</b> E200.8										Batch: R315857	
<b>Lab ID:</b> LRB	19	Method Blank							Run: ICPMS206-B_190222A 02/23/19 12:58		
Aluminum		ND	mg/L	0.0008							
Antimony		ND	mg/L	0.0004							
Arsenic		ND	mg/L	0.0002							
Beryllium		ND	mg/L	0.0001							
Cadmium		ND	mg/L	0.00003							
Chromium		ND	mg/L	0.0002							
Copper		ND	mg/L	0.0003							
Iron		ND	mg/L	0.001							
Lead		ND	mg/L	0.00005							
Manganese		ND	mg/L	0.00010							
Molybdenum		ND	mg/L	0.00005							
Selenium		ND	mg/L	0.0003							
Silver		ND	mg/L	0.00002							
Thallium		ND	mg/L	0.00007							
Tin		ND	mg/L	0.001							
Titanium		ND	mg/L	0.0001							
Uranium		ND	mg/L	0.00005							
Vanadium		ND	mg/L	0.001							
Zinc		ND	mg/L	0.003							
<b>Lab ID:</b> LFB	19	Laboratory Fortified Blank							Run: ICPMS206-B_190222A 02/23/19 16:56		
Aluminum		0.0434	mg/L	0.10	87	85	115				

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 03/07/19

**Project:** NWP Column Study Phase 2

**Work Order:** B19021083

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.8</b>											
Batch: R315857											
<b>Lab ID:</b>	<b>LFB</b>	19 Laboratory Fortified Blank			Run: ICPMS206-B_190222A			02/23/19 16:56			
Antimony		0.0439	mg/L	0.050	88	85	115				
Arsenic		0.0462	mg/L	0.0050	92	85	115				
Beryllium		0.0434	mg/L	0.0010	87	85	115				
Cadmium		0.0425	mg/L	0.0010	85	85	115				
Chromium		0.0456	mg/L	0.010	91	85	115				
Copper		0.0540	mg/L	0.010	108	85	115				
Iron		4.69	mg/L	0.020	94	85	115				
Lead		0.0434	mg/L	0.010	87	85	115				
Manganese		0.0428	mg/L	0.010	86	85	115				
Molybdenum		0.0433	mg/L	0.0050	87	85	115				
Selenium		0.0452	mg/L	0.0050	90	85	115				
Silver		0.0171	mg/L	0.0050	86	85	115				
Thallium		0.0463	mg/L	0.10	93	85	115				
Tin		0.0434	mg/L	0.10	87	85	115				
Titanium		0.0506	mg/L	0.010	101	85	115				
Uranium		0.0437	mg/L	0.00030	87	85	115				
Vanadium		0.0506	mg/L	0.10	101	85	115				
Zinc		0.0427	mg/L	0.010	85	85	115				
<b>Lab ID:</b>	<b>B19021057-003BMS</b>	18 Sample Matrix Spike			Run: ICPMS206-B_190222A			02/23/19 23:32			
Aluminum		0.0459	mg/L	0.030	92	70	130				
Antimony		0.0351	mg/L	0.0010	70	70	130				
Arsenic		0.0732	mg/L	0.0010	99	70	130				
Beryllium		0.0432	mg/L	0.0010	86	70	130				
Cadmium		0.0469	mg/L	0.0010	94	70	130				
Chromium		0.0474	mg/L	0.0050	95	70	130				
Copper		0.0503	mg/L	0.0050	101	70	130				
Lead		0.0477	mg/L	0.0010	95	70	130				
Manganese		1.16	mg/L	0.0010		70	130			A	
Molybdenum		0.0510	mg/L	0.0010	99	70	130				
Selenium		0.0518	mg/L	0.0010	101	70	130				
Silver		0.0181	mg/L	0.0010	90	70	130				
Thallium		0.0461	mg/L	0.00050	91	70	130				
Tin		0.0496	mg/L	0.010	99	70	130				
Titanium		0.0489	mg/L	0.0050	94	70	130				
Uranium		0.0476	mg/L	0.00030	94	70	130				
Vanadium		0.0462	mg/L	0.010	92	70	130				
Zinc		0.0468	mg/L	0.010	94	70	130				
<b>Lab ID:</b>	<b>B19021057-003BMSD</b>	19 Sample Matrix Spike Duplicate			Run: ICPMS206-B_190222A			02/23/19 23:37			
Aluminum		0.0470	mg/L	0.030	94	70	130	2.5	20		
Antimony		0.0341	mg/L	0.0010	68	70	130	2.8	20	S	
Arsenic		0.0737	mg/L	0.0010	99	70	130	0.6	20		
Beryllium		0.0436	mg/L	0.0010	87	70	130	1.0	20		

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 03/07/19

**Project:** NWP Column Study Phase 2

**Work Order:** B19021083

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b> <span style="float: right;">Batch: R315857</span>										
<b>Lab ID:</b>	<b>B19021057-003BMSD</b>	19 Sample Matrix Spike Duplicate			Run: ICPMS206-B_190222A				02/23/19 23:37	
Cadmium		0.0463	mg/L	0.0010	93	70	130	1.2	20	
Chromium		0.0482	mg/L	0.0050	96	70	130	1.7	20	
Copper		0.0508	mg/L	0.0050	102	70	130	0.9	20	
Iron		4.25	mg/L	0.020	-3	70	130	1.4	20	S
Lead		0.0474	mg/L	0.0010	95	70	130	0.6	20	
Manganese		1.18	mg/L	0.0010		70	130	1.5	20	A
Molybdenum		0.0504	mg/L	0.0010	98	70	130	1.3	20	
Selenium		0.0508	mg/L	0.0010	99	70	130	1.8	20	
Silver		0.0180	mg/L	0.0010	90	70	130	0.3	20	
Thallium		0.0467	mg/L	0.00050	92	70	130	1.3	20	
Tin		0.0494	mg/L	0.010	99	70	130	0.5	20	
Titanium		0.0501	mg/L	0.0050	96	70	130	2.5	20	
Uranium		0.0475	mg/L	0.00030	94	70	130	0.2	20	
Vanadium		0.0482	mg/L	0.010	96	70	130	4.2	20	
Zinc		0.0464	mg/L	0.010	93	70	130	0.9	20	
<b>Method: E200.8</b> <span style="float: right;">Analytical Run: ICPMS206-B_190227A</span>										
<b>Lab ID:</b>	<b>QCS</b>	2 Initial Calibration Verification Standard			Run: ICPMS206-B_190227A				02/27/19 14:23	
Aluminum		0.243	mg/L	0.10	97	90	110			
Titanium		0.0464	mg/L	0.010	93	90	110			
<b>Method: E200.8</b> <span style="float: right;">Batch: R316086</span>										
<b>Lab ID:</b>	<b>LRB</b>	2 Method Blank			Run: ICPMS206-B_190227A				02/27/19 15:10	
Aluminum		ND	mg/L	0.0008						
Titanium		ND	mg/L	0.0001						
<b>Lab ID:</b>	<b>LFB</b>	2 Laboratory Fortified Blank			Run: ICPMS206-B_190227A				02/27/19 15:19	
Aluminum		0.0484	mg/L	0.10	97	85	115			
Titanium		0.0547	mg/L	0.010	109	85	115			
<b>Lab ID:</b>	<b>B19021509-001AMS</b>	2 Sample Matrix Spike			Run: ICPMS206-B_190227A				02/27/19 18:49	
Aluminum		0.0480	mg/L	0.030	96	70	130			
Titanium		0.0564	mg/L	0.0050	105	70	130			
<b>Lab ID:</b>	<b>B19021509-001AMSD</b>	2 Sample Matrix Spike Duplicate			Run: ICPMS206-B_190227A				02/27/19 18:54	
Aluminum		0.0488	mg/L	0.030	98	70	130	1.6	20	
Titanium		0.0554	mg/L	0.0050	103	70	130	1.7	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 03/07/19

**Project:** NWP Column Study Phase 2

**Work Order:** B19021083

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
<b>Method: E200.8</b>								Analytical Run: ICPMS207-B_190225B			
<b>Lab ID: QCS</b>	18 Initial Calibration Verification Standard							02/25/19 18:14			
Antimony		0.0487	mg/L	0.050	97	90	110				
Arsenic		0.0480	mg/L	0.0050	96	90	110				
Cadmium		0.0254	mg/L	0.0010	101	90	110				
Chromium		0.0488	mg/L	0.010	98	90	110				
Cobalt		0.0509	mg/L	0.010	102	90	110				
Copper		0.0501	mg/L	0.010	100	90	110				
Iron		0.253	mg/L	0.020	101	90	110				
Lead		0.0504	mg/L	0.010	101	90	110				
Manganese		0.244	mg/L	0.010	98	90	110				
Molybdenum		0.0494	mg/L	0.0050	99	90	110				
Nickel		0.0485	mg/L	0.010	97	90	110				
Selenium		0.0510	mg/L	0.0050	102	90	110				
Silver		0.0254	mg/L	0.0050	102	90	110				
Thallium		0.0500	mg/L	0.10	100	90	110				
Tin		0.0501	mg/L	0.10	100	90	110				
Uranium		0.0501	mg/L	0.00030	100	90	110				
Vanadium		0.0481	mg/L	0.10	96	90	110				
Zinc		0.0498	mg/L	0.010	100	90	110				
<b>Method: E200.8</b>								Batch: R315948			
<b>Lab ID: LRB</b>	18 Method Blank							Run: ICPMS207-B_190225B 02/25/19 18:56			
Antimony		ND	mg/L	0.0004							
Arsenic		ND	mg/L	0.0002							
Cadmium		ND	mg/L	0.00002							
Chromium		ND	mg/L	0.0002							
Cobalt		ND	mg/L	0.00004							
Copper		0.0003	mg/L	0.0003							
Iron		ND	mg/L	0.001							
Lead		0.0003	mg/L	0.00006							
Manganese		ND	mg/L	0.00010							
Molybdenum		ND	mg/L	0.00005							
Nickel		ND	mg/L	0.0006							
Selenium		ND	mg/L	0.0003							
Silver		ND	mg/L	0.00002							
Thallium		ND	mg/L	0.00004							
Tin		ND	mg/L	0.001							
Uranium		ND	mg/L	0.00005							
Vanadium		ND	mg/L	0.001							
Zinc		ND	mg/L	0.003							
<b>Lab ID: LFB</b>	18 Laboratory Fortified Blank							Run: ICPMS207-B_190225B 02/26/19 07:43			
Antimony		0.0458	mg/L	0.050	92	85	115				
Arsenic		0.0500	mg/L	0.0050	100	85	115				
Cadmium		0.0470	mg/L	0.0010	94	85	115				

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 03/07/19

**Project:** NWP Column Study Phase 2

**Work Order:** B19021083

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>										
Batch: R315948										
<b>Lab ID:</b>	<b>LFB</b>	18 Laboratory Fortified Blank			Run: ICPMS207-B_190225B				02/26/19 07:43	
Chromium		0.0504	mg/L	0.010	101	85	115			
Cobalt		0.0490	mg/L	0.010	98	85	115			
Copper		0.0507	mg/L	0.010	101	85	115			
Iron		4.71	mg/L	0.020	94	85	115			
Lead		0.0501	mg/L	0.010	100	85	115			
Manganese		0.0491	mg/L	0.010	98	85	115			
Molybdenum		0.0485	mg/L	0.0050	97	85	115			
Nickel		0.0503	mg/L	0.010	101	85	115			
Selenium		0.0487	mg/L	0.0050	97	85	115			
Silver		0.0189	mg/L	0.0050	95	85	115			
Thallium		0.0498	mg/L	0.10	100	85	115			
Tin		0.0482	mg/L	0.10	97	85	115			
Uranium		0.0506	mg/L	0.00030	101	85	115			
Vanadium		0.0539	mg/L	0.10	108	85	115			
Zinc		0.0487	mg/L	0.010	97	85	115			
<b>Lab ID:</b>	<b>B19021114-010BMS</b>	18 Sample Matrix Spike			Run: ICPMS207-B_190225B				02/25/19 22:55	
Antimony		0.0538	mg/L	0.0010	102	70	130			
Arsenic		0.112	mg/L	0.0010	98	70	130			
Cadmium		0.0491	mg/L	0.0010	98	70	130			
Chromium		0.0494	mg/L	0.0050	98	70	130			
Cobalt		0.0500	mg/L	0.0050	100	70	130			
Copper		0.0513	mg/L	0.0050	100	70	130			
Iron		5.02	mg/L	0.020	100	70	130			
Lead		0.0520	mg/L	0.0010	103	70	130			
Manganese		0.0491	mg/L	0.0010	97	70	130			
Molybdenum		0.0544	mg/L	0.0010	99	70	130			
Nickel		0.0473	mg/L	0.0050	95	70	130			
Selenium		0.0500	mg/L	0.0010	100	70	130			
Silver		0.00323	mg/L	0.0010	16	70	130			S
Thallium		0.0513	mg/L	0.00050	103	70	130			
Tin		0.0515	mg/L	0.010	103	70	130			
Uranium		0.0538	mg/L	0.00030	106	70	130			
Vanadium		0.0568	mg/L	0.010	110	70	130			
Zinc		0.0478	mg/L	0.010	96	70	130			
<b>Lab ID:</b>	<b>B19021114-010BMSD</b>	18 Sample Matrix Spike Duplicate			Run: ICPMS207-B_190225B				02/25/19 23:00	
Antimony		0.0559	mg/L	0.0010	106	70	130	3.8	20	
Arsenic		0.114	mg/L	0.0010	102	70	130	2.0	20	
Cadmium		0.0501	mg/L	0.0010	100	70	130	2.0	20	
Chromium		0.0507	mg/L	0.0050	101	70	130	2.6	20	
Cobalt		0.0504	mg/L	0.0050	101	70	130	0.7	20	
Copper		0.0524	mg/L	0.0050	102	70	130	2.2	20	
Iron		4.81	mg/L	0.020	96	70	130	4.1	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Enviromin Inc

Report Date: 03/07/19

Project: NWP Column Study Phase 2

Work Order: B19021083

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b> <span style="float: right;">Batch: R315948</span>										
<b>Lab ID: B19021114-010BMSD</b>	18	Sample Matrix Spike Duplicate			Run: ICPMS207-B_190225B				02/25/19 23:00	
Lead		0.0516	mg/L	0.0010	102	70	130	0.6	20	
Manganese		0.0507	mg/L	0.0010	101	70	130	3.4	20	
Molybdenum		0.0559	mg/L	0.0010	102	70	130	2.6	20	
Nickel		0.0484	mg/L	0.0050	97	70	130	2.2	20	
Selenium		0.0494	mg/L	0.0010	99	70	130	1.1	20	
Silver		0.00330	mg/L	0.0010	16	70	130	2.1	20	S
Thallium		0.0509	mg/L	0.00050	102	70	130	0.8	20	
Tin		0.0512	mg/L	0.010	102	70	130	0.6	20	
Uranium		0.0538	mg/L	0.00030	106	70	130	0.1	20	
Vanadium		0.0582	mg/L	0.010	112	70	130	2.5	20	
Zinc		0.0488	mg/L	0.010	98	70	130	2.1	20	
<b>Lab ID: B19021083-005AMS</b>	18	Sample Matrix Spike			Run: ICPMS207-B_190225B				02/26/19 00:07	
Antimony		0.0494	mg/L	0.0010	98	70	130			
Arsenic		0.0484	mg/L	0.0010	94	70	130			
Cadmium		0.0464	mg/L	0.0010	93	70	130			
Chromium		0.0484	mg/L	0.0050	95	70	130			
Cobalt		0.0474	mg/L	0.0050	94	70	130			
Copper		0.0794	mg/L	0.0050	95	70	130			
Iron		5.14	mg/L	0.020	95	70	130			
Lead		0.0492	mg/L	0.0010	97	70	130			
Manganese		0.0492	mg/L	0.0010	95	70	130			
Molybdenum		0.0478	mg/L	0.0010	95	70	130			
Nickel		0.0478	mg/L	0.0050	94	70	130			
Selenium		0.270	mg/L	0.0010		70	130			A
Silver		0.00403	mg/L	0.0010	15	70	130			S
Thallium		0.0479	mg/L	0.00050	96	70	130			
Tin		0.0497	mg/L	0.010	99	70	130			
Uranium		0.0499	mg/L	0.00030	100	70	130			
Vanadium		0.0494	mg/L	0.010	99	70	130			
Zinc		0.0898	mg/L	0.010	92	70	130			
<b>Lab ID: B19021083-005AMSD</b>	18	Sample Matrix Spike Duplicate			Run: ICPMS207-B_190225B				02/26/19 00:11	
Antimony		0.0527	mg/L	0.0010	104	70	130	6.5	20	
Arsenic		0.0507	mg/L	0.0010	98	70	130	4.7	20	
Cadmium		0.0487	mg/L	0.0010	97	70	130	4.7	20	
Chromium		0.0501	mg/L	0.0050	98	70	130	3.5	20	
Cobalt		0.0500	mg/L	0.0050	100	70	130	5.3	20	
Copper		0.0838	mg/L	0.0050	103	70	130	5.3	20	
Iron		5.85	mg/L	0.020	109	70	130	13	20	
Lead		0.0519	mg/L	0.0010	103	70	130	5.4	20	
Manganese		0.0514	mg/L	0.0010	99	70	130	4.4	20	
Molybdenum		0.0489	mg/L	0.0010	97	70	130	2.4	20	
Nickel		0.0504	mg/L	0.0050	99	70	130	5.4	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.



# QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** Enviromin Inc

**Report Date:** 03/07/19

**Project:** NWP Column Study Phase 2

**Work Order:** B19021083

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E200.8										Batch: R315948
<b>Lab ID:</b> B19021083-005AMSD	18	Sample Matrix Spike Duplicate			Run: ICPMS207-B_190225B				02/26/19 00:11	
Selenium		0.305	mg/L	0.0010		70	130	12	20	A
Silver		0.00423	mg/L	0.0010	16	70	130	4.9	20	S
Thallium		0.0496	mg/L	0.00050	99	70	130	3.5	20	
Tin		0.0508	mg/L	0.010	102	70	130	2.2	20	
Uranium		0.0529	mg/L	0.00030	106	70	130	5.8	20	
Vanadium		0.0513	mg/L	0.010	103	70	130	3.8	20	
Zinc		0.0928	mg/L	0.010	98	70	130	3.3	20	

**Qualifiers:**

RL - Analyte reporting limit.

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A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.





Work Order Receipt Checklist

Enviromin Inc

B19021083

Login completed by: Briana G. Sangiuliano

Date Received: 2/15/2019

Reviewed by: BL2000\gmccartney

Received by: bgs

Reviewed Date: 2/19/2019

Carrier name: Return-UPS Ground

- Shipping container/cooler in good condition? Yes [checked] No [ ] Not Present [ ]
Custody seals intact on all shipping container(s)/cooler(s)? Yes [checked] No [ ] Not Present [ ]
Custody seals intact on all sample bottles? Yes [ ] No [ ] Not Present [checked]
Chain of custody present? Yes [checked] No [ ]
Chain of custody signed when relinquished and received? Yes [checked] No [ ]
Chain of custody agrees with sample labels? Yes [ ] No [checked]
Samples in proper container/bottle? Yes [checked] No [ ]
Sample containers intact? Yes [checked] No [ ]
Sufficient sample volume for indicated test? Yes [checked] No [ ]
All samples received within holding time? Yes [checked] No [ ]
Temp Blank received in all shipping container(s)/cooler(s)? Yes [ ] No [checked] Not Applicable [ ]
Container/Temp Blank temperature: 2.8°C Blue Ice
Water - VOA vials have zero headspace? Yes [ ] No [ ] No VOA vials submitted [checked]
Water - pH acceptable upon receipt? Yes [checked] No [ ] Not Applicable [ ]

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as -dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Contact and Corrective Action Comments:

The following issues were resolved per phone conversation with Terry Biere:

The Chain of Custody listed the sample R1 for Dissolved Organic Carbon however container was not received. A unlabeled 250 mL phosphoric acid preserved container was received. The unlabeled container is the R1 sample for Dissolved Organic Carbon that was filtered in the field by client.

The sample R5 for Dissolved Organic Carbon was not indicated on the container if the sample was filtered or unfiltered. Sample was filtered in the field by client.



Trust our People. Trust our Data.

# Chain of Custody & Analytical Request Record

www.energylab.com

### Account Information (Billing information)

Company/Name: Environ Inc  
 Contact: Terry Biere  
 Phone: 406 430 2333  
 Mailing Address: 524 Professional Dr.  
 City, State, Zip: Bozeman, MT 59715  
 Email: terry.biere@environinc.com  
 Receive Invoice  Hard Copy  Email  Hard Copy  Email  
 Purchase Order: 4093 Bottle Order

### Report Information (if different than Account Information)

Company/Name: \_\_\_\_\_  
 Contact: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_  
 City, State, Zip: \_\_\_\_\_  
 Email: \_\_\_\_\_  
 Receive Report  Hard Copy  Email  
 Special Report/Formats:  
 LEVEL IV  NELAC  EDD/EDT (contact laboratory)  Other: \_\_\_\_\_

### Comments

\_\_\_\_\_

### Project Information

Project Name, PWSID, Permit, etc.: MWSP Column Study Phase 2  
 Sampler Name: Terry Biere Sampler Phone: \_\_\_\_\_  
 Sample Origin State: \_\_\_\_\_ EPA/State Compliance  Yes  No  
 MIMING CLIENTS, please indicate sample type.  
 Byproduct 11 (e)2 material  Unprocessed ore (NOT ground or refined)\*

**Matrix Codes**

A - Air  
 W - Water  
 S - Solids  
 V - Vegetation  
 B - Bioassay  
 O - Other  
 DW - Drinking Water

### Analysis Requested

See Attached

*Discard note protocol + sp*

*DL*

*X*

*X*

All turnaround times are standard unless marked as RUSH.  
 Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling - See Instructions Page

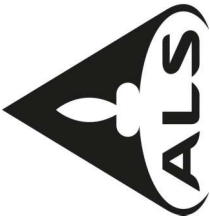
Sample ID	Sample Identification (Name, Location, Interval, etc.)	Collection		Matrix (See Codes Above)	Number of Containers	Date	Time	Signature	Signature	Date/Time	Received by (print)	Amount	Payment Type	Receipt Number (cash/check only)
		Date	Time											
1	R1	2/4/19	12PM	W	2									
2	R2													
3	R3													
4	R4													
5	R5													
6	E1													
7	E2													
8	E3													
9	E4													
10	E5													

EL LAB ID  
 B19021083

Custody Record MUST be signed by Terry Biere  
 Relinquished by (print): \_\_\_\_\_  
 Relinquished by (print): \_\_\_\_\_  
 Shipped By: \_\_\_\_\_ Cooler ID(s): \_\_\_\_\_ Custody Seals: Y N C B  
 Receipt Temp: \_\_\_\_\_ °C Intact: Y N  
 Temp Blank: Y N On Ice: Y N  
 Payment Type: \_\_\_\_\_ Cash \_\_\_\_\_ Check \_\_\_\_\_  
 Amount: \_\_\_\_\_ \$  
 Receipt Number (cash/check only): \_\_\_\_\_  
 Signature: Terry Biere  
 Date/Time: 2/15/19 09:20  
 Received by Laboratory (print): Bozeman Sampling Lab  
 Signature: \_\_\_\_\_  
 Date/Time: \_\_\_\_\_

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

## **Appendix I – Multielement Digest of Column Reject Material**



ALS USA Inc.  
 4977 Energy Way  
 Reno NV 89502  
 Phone: +1 775 356 5395 Fax: +1 775 355 0179  
 www.alsglobal.com/geochemistry

To: ENVIROMIN, INC.  
 524 PROFESSIONAL DRIVE  
 BOZEMAN MT 59718

Page: 1  
 Total # Pages: 3 (A - G)  
 Plus Appendix Pages  
 Finalized Date: 13-DEC-2019  
 Account: INCENV

**QC CERTIFICATE RE19281718**

Project: NWP Columns Phase 2

This report is for 24 Rock samples submitted to our lab in Reno, NV, USA on 6-NOV-2019.

The following have access to data associated with this certificate:

TERRY BIERE

**SAMPLE PREPARATION**

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
PUL-31mp	Manual Pulverization w/o PUL-QC
LOG-22	Sample login - Rcd w/o BarCode
SND-ALS	Send samples to internal laboratory

**ANALYTICAL PROCEDURES**

ALS CODE	DESCRIPTION
ME-MS61L	Super Trace Lowest DL 4A by ICP-MS
ME-MS41L	Super Trace Lowest DL AR by ICP-MS

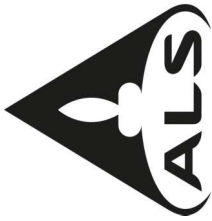
The results of this assay were based solely upon the content of the sample submitted. Any decision to invest should be made only after the potential investment value of the claim or deposit has been determined based on the results of assays of multiple samples of geological materials collected by the prospective investor or by a qualified person selected by him/her and based on an evaluation of all engineering data which is available concerning any proposed project. Statement required by Nevada State Law NRS 519

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

\*\*\*\*\* See Appendix Page for comments regarding this certificate \*\*\*\*\*

**Signature:**

Saa Traxler, General Manager, North Vancouver



ALS USA Inc.  
 4977 Energy Way  
 Reno NV 89502  
 Phone: +1 775 356 5395 Fax: +1 775 355 0179  
 www.alsglobal.com/geochemistry

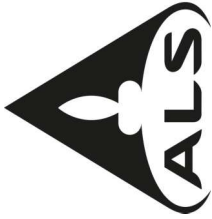
To: ENVIROMIN, INC.  
 524 PROFESSIONAL DRIVE  
 BOZEMAN MT 59718

Page: 2 - A  
 Total # Pages: 3 (A - G)  
 Plus Appendix Pages  
 Finalized Date: 13-DEC-2019  
 Account: INCENV

Project: NWP Columns Phase 2

**QC CERTIFICATE OF ANALYSIS RE19281718**

Sample Description	Method Analyte Units LOD	ME-MS61L Ag ppm 0.002	ME-MS61L Al % 0.01	ME-MS61L As ppm 0.02	ME-MS61L Ba ppm 1	ME-MS61L Be ppm 0.02	ME-MS61L Bi ppm 0.002	ME-MS61L Ca % 0.01	ME-MS61L Cd ppm 0.005	ME-MS61L Ce ppm 0.01	ME-MS61L Co ppm 0.005	ME-MS61L Cr ppm 0.3	ME-MS61L Cs ppm 0.01	ME-MS61L Cu ppm 0.02	ME-MS61L Fe % 0.002	ME-MS61L Ga ppm 0.05	
OREAS 920	Target Range - Lower Bound	0.098	7.53	5.49	540	2.45	0.723	0.48	0.053	91.4	14.20	82.0	8.88	107.0	3.93	18.85	
	Upper Bound	0.088	6.91	4.80	463	2.57	0.619	0.44	0.066	84.6	14.05	70.8	7.76	104.0	3.72	18.65	
OREAS-45e	Target Range - Lower Bound	0.112	8.47	5.91	629	3.19	0.761	0.56	0.094	103.5	17.15	87.2	9.50	120.0	4.56	22.9	
	Upper Bound	0.074	9.78	9.76	213	1.10	0.186	0.10	<0.005	25.0	41.4	424	3.73	349	14.10	26.1	
OREAS-45f	Target Range - Lower Bound	0.049	2.41	2.99			0.151		0.022		35.3						
	Upper Bound	0.065	2.99				0.189				43.1						
<b>BLANKS</b>																	
BLANK	Target Range - Lower Bound	<0.002	<0.01	<0.02	<1	<0.02	<0.002	<0.01	<0.005	<0.01	<0.005	<0.3	<0.01	0.02	<0.002	0.07	
	Upper Bound	<0.002	<0.01	<0.02	<1	<0.02	<0.002	<0.01	<0.005	<0.01	<0.005	<0.3	<0.01	<0.02	<0.002	<0.05	
BLANK	Target Range - Lower Bound	0.004	0.02	0.04	2	0.04	0.004	0.02	0.010	0.02	0.010	0.6	0.02	0.04	0.004	0.10	
	Upper Bound																
<b>DUPLICATES</b>																	
10% CR - Top	DUP																
	Target Range - Lower Bound																
	Upper Bound																



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 4977 Energy Way  
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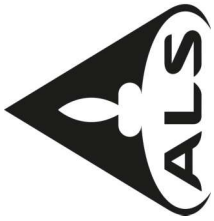
**QC CERTIFICATE OF ANALYSIS RE19281718**

Sample Description	Method Analyte Units LOD	ME-MS61L Ge ppm 0.05	ME-MS61L Hf ppm 4.70	ME-MS61L In ppm 0.071	ME-MS61L K % 2.83	ME-MS61L La ppm 43.2	ME-MS61L Li ppm 28.3	ME-MS61L Mg % 1.30	ME-MS61L Mn ppm 581	ME-MS61L Mo ppm 0.40	ME-MS61L Na % 0.629	ME-MS61L Nb ppm 17.25	ME-MS61L Ni ppm 38.6	ME-MS61L P % 0.073	ME-MS61L Pb ppm 22.2	ME-MS61L Rb ppm 171.5
OREAS 920	Target Range - Lower Bound	0.25	4.70	0.071	2.83	43.2	28.3	1.30	581	0.40	0.629	17.25	38.6	0.073	22.2	171.5
	Upper Bound	0.06	4.14	0.070	2.59	41.5	26.0	1.23	540	0.39	0.569	15.65	37.5	0.064	21.1	158.5
OREAS-45e	Target Range - Lower Bound	0.28	5.06	0.098	3.19	50.7	32.2	1.53	660	0.53	0.697	19.15	46.1	0.080	25.9	193.5
	Upper Bound															
OREAS-45f	Target Range - Lower Bound	0.35	4.35	0.105	0.22	13.10	20.1	0.21	214	2.26	0.063	21.9	252	0.027	13.40	28.3
	Upper Bound									1.05		0.148				
										1.33		0.192				
BLANK	Target Range - Lower Bound	0.07	<0.004	<0.005	<0.01	<0.005	<0.2	<0.01	<0.2	<0.02	0.001	<0.005	<0.08	<0.001	0.01	<0.02
	Upper Bound	<0.05	<0.004	<0.005	<0.01	<0.005	<0.2	<0.01	<0.2	<0.02	<0.001	<0.005	<0.08	<0.001	<0.01	<0.02
10% CR - Top	Target Range - Lower Bound	0.10	0.008	0.010	0.02	0.010	0.4	0.02	0.4	0.04	0.002	0.010	0.16	0.002	0.02	0.04
DUP	Target Range - Lower Bound															
	Upper Bound															

**STANDARDS**

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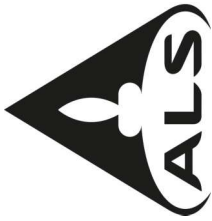
**QC CERTIFICATE OF ANALYSIS RE19281718**

Sample Description	Method Analyte Units LOD	ME-MS61L Re ppm 0.0004	ME-MS61L S % 0.01	ME-MS61L Sb ppm 0.02	ME-MS61L Sc ppm 0.01	ME-MS61L Se ppm 0.006	ME-MS61L Sn ppm 0.02	ME-MS61L Sr ppm 0.02	ME-MS61L Ta ppm 0.01	ME-MS61L Te ppm 0.005	ME-MS61L Th ppm 0.004	ME-MS61L Tl % 0.001	ME-MS61L Tl ppm 0.002	ME-MS61L U ppm 0.01	ME-MS61L V ppm 0.1	ME-MS61L W ppm 0.008
OREAS 920	Target Range - Lower Bound	0.0006	0.04	1.38	14.35	0.230	5.14	79.0	1.30	0.021	17.20	0.466	0.827	3.48	97.0	3.08
	Upper Bound	<0.0004	<0.01	1.25	12.85	0.216	4.52	73.8	1.21	0.010	17.35	0.438	0.748	3.36	87.2	2.64
OREAS-45e	Target Range - Lower Bound	0.0008	0.05	1.73	15.75	0.278	5.56	90.2	1.51	0.032	21.2	0.538	1.015	4.12	107.0	3.58
	Upper Bound	<0.0004	0.04	0.59	38.3	1.960	2.82	24.8	1.43	0.071	8.17	1.030	0.180	1.81	244	1.140
OREAS-45f	Target Range - Lower Bound	<0.0004	<0.01	0.18	<0.01	<0.006	1.75	<0.02	<0.01	0.020	6.90	<0.001	0.100	0.97	<0.1	<0.008
	Upper Bound	0.0008	0.02	0.30	0.02	0.012	2.19	0.04	0.02	0.044	8.44	0.002	0.140	1.21	0.2	0.023
BLANK	Target Range - Lower Bound	<0.0004	0.02	<0.02	<0.01	<0.006	0.02	<0.02	<0.01	<0.005	<0.004	<0.001	<0.002	<0.01	0.1	<0.008
	Upper Bound	<0.0004	<0.01	<0.02	<0.01	<0.006	<0.02	<0.02	<0.01	<0.005	<0.004	<0.001	<0.002	<0.01	<0.1	<0.008
10% CR - Top	Target Range - Lower Bound	0.0008	0.02	0.04	0.02	0.012	0.04	0.04	0.02	0.010	0.008	0.002	0.004	0.02	0.2	0.016
DUP	Target Range - Lower Bound															
	Upper Bound															

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**QC CERTIFICATE OF ANALYSIS RE19281718**

Sample Description	Method Analyte Units LOD	ME-MS61L Y ppm 0.01	ME-MS61L Zn ppm 0.2	ME-MS61L Zr ppm 0.1	ME-MS41L Au ppm 0.0002	ME-MS41L Ag ppm 0.001	ME-MS41L Al % 0.01	ME-MS41L As ppm 0.01	ME-MS41L B ppm 10	ME-MS41L Ba ppm 0.5	ME-MS41L Be ppm 0.01	ME-MS41L Bi ppm 0.0005	ME-MS41L Ca % 0.01	ME-MS41L Cd ppm 0.001	ME-MS41L Ce ppm 0.003	ME-MS41L Co ppm 0.001
OREAS 920	Target Range - Lower Bound	32.3	114.0	166.5	0.0006	0.092	2.36	4.12	<10	70.9	0.65	0.674	0.31	0.056	67.9	14.80
	Target Range - Upper Bound	29.9	104.0	128.5	0.0013	0.088	2.18	4.27	<10	67.5	0.65	0.612	0.28	0.052	64.8	13.50
OREAS 920	Target Range - Lower Bound	36.5	128.0	174.0		0.110	2.68	5.24	20	92.5	0.81	0.749	0.37	0.066	79.2	16.50
	Target Range - Upper Bound															
OREAS-45e	Target Range - Lower Bound				0.0494	0.237	3.12	11.25	<10	142.0	0.39	0.217	0.03	0.020	17.20	47.5
	Target Range - Upper Bound				0.0448	0.219	2.98	11.25	<10	117.5	0.36	0.1975	<0.01	0.018	15.95	46.8
OREAS-45f	Target Range - Lower Bound				0.0552	0.269	3.66	13.75	20	160.5	0.46	0.243	0.05	0.024	19.45	57.2
	Target Range - Upper Bound				0.0169	0.042	4.57	2.66	<10	148.5	0.86	0.1410	0.08	0.003	19.95	35.9
OREAS-45f	Target Range - Lower Bound				0.0160	0.050		2.42				0.1525		0.008		35.3
	Target Range - Upper Bound	9.82	33.6	178.0	0.0200	0.064		2.98				0.1875		0.014		43.1
OREAS-45f	Target Range - Lower Bound															
	Target Range - Upper Bound															
BLANK	Target Range - Lower Bound	<0.0002	<0.001	<0.01	<0.0002	<0.001	<0.01	<0.01	<10	<0.5	<0.01	<0.0005	<0.01	<0.001	0.003	0.003
	Target Range - Upper Bound	0.0004	0.002	0.02	0.0004	0.002	0.02	0.02	20	1.0	0.02	0.0010	0.02	0.002	<0.003	<0.001
BLANK	Target Range - Lower Bound	<0.01	<0.2	<0.1												
	Target Range - Upper Bound	0.02	0.4	0.2												
10% CR - Top	Target Range - Lower Bound	0.0066	0.305	0.43	0.0066	0.305	0.43	11.40	10	109.5	0.57	0.203	0.27	0.416	4.64	2.33
DUP	Target Range - Lower Bound	0.0035	1.305	0.43	0.0035	1.305	0.43	14.95	10	108.5	0.56	0.393	0.26	0.411	4.54	2.17
	Target Range - Upper Bound	0.0046	0.764	0.40	0.0046	0.764	0.40	12.50	<10	100.5	0.53	0.283	0.24	0.392	4.36	2.14
	Target Range - Upper Bound	0.0055	0.846	0.46	0.0055	0.846	0.46	13.85	20	117.5	0.60	0.313	0.29	0.435	4.82	2.36

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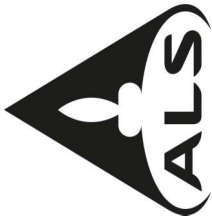
**QC CERTIFICATE OF ANALYSIS RE19281718**

Sample Description	Method Analyte Units LOD	ME-MS41L Cr ppm 0.01	ME-MS41L Cs ppm 0.005	ME-MS41L Cu ppm 0.01	ME-MS41L Fe % 0.001	ME-MS41L Ga ppm 0.004	ME-MS41L Ge ppm 0.005	ME-MS41L Hf ppm 0.002	ME-MS41L Hg ppm 0.004	ME-MS41L In ppm 0.005	ME-MS41L K % 0.01	ME-MS41L La ppm 0.002	ME-MS41L Li ppm 0.1	ME-MS41L Mg % 0.01	ME-MS41L Mn ppm 0.1	ME-MS41L Mo ppm 0.01
OREAS 920	Target Range - Lower Bound	40.9	1.940	106.5	3.43	6.07	0.125	0.588	<-0.004	0.028	0.39	33.7	19.8	1.03	491	0.33
	Upper Bound	38.2	1.885	102.5	3.27	6.17	0.100	0.493	<-0.004	0.019	0.37	33.5	19.0	0.93	459	0.33
	Target Range - Lower Bound	46.8	2.32	117.5	3.99	7.55	0.134	0.607	0.008	0.043	0.47	40.9	23.4	1.15	561	0.43
	Upper Bound															
OREAS-45e	Target Range - Lower Bound	812	0.671	699	22.3	12.50	0.403	0.773	0.011	0.094	0.05	6.55	2.4	0.08	345	1.78
	Upper Bound	764	0.623	659	20.4	11.25	0.319	0.703	<-0.004	0.076	0.03	5.86	2.2	0.07	329	1.57
	Target Range - Lower Bound	934	0.773	759	25.0	13.75	0.401	0.863	0.020	0.105	0.08	7.16	2.9	0.12	403	1.94
	Upper Bound	327	1.680	320	13.30	19.70	0.195	0.775	0.037	0.082	0.07	10.10	8.0	0.13	123.0	1.05
	Target Range - Lower Bound								0.020							1.06
	Upper Bound								0.042							1.32
	Target Range - Lower Bound															
	Upper Bound															
BLANK	Target Range - Lower Bound	0.01	<0.005	0.02	0.001	0.005	<0.005	<0.002	<0.004	<0.005	<0.01	0.002	<0.1	<0.01	0.1	<0.01
	Upper Bound	<0.01	<0.005	<0.01	<0.001	<0.004	<0.005	<0.002	<0.004	<0.005	<0.01	<0.002	<0.1	<0.01	<0.1	<0.01
	Target Range - Lower Bound	0.02	0.010	0.02	0.002	0.008	0.010	0.004	0.008	0.010	0.02	0.004	0.2	0.02	0.2	0.02
	Upper Bound															
10% CR - Top	Target Range - Lower Bound	3.30	0.917	20.5	0.430	1.100	0.026	0.044	0.112	0.028	0.08	2.22	1.9	0.04	23.1	0.83
	Upper Bound	3.30	0.941	19.95	0.430	1.110	0.029	0.040	0.108	0.030	0.08	2.17	1.9	0.04	22.8	0.78
DUP	Target Range - Lower Bound	3.13	0.878	19.50	0.408	1.045	0.021	0.038	0.098	0.023	0.07	2.08	1.7	0.03	21.7	0.75
	Upper Bound	3.48	0.980	20.9	0.453	1.165	0.034	0.046	0.122	0.035	0.09	2.31	2.1	0.05	24.2	0.86

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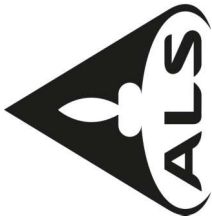
**QC CERTIFICATE OF ANALYSIS RE19281718**

Sample Description	Method Analyte Units LOD	ME-MS41L Na % 0.001	ME-MS41L Nb ppm 0.002	ME-MS41L Ni ppm 0.04	ME-MS41L P % 0.001	ME-MS41L Pb ppm 0.005	ME-MS41L Pd ppm 0.001	ME-MS41L Pt ppm 0.002	ME-MS41L Rb ppm 0.005	ME-MS41L Re ppm 0.0002	ME-MS41L S % 0.01	ME-MS41L Sb ppm 0.005	ME-MS41L Sc ppm 0.005	ME-MS41L Se ppm 0.003	ME-MS41L Sn ppm 0.01	ME-MS41L Sr ppm 0.01
OREAS 920	Target Range - Lower Bound	0.021	0.398	36.7	0.067	19.45	<0.001	<0.002	23.1	<0.0002	0.03	0.587	3.09	0.223	1.02	16.05
	Upper Bound	0.020	0.287	34.5	0.063	19.35	<0.001	<0.002	22.3	<0.0002	<0.01	0.514	2.61	0.192	0.98	15.20
	Target Range - Lower Bound	0.026	0.393	42.3	0.079	23.7	0.002	0.004	27.3	0.0004	0.05	0.707	3.21	0.242	1.22	18.60
	Upper Bound															
OREAS-45e	Target Range - Lower Bound	0.023	0.202	360	0.028	12.85	0.056	0.095	7.31	<0.0002	0.05	0.514	72.7	1.070	0.88	3.64
	Upper Bound	0.023	0.185	321	0.025	12.85	0.055	0.097	7.13	<0.0002	0.02	0.505	70.2	1.615	0.86	3.58
	Target Range - Lower Bound	0.031	0.255	393	0.033	15.75	0.069	0.123	8.73	0.0004	0.07	0.695	85.8	1.985	1.08	4.40
	Upper Bound	0.029	0.121	173.0	0.020	10.85	0.049	0.034	12.75	<0.0002	0.03	0.210	29.8	0.464	1.83	11.90
	Target Range - Lower Bound		0.143							<0.0002		0.199		0.519	1.76	
	Upper Bound		0.198							0.0004		0.281		0.641	2.18	
	Target Range - Lower Bound															
	Upper Bound															
BLANK	Target Range - Lower Bound	<0.001	<0.002	<0.04	<0.001	0.005	<0.001	<0.002	0.005	<0.0002	0.01	<0.005	<0.005	<0.003	<0.01	0.05
	Upper Bound	<0.001	<0.002	<0.04	<0.001	<0.005	<0.001	<0.002	<0.005	<0.0002	<0.01	<0.005	<0.005	<0.003	<0.01	<0.01
	Target Range - Lower Bound	0.002	0.004	0.08	0.002	0.010	0.08	0.002	0.010	0.0004	0.02	0.010	0.010	0.006	0.02	0.02
	Upper Bound															
10% CR - Top	Target Range - Lower Bound	0.008	0.051	6.67	0.016	7.47	<0.001	<0.002	7.37	0.0024	0.02	0.343	2.92	0.622	0.33	26.2
	Upper Bound	0.008	0.051	6.65	0.015	7.54	0.001	<0.002	7.27	0.0022	0.02	0.368	2.92	0.620	0.34	25.9
DUP	Target Range - Lower Bound	0.007	0.045	6.29	0.014	7.12	<0.001	<0.002	6.95	0.0020	<0.01	0.324	2.77	0.587	0.31	24.7
	Upper Bound	0.009	0.057	7.03	0.017	7.89	0.002	0.004	7.69	0.0026	0.03	0.387	3.07	0.655	0.36	27.4

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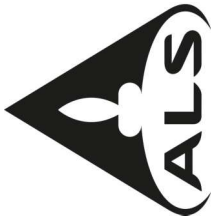
**QC CERTIFICATE OF ANALYSIS RE19281718**

Sample Description	Method Analyte Units LOD	ME-MS41L Ta ppm 0.005	ME-MS41L Te ppm 0.003	ME-MS41L Th ppm 0.002	ME-MS41L Ti % 0.001	ME-MS41L Ti ppm 0.001	ME-MS41L U ppm 0.005	ME-MS41L V ppm 0.1	ME-MS41L W ppm 0.001	ME-MS41L Y ppm 0.003	ME-MS41L Zn ppm 0.1	ME-MS41L Zr ppm 0.01
OREAS 920	Target Range - Lower Bound	0.015	0.018	15.10	0.121	0.144	1.965	24.2	0.452	16.35	96.8	21.4
	Upper Bound	<0.005	0.009	13.75	0.110	0.124	1.930	22.3	0.390	15.85	95.3	18.10
	Target Range - Lower Bound	0.018	0.023	16.85	0.136	0.170	2.37	27.5	0.530	19.35	116.5	24.5
	Upper Bound	<0.005	0.075	10.10	0.099	0.061	1.740	27.4	0.101	5.47	29.1	27.5
OREAS-45e	Target Range - Lower Bound	<0.005	0.087	9.63	0.094	0.049	1.550	265	0.081	5.16	27.4	23.7
	Upper Bound	0.021	0.113	11.75	0.118	0.069	1.910	325	0.111	6.32	33.8	32.1
OREAS-45f	Target Range - Lower Bound	<0.005	0.014	7.19	0.087	0.098	1.010	199.5	0.009	6.40	19.2	27.0
	Upper Bound	<0.005	0.024	6.90	0.076	0.101	0.976		0.003			25.5
OREAS-45f	Target Range - Lower Bound	0.010	0.040	8.44		0.139	1.205		0.009			34.5
	Upper Bound											
BLANK	Target Range - Lower Bound	<0.005	<0.003	<0.002	<0.001	<0.001	<0.005	0.1	<0.001	<0.003	<0.1	<0.01
	Upper Bound	<0.005	<0.003	<0.002	<0.001	<0.001	<0.005	<0.1	<0.001	<0.003	<0.1	<0.01
BLANK	Target Range - Lower Bound	0.010	0.006	0.004	0.002	0.002	0.010	0.2	0.002	0.006	0.2	0.02
	Upper Bound											
10% CR - Top	Target Range - Lower Bound	<0.005	0.033	1.355	0.001	0.006	0.566	12.7	0.011	4.20	34.6	2.07
DUP	Upper Bound	<0.005	0.038	1.360	0.001	0.007	0.549	12.5	0.012	4.11	34.0	2.10
Target Range - Lower Bound	Target Range - Lower Bound	<0.005	0.028	1.290	<0.001	0.005	0.525	11.9	0.010	3.94	32.5	1.92
	Upper Bound	0.010	0.038	1.425	0.002	0.008	0.590	13.3	0.013	4.37	36.1	2.25

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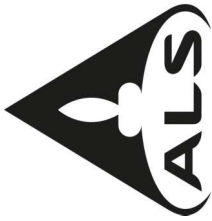
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**QC CERTIFICATE OF ANALYSIS RE19281718**

Sample Description	Method Analyte Units LOD	ME-MS61L														
		Ag ppm	Al %	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Ce ppm	Co ppm	Cr ppm	Cs ppm	Cu ppm	Fe %	Ga ppm
0% WR - Mid		0.456	7.92	5.64	1590	2.13	0.220	4.07	1.180	79.0	11.55	114.0	9.97	39.1	2.91	19.10
DUP		0.463	7.34	5.79	1480	1.97	0.208	3.81	1.150	74.5	10.70	105.5	9.22	36.8	2.68	18.20
Target Range - Lower Bound		0.435	7.24	5.41	1420	1.93	0.201	3.73	1.100	72.9	10.55	104.0	9.11	36.6	2.65	17.65
Upper Bound		0.484	8.02	6.02	1650	2.17	0.227	4.15	1.230	80.6	11.70	115.5	10.10	39.3	2.94	19.65

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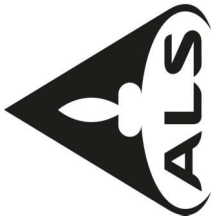
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**QC CERTIFICATE OF ANALYSIS RE19281718**

Method Analyte Units LOD	ME-MS61L	ME-MS61L	ME-MS61L	ME-MS61L	ME-MS61L	ME-MS61L	ME-MS61L	ME-MS61L	ME-MS61L	ME-MS61L	ME-MS61L	ME-MS61L	ME-MS61L	ME-MS61L	ME-MS61L	ME-MS61L	ME-MS61L	ME-MS61L
Sample Description	Ge ppm	Hf ppm	In ppm	K %	La ppm	Li ppm	Mg %	Mn ppm	Mo ppm	Na %	Nb ppm	Ni ppm	P %	Pb ppm	Rb ppm			
0% WR - Mid	0.25	3.24	0.066	3.05	42.3	48.0	1.88	422	3.25	0.104	16.85	54.4	0.110	24.0	139.0			
DUP	0.24	3.05	0.053	2.85	40.0	44.2	1.75	394	3.03	0.097	15.65	50.8	0.103	21.8	131.5			
Target Range - Lower Bound	0.18	2.98	0.052	2.79	39.1	43.6	1.71	387	2.96	0.094	15.45	49.9	0.100	21.7	128.5			
Upper Bound	0.31	3.31	0.067	3.11	43.2	48.6	1.92	429	3.32	0.107	17.05	55.3	0.113	24.1	142.0			

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**QC CERTIFICATE OF ANALYSIS RE19281718**

Method Analyte Units LOD	ME-MS61L Re ppm 0.0004	ME-MS61L S % 0.01	ME-MS61L Sb ppm 0.02	ME-MS61L Sc ppm 0.01	ME-MS61L Se ppm 0.006	ME-MS61L Sn ppm 0.02	ME-MS61L Sr ppm 0.02	ME-MS61L Ta ppm 0.01	ME-MS61L Te ppm 0.005	ME-MS61L Th ppm 0.004	ME-MS61L Ti % 0.001	ME-MS61L Tl ppm 0.002	ME-MS61L U ppm 0.01	ME-MS61L V ppm 0.1	ME-MS61L W ppm 0.008
0% WR - Mid	0.0036	0.11	1.77	13.70	2.10	2.39	177.5	1.04	0.066	12.55	0.392	0.985	4.76	225	1.180
DUP	0.0037	0.10	1.68	13.20	2.00	2.11	165.0	0.96	0.072	11.90	0.363	0.915	4.33	210	1.155
Target Range - Lower Bound	0.0031	0.09	1.58	12.75	1.940	2.12	162.5	0.94	0.061	11.60	0.358	0.877	4.31	207	1.070
Upper Bound	0.0042	0.12	1.87	14.15	2.16	2.38	180.0	1.06	0.077	12.85	0.397	1.025	4.78	228	1.265

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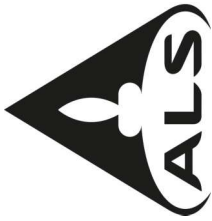
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**QC CERTIFICATE OF ANALYSIS RE19281718**

Method Analyte Units LOD	ME-MS61L	ME-MS61L	ME-MS61L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L
Sample Description	Y	Zn	Zr	Au	Ag	Al	As	B	Ba	Be	Bi	Ca	Cd	Ce	Co		
	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm		
0% WR - Mid	25.2	206	124.5				0.01	10	0.5	0.01	0.0005	0.01	0.001	0.003	0.001		
DUP	23.4	189.5	119.5				0.01	10	0.5	0.01	0.0005	0.01	0.001	0.003	0.001		
Target Range - Lower Bound	23.1	187.5	113.0				0.01	10	0.5	0.01	0.0005	0.01	0.001	0.003	0.001		
Upper Bound	25.5	208	131.5				0.01	10	0.5	0.01	0.0005	0.01	0.001	0.003	0.001		

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**QC CERTIFICATE OF ANALYSIS RE19281718**

Method Analyte Units LOD	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L													
Sample Description	Cr ppm	0.01	Cs ppm	0.005	Cu ppm	0.01	Fe %	0.001	Ga ppm	0.004	Ge ppm	0.005	Hf ppm	0.002	Hg ppm	0.004	In ppm	0.005	K %	0.01	La ppm	0.002	Li ppm	0.1	Mg %	0.01	Mn ppm	0.1	Mo ppm	0.01
0% WR - Mid DUP																														
Target Range - Lower Bound Upper Bound																														

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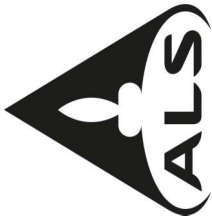
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**QC CERTIFICATE OF ANALYSIS RE19281718**

Method Analyte Units LOD	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L												
Sample Description	Na %	0.001	Nb ppm	0.002	Ni ppm	0.04	P %	0.001	Pb ppm	0.005	Pd ppm	0.001	Pt ppm	0.002	Rb ppm	0.005	Re ppm	0.0002	S %	0.01	Sb ppm	0.005	Sc ppm	0.005	Se ppm	0.003	Sn ppm	0.01	Sr ppm	0.01
0% WR - Mid DUP	DUPLICATES																													
Target Range - Lower Bound Upper Bound																														



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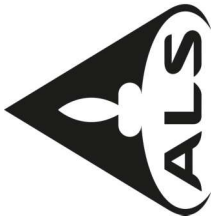
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**QC CERTIFICATE OF ANALYSIS RE19281718**

Method Analyte Units LOD	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L	ME-MS41L
Sample Description	Ta	Te	Th	Ti	Ti	Ti	U	V	W	Y	Zn	Zr
	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm
	0.005	0.003	0.002	0.001	0.001	0.001	0.005	0.1	0.001	0.003	0.1	0.01
0% WR - Mid DUP Target Range - Lower Bound Upper Bound	<b>DUPLICATES</b>											



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QC CERTIFICATE OF ANALYSIS RE19281718

### CERTIFICATE COMMENTS

#### ANALYTICAL COMMENTS

Gold determinations by this method are semi-quantitative due to the small sample weight used (0.5g).  
ME-MS41L

Applies to Method:

#### LABORATORY ADDRESSES

Processed at ALS Reno located at 4977 Energy Way, Reno, NV, USA.  
LOG-22  
SND-ALS

Applies to Method:

Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.  
ME-MS41L  
ME-MS61L  
WEI-21  
PUL-31mp

Applies to Method: