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APPENDIX A1

BOREHOLE COMPLETION TABLE AND DIRECT PUSH TECHNICAL MEMORANDUM (2009)

DIRECT PUSH GROUNDWATER SAMPLING TECHNICAL MEMORANDUM

Draft
Revision 1

(Response to Comments Attached)

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ACRONYMS AND ABBREVIATIONS

ASTM	American Society for Testing and Materials
bgs	below ground surface
EE/CA	Engineering Evaluations/Cost Analysis
GPS	global positioning system
LDC	Laboratory Data Consultants, Inc.
MDL	method detection limit
mg/L	milligrams per liter
ml	milliliter
P4	P4 Production, LLC
PVC	polyvinyl chloride
QAPP	Quality Assurance Project Plan
QC	quality control
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
RSD	relative standard deviation
SAP	sampling and analysis plan
µS/cm	microsiemens per centimeter
USCS	Unified Soils Classification Sytstem
WAAS	Wide Area Augmentation System

1.0 INTRODUCTION

This technical memorandum presents the results of the direct push groundwater sampling study conducted in May 2009 at the P4 Production, LLC (P4) mines (i.e., the Ballard, Henry, and Enoch Valley Mines) located near Soda Springs, Idaho. Sampling was conducted in accordance with the *Direct Push Groundwater Continuation Sampling and Analysis Plan,* Final Revision 2 (SAP; P4, 2009). The sampling plan was designed to follow up on the results of the 2008 Direct Push Groundwater Sampling Program (the Direct Push Program), which indicated the need for continued characterization to further evaluate and delineate the nature and extent of shallow alluvial groundwater impacts from past P4 mining operations. The results of the 2008 Direct Push Program are included in the *2007 and 2008 Data Summary Report Mines Site Investigation,* Final Revision 2 (MWH, 2009a).

The Direct Push Program specifically focuses on assessing the lateral extent of potential selenium impacts to shallow alluvial groundwater (i.e., Quaternary and older alluvium, colluvium and other surficial deposits) downgradient of mine source areas, such as the former mine pits and waste rock piles. Groundwater sampling was accomplished by collecting samples of alluvial groundwater from direct push boreholes (e.g., Geoprobe®). This sampling was designed to augment monitoring data from existing alluvial groundwater monitoring wells.

The Direct Push Program is one part of a comprehensive groundwater investigation being conducted to identify, characterize and monitor groundwater flow systems associated with potential contaminant sources at the P4 mines. This work was conducted to satisfy, in part, conditions of Consent Order/Administrative Order on Consent for the Performance of Site Investigations and Engineering Evaluations/Cost Analysis (EE/CAs) at P4 Production, LLC Phosphate Mine Sites in Southeastern Idaho (08/20/03), EPA Docket No. CERCLA-10-2003-0117.

The results of the Direct Push Program will also be utilized in accordance with the requirements of the Administrative Settlement Agreement and Order on Consent/Consent Order for Remedial Investigation/Feasibility Study (2009 CO/AOC; USEPA, 2009) and the Statement of Work (SOW). The purpose of the 2009 CO/AOC is to conduct a Remedial Investigation and Feasibility Study (RI/FS) for P4's Ballard, Henry and Enoch Valley Mines (the Sites). The 2009 CO/AOC supersedes the previous 2003 CO/AOC.

Evaluation of the direct push results is not presented herein but has been utilized in RI/FS Work Plan for the following:

- Analysis of remaining data gaps in the shallow aquifers at the Ballard, Henry, and Enoch Valley Mines
- Refining the conceptual site model (CSM) for the shallow aquifers
- Evaluation of the direct push results in relation to the decision error lower bound (DELB) for both adjoining groundwater and potentially impacted surface water
- Proposing additional characterization of the shallow groundwater where necessary

2.0 SCOPE OF WORK

The scope of work completed for the Direct Push Program included the following:

- Advanced multiple direct push boreholes to first encountered alluvial groundwater in the vicinity (downgradient) of mine source components (waste rock dumps and former mine pits) at the P4 Ballard, Henry and Enoch Valley mines (Drawing 1).
- Measured field parameters temperature, pH and electrical conductivity in boreholes that produce sufficient water to sample.
- Collected a groundwater sample from the direct push borehole if groundwater was encountered.
- Installed prepacked well screens at select direct push borehole locations to facilitate assessment of hydrogeologic characteristics of the shallow alluvial groundwater system.
- Assessed in situ hydraulic conductivities (i.e., slug testing) at select direct push locations.
- Collected and archived soil samples from select direct push boreholes for possible grain size analyses.
- Analyzed each groundwater sample collected from direct push boreholes for dissolved selenium (field filtered due to high turbidity).
- Installed temporary piezometers at select locations based on the rate of infiltration of groundwater into direct push boreholes.
- Surveyed the locations of the direct push bore by using a handheld global positioning system (GPS) unit.
- Surveyed the locations and elevations of each prepacked well location.
- Presented the results of the direct push groundwater sampling and laboratory testing.

3.0 LOCATION INFORMATION

Drawing 1 displays the six potential alluvial flow areas identified for follow-up investigation during the 2008 Direct Push Program at the Ballard, Henry and Enoch Valley Mines. The additional borehole locations that were added in and around these potential alluvial flow areas for the 2009 sampling event are discussed below for each mine. Location coordinates and other borehole completion information are provided in Table 1.

3.1 The Ballard Mine

The Ballard Mine was divided into three areas designated E, F and G. Due to the Ballard Mine's topographic and geologic location, there are comparatively more potential alluvial pathways near this mine than at the other P4 mines. Twenty-four boreholes were completed in 2009 in the Ballard Mine area.

3.1.1 The Ballard Mine Area E

Eight new boreholes, BH126 through BH133, were completed on the east side of the Ballard Mine (Drawings 2 and 3). Five were located within Area E and three were located outside of Area E to the east and downstream of previous borings. These eight boreholes primarily targeted shallow alluvial groundwater near waste rock dumps MWD084 to the northeast and MWD082 to the southeast. Two of the eight boreholes, BH127 and BH130, were cored and a soil sample from the saturated zone in each was collected and archived. Logs of the soil cores are included in Attachment A.

A prepacked well was installed in each boring, BH130 and BH131, and these wells were designated MBW130 and MBW131, respectively. Both wells are located along North Fork Wooley Valley Creek. MBW130 is located to the east of the Ballard Mine near MST092 in a downgradient location and MBW131 is located in an upgradient location to the northeast of the Ballard Mine near stream station MST093. Groundwater samples from MBW130 and MBW131 were collected from the prepacked wells after development. Groundwater samples from the remaining six boreholes were collected using the drive-point system.

3.1.2 The Ballard Mine Area F

Ten boreholes, BH134 through BH143, were completed near Area F on the southwest side of the Ballard Mine (Drawings 4 and 5). Seven of the ten boreholes were to the west of Area F and targeted shallow alluvial groundwater west of MWD081 and the main haul road. The remaining three boreholes were drilled on the south side of Area F to target shallow alluvial groundwater southwest of waste rock dump MWD081 near the Blackfoot River.

Boreholes BH134, BH135 and BH136 were relocated further east because the planned locations near the Blackfoot River were too marshy and soft for the direct push rig. This area of standing water and soft conditions is shown on Drawing 4. Boreholes BH137, 138, 140, 141, and 143 were dry. Temporary piezometers were set in boreholes BH134 and BH139 and sampled the next morning. Groundwater samples from boreholes BH136 and BH142 were collected using the drive-point system.

A prepacked well was installed in boring BH135 and designated MBW135. This well is located downgradient of MWD081 on the western side of the Blackfoot River Road. A groundwater sample from MBW135 was collected following well development.

3.1.3 The Ballard Mine Area G

Six boreholes were completed in Area G on the northwest side of the Ballard Mine (Drawings 4 and 5). Two boreholes were located within the previously defined Area G perimeter, and the other four were located to the immediate north and west. Similar to Area F, borehole BH149 was moved westward due to wet conditions.

All of the boreholes targeted groundwater in the older alluvium west of waste rock dump MWD080. Boreholes BH144 through BH147 were dry. Temporary piezometers were set in boreholes BH148 and BH149 and sampled the next morning. No additional prepacked wells were installed in Area G during the 2009 program.

3.2 The Henry Mine

The Henry Mine was divided into Areas C and D. Area C encompasses the southeast section of the mine and Area D encompasses the northwest section of the mine (Drawings 1, 6, and 7). Six boreholes were completed in these areas during the 2009 program.

3.2.1 The Henry Mine Area C

Two boreholes were completed in Area C. These boreholes were located to the northeast of waste rock dump MWD090 as shown on Drawing 6. Groundwater from each borehole was sampled using the drive-point system. No new prepacked wells were installed in Area C during the 2009 program.

3.2.2 The Henry Mine Area D

Four boreholes were advanced in Area D in small drainages leading to the Little Blackfoot River (Drawing 7). One borehole, BH150, was dry. Groundwater from boreholes BH151 and 153 were sampled using the drive-point system. A prepacked well was installed in BH152 and designated MBW152. The well is located along the Little Blackfoot River on the east side of the old Henry Haul Road. A groundwater sample was collected from the well following development.

The location of BH152 was adjusted to be slightly closer to the Little Blackfoot River than had been planned due to accessibility issues. The original location consists of basalt and basalt boulders, which are too rough to maneuver the direct push rig and too hard to push through. This area is shown on Drawing 7.

3.3 The Enoch Valley Mine

The Enoch Valley Mine was divided into areas A and B with A being the southeast section of the mine and B, the northwest section of the mine. Because of the general lack of alluvial groundwater, follow-up sampling was not needed nor conducted in Area B during the 2009 program.

3.3.1 The Enoch Valley Mine Area A

Three boreholes were completed in Area A, as shown on Drawing 8. These boreholes are located west of waste rock dump MWD092 along Rasmussen Creek.

A soil core was collected from BH155, and a soil sample from the saturated zone was collected and archived. A log of this core is included in Attachment A. Groundwater from all three boreholes was sampled using the drive-point system. No new prepacked wells were installed in Area A during the 2009 program.

4.0 METHODS

A Geoprobe® 6620DT direct push machine was contracted to advance direct push boreholes, collect soil and groundwater samples, and install prepacked monitoring wells. The direct push machine was owned and operated by Earth Probe Environmental, Inc., located in Bountiful Utah.

4.1 Boring Methods

The direct push boreholes were advanced using methods described in the *Direct Push Groundwater Continuation Sampling and Analysis Plan*, Final Revision 2 (P4, 2009). Two methods, soil coring and drive-point sampling, were used to identify and sample groundwater. The soil coring method permitted visual determination of the saturated zone and collection of a soil sample from the saturated zone. The drive-point system reduced drilling time compared to the coring method, allowing advancement of a screen, which helped to decrease sample turbidity.

4.2 Sampling of Groundwater

Groundwater from direct push borings was sampled using a peristaltic pump with polyethylene and silicone tubing inserted into either the drive-point sampler or prepacked well. When groundwater flow was too low for the drive-point sampler, a temporary peizometer was advanced into the drive-point boring, left overnight, and sampled the following morning.

All samples were field-filtered through a 0.45µ disposable filter directly into 250 milliliter (ml) bottles prefilled with 0.5% nitric acid preservative. Samples were not preserved prior to filtering. Samples were labeled and kept chilled with ice in the field, and stored in a locked refrigerator at the end of each day until shipped to the laboratory. Collection of field quality control samples, equipment decontamination procedures, and sample shipping and handling were performed as described in the SAP (P4, 2009)

4.3 Sampling of Soils

Soil samples recovered from cored boreholes were doubled-bagged in quart-size zip top bags. Labels included the borehole number, sample date and sample interval (referenced from the ground surface). The soil samples were placed in plastic containers and archived. If needed, these archived samples may be analyzed at a later date to assess material properties, such as grain size and hydraulic characteristics.

4.4 Quality Control

Blind sample duplicates and equipment rinsate samples were collected at a rate of one per 20 samples. The blind sample was collected from the same borehole and using the same methods as the primary sample, but was given a unique sample ID beginning at number 400. The equipment rinsate blanks were prepared by passing laboratory-provided water of known quality through decontaminated, non-dedicated equipment. A summary of sample analysis and quality control is provided in Table 2.

4.5 Decontamination Procedures

All non-disposable or non-dedicated sampling equipment was cleaned and decontaminated prior to use at each location. The sampling equipment was decontaminated using a pressure washer with potable water from the Enoch Valley Mine Shop. Prior to sampling, non-disposable or non-dedicated sampling equipment was rinsed twice with laboratory-grade deionized or distilled water.

4.6 Surveying

The coordinates of the boreholes were documented using a Wide Area Augmentation System (WAAS) enabled handheld GPS unit. All measurements were referenced to the State Plane Coordinate System, North American Datum 1983. The location coordinates were recorded in a bound field notebook and downloaded from the GPS unit at the end of each day. The four prepacked well locations will be more precisely surveyed by P4, utilizing mine surveying personnel and equipment.

4.7 Borehole Abandonment

Boreholes in which a prepacked well was not installed were abandoned immediately after groundwater sampling. Bentonite chips were poured into the borehole until even with the ground surface.

4.8 Sample Handling and Shipment

After collection, samples were stored to prevent degradation of the sample prior to analysis. The samples were placed on ice, in sealed coolers for shipping to the laboratory. A chain-of-custody form was included in each cooler. The samples were shipped to Microbac at the following address:

Microbac Laboratory
Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750

Phone: (800) 373-4071

4.9 Laboratory Analysis

Field readings of temperature, pH and electrical conductivity were obtained after sample collection when an adequate volume of water remained in the borehole. The samples were analyzed by Microbac for dissolved selenium (field-filtered) as the key indicator parameter, using analytical method EPA 6020A. The method detection limit (MDL) is 0.0005 mg/L.

4.10 Data Validation

Data were validated by Laboratory Data Consultants, Inc. (LDC), located in Carlsbad, California. All data were qualified as specified in the QAPP Addendum (MWH, 2009c). The following laboratory quality control sample data resulted in qualification of associated field sample data:

- The calibration blank associated with samples BallardF-GW139, EnochA-GW155, and BallandF-GWMBW135 contained selenium at 0.000609 mg/L, a concentration slightly greater than the MDL of 0.0005 mg/L. Because of the instrument contamination, the value of 0.0018 mg/L for BallardF-GW139 was qualified as

estimated with a high bias, and the detected values of 0.0006 and 0.0008 mg/L for EnochA-GW155 and Ballard-GWMBW135, respectively, were qualified as not detected at the reported values.

- The percent difference associated with the serial dilution of sample BallardF-GW142L was greater than the acceptance criterion. All associated data were qualified as estimated.

Two equipment rinsate blank samples were collected during the direct push field sampling event. Selenium was not detected in both rinsate samples.

Groundwater was sampled in triplicate at two locations (MBW152 and BH156; see Table 2). The relative standard deviations (RSDs) for these triplicate samples are calculated as follows:

- MBW152: 0.00536, 0.00458, and 0.00417 mg/L; RSD = 13 percent
- BH156: 0.185, 0.190, and 0.187 mg/L; RSD = 1.3 percent

These RSD indicate adequate precision for field replicate results.

All sample results are usable as qualified. Complete data packages and data validation results will be provided in the Data Quality and Usability Report that will be submitted as part of the RI/FS scoping process.

4.11 Logging Procedure

Borehole logging was conducted in accordance with the procedures described in Appendix A of the *2009 Monitoring Well Installation Technical Memorandum* (MWH, 2009b). The guidelines described are applicable to logging soil data and were based on the Unified Soils Classification System (USCS); American Society for Testing and Materials (ASTM) Standard D 2488-93, Standard Practice for Description and Identification of Soils (Visual Manual); and ASTM Standard D 5434-93, Standard Guide for Field Logging of Subsurface Explorations of Soil and Rock.

4.12 Prepacked Monitoring Wells

Prepacked monitoring well screens were installed in select direct push borehole locations. The locations were chosen based on hydrogeological character of the alluvial materials, presence of groundwater, and proximity to mine source components, such as the former mine pits and waste rock dumps. These well logs are included in Attachment A. The wells were installed and developed in accordance with ASTM documents located in Appendix B of the SAP (P4, 2009).

4.13 Slug Testing

Pneumatic slug testing was conducted in the four prepacked wells. These procedures and the resulting data will be presented in a future technical memorandum describing both the hydraulic (slug) testing results of the direct push wells, and other new monitoring wells installed in 2009.

4.14 Naming Convention

Boreholes were named in the order they were pushed. The first borehole pushed in 2009 was designated BH0126. A borehole would receive a trailing letter if the attempt was refused and another attempt was made nearby to complete the borehole. If a prepacked well was installed in the borehole, the designation would be changed (e.g., from BH001 to MBW001).

4.15 Temporary Piezometers

Temporary piezometers were installed in four boreholes. These were placed in borings that produced very little water at time of drilling. The piezometers consisted of 1.5-inch diameter polyvinyl chloride (PVC) pipe with 0.125 inch slots. The piezometers were left in the boreholes overnight and sampled the next morning using the same procedure as the drive-point sampling. After a groundwater sample was collected, the piezometers were removed and the borehole backfilled with bentonite chips.

5.0 RESULTS

As discussed in Section 3.0, a total of 33 direct push boreholes were advanced during the 2009 study. Prepacked well screens were installed in four boreholes, increasing the network of available groundwater monitoring points. Ten boreholes did not encounter groundwater due to shallow bedrock above the water table. Results of the 2009 program are summarized in this section. Details on each borehole, including laboratory data, are presented in Table 1. The laboratory data is also presented on Drawings 2 through 9. Complete documentation for the laboratory data will be provided in the Data Quality and Usability Report to be submitted as part of the RI/FS scoping process.

5.1 The Ballard Mine Area

The Ballard Mine is divided into three areas, E, F, and G. Twenty-four boreholes were completed in the Ballard Mine area. Three of the borings were completed as prepacked monitoring wells.

5.1.1 Area E Subsurface Conditions

The distribution of borings in Area E, which is located on the east side of the Ballard Mine, is shown on Drawing 2. The alluvium drilled at Area E consisted of silty-to-sandy clay with occasional gravels.

5.1.1.1 Groundwater

Groundwater was encountered in all eight borings at Area E. The water level was typically within 2 feet of the surface with the exception of borings BH127 and BH130 that had water levels of 8.5 and 18 feet bgs, respectively. Prepacked wells were installed in borings BH130 and BH131. These new monitoring wells are shown on Drawing 2 as MBW130 and MBW131. The well logs are included in Attachment A.

5.1.1.2 Laboratory Results

Dissolved selenium results in groundwater were reported for each of the eight samples (Table 1 and Drawing 2). Four groundwater samples had detectable selenium levels. Three of the detectable selenium results were from borings drilled downstream of waste rock dump MWD082. The highest dissolved selenium detection in this area was from BH127 at 0.0046 mg/L followed by BH130 at 0.0022 mg/L. However, downstream of each of these borings, the dissolved concentrations of selenium were <0.0005 mg/L in both borings BH128 and BH129.

The highest dissolved selenium result measured in 2009 at Area E was 0.0060 mg/L in boring BH132. Boring BH132 is located downgradient of the Ballard Mine waste rock dump MWD084. Borings BH131 and BH133, near BH132 and also directly downgradient of MWD084, both had dissolved concentrations of selenium <0.0005 mg/L.

An isoconcentration map of the selenium concentrations in Area E is presented on Drawing 3. The contouring suggests three separate selenium plumes, one emerging from beneath MWD084 and two from MWD082, dividing around either side of a bedrock hill. The results are provided in Table 1 and Drawing 2. The results from the 2009 Direct Push Program generally confirm the results of the 2008 direct push sampling, and the nature and extent of the alluvial groundwater selenium plumes. All of the selenium results from 2009 on the east side of the Ballard Mine, in and near Area E, were below the State of Idaho drinking water standard (IDAPA 58.01.11) of 0.05 mg/L (total) and the cold water aquatic life criterion value (IDAPA 58.01.02) of 0.005 mg/L, with the exception of boring BH132, which had a dissolved concentration of selenium of 0.0060 mg/L.

5.1.2 Area F Subsurface Conditions

The distribution of borings in Area F, which is located on the southwest side of the Ballard Mine, is shown on Drawing 4. The alluvium drilled at Area F generally consisted of silty-to-sandy clay with occasional gravels.

5.1.2.1 Groundwater

The depths to groundwater in Area F ranged from 2 feet bgs at BH136 to 15 feet bgs at BH135. Four of the ten boreholes in Area F did not encounter groundwater. Boring BH135 was completed as a prepacked monitoring well.

5.1.2.2 Laboratory Results

Three of the ten boreholes drilled at Area F were near the Blackfoot River southwest of waste rock dump MWD081. Boreholes BH135 and BH136 had dissolved selenium concentrations of less than the MDL of 0.0008 and 0.012 mg/L, respectively. Borehole BH134, located further to the east of the Blackfoot River, had a dissolved selenium concentration below the MDL of 0.0005 mg/L.

The remaining seven boreholes drilled at Area F were located in an agricultural field between the Blackfoot River Road and the Ore Haul Road. The field is approximately 2,500 feet west of waste rock dumps MWD080 and MWD081 (Drawing 4). Five of the seven boreholes were dry. The other two boreholes, BH139 and BH142, had dissolved selenium concentrations of 0.0018 and 0.033 mg/L, respectively.

The selenium concentrations in Area F were contoured, along with Area G discussed below. These data are presented on Drawing 5. The contouring suggests that there are two plumes in Area F emerging from beneath MWD081 and MWD080, dividing around either side of a bedrock hill, then merging near the edge of the sampling area. Results are provided in Table 1 and Drawing 4.

The results of the 2009 investigation generally confirm the plume configuration and dimensions identified in 2008. However, groundwater flow and dimensions proved difficult to locate further out in the valley with the direct push sampling method. Meaningful sampling could not be conducted between the apparent downgradient edge of the southwestern plume and the Blackfoot River due to saturated ground conditions near the river.

5.1.3 Area G Subsurface Conditions

The distribution of borings in Area G, which is located on the west side of the Ballard Mine, is shown on Drawing 4. Similar to Area F, the alluvium drilled at Area G was generally found to consist of silty-to-sandy clay with occasional gravels.

5.1.3.1 Groundwater Conditions

Groundwater was encountered in only two of the six boreholes in Area G. These were borings BH148 and 149, which had groundwater levels of 7 and 13 feet bgs, respectively. Groundwater was not encountered in boreholes BH144 through BH147.

5.1.3.2 Laboratory Results

Boreholes BH148 and BH149 had dissolved selenium concentrations of 0.0047 mg/L and 0.030 mg/L, respectively. The results are provided on Table 1 and Drawing 4. The selenium concentrations in Area G were contoured, as presented in Drawing 5.

5.2 The Henry Mine Area

Six boreholes were completed in Areas C and D at the Henry Mine (Drawings 6 and 7). One prepacked well, MBW152, was installed at the Henry Mine in Area D.

5.2.1 Area C Subsurface Conditions

The distribution of borings in Area C, which is located in the southern portion of the Henry Mine, is shown on Drawing 6. Alluvium drilled at Area C was generally found to consist of silty-to-sandy clay with occasional gravels.

5.2.1.1 Groundwater

Shallow groundwater was encountered in the two borings drilled at Area C. At BH157 and BH158, groundwater was encountered at 2 feet bgs and 1 foot bgs, respectively.

5.2.1.2 Laboratory Results

Dissolved selenium results were reported for both borings. The highest concentration was detected at BH158 (0.032 mg/L). BH157 had a dissolved selenium concentration of 0.018 mg/L. Results are provided on Table 1 and Drawing 6. At these locations selenium was present at concentrations below the State of Idaho groundwater standard of 0.05 mg/L, but above the cold water aquatic life criterion of 0.005 mg/L.

5.2.2 Area D Subsurface Conditions

The distribution of borings in Area D, which is located in the north central area of the Henry Mine, is shown on Drawing 7. Alluvium drilled at Area D generally was found to consist of silty-to-sandy clay with occasional gravels underlain by basalt bedrock.

5.2.2.1 Groundwater

Groundwater was encountered in three of the four borings at Area D. Borehole BH150 met refusal before groundwater was located. The shallowest water level was in boring BH153 at 1.5 feet bgs and the deepest groundwater level was 7.5 feet bgs in boring BH152. A prepacked well, MBW152, was installed in boring BH152, which is located on the Little Blackfoot River.

5.2.2.2 Laboratory Results

Dissolved selenium results were reported for three groundwater samples collected in Area D. The highest dissolved selenium concentrations were in borings BH152 and BH153 at 0.0054 and 0.0055 mg/L, respectively. Dissolved selenium in boring BH151, which is located to the east of boreholes BH152 and BH153, was below the MDL of 0.0005 mg/L. Results are provided in Table 1 and Drawing 7.

5.3 The Enoch Valley Mine Area

The Enoch Valley Mine is divided into two areas, A and B. Three boreholes were completed at the Enoch Valley Mine, all located in Area A. Follow-up sampling was not

needed nor conducted in Area B during the 2009 program due to the general lack of alluvial groundwater in this area.

5.3.1 Area A Subsurface Conditions

Three boreholes were completed within Area A, which is located in the southern portion of the Enoch Valley Mine (Drawing 8). Alluvium encountered in this area generally consisted of silty-to-sandy clay with occasional gravels. The upper Dinwoody formation was also encountered at shallow depths, as noted in the soil core sample collected from boring BH155 (Attachment A).

5.3.1.1 Groundwater

The deepest groundwater encountered was at 5 feet bgs in boring BH156. Both BH154 and BH155 had groundwater near the surface at 0.5 and 1 feet bgs, respectively.

5.3.1.2 Laboratory Results

Groundwater samples were collected from the three boreholes pushed in Area A. The highest dissolved concentration of selenium was 0.19 mg/L in boring BH156. This boring is located immediately downstream of dump seep MDS025. The other two borings, BH154 and BH155, are located downstream of the seep. These two borings had dissolved selenium concentrations of 0.010 and less than the MDL of 0.0006 mg/L, respectively. Results are provided on Table 1 and Drawing 8. These results confirm that the extent of selenium-impacted groundwater in the alluvial system at Area A is restricted to a zone relatively close to the source.

6.0 REFERENCES

MWH, 2009a. *2007 and 2008 Data Summary Report Mines Site Investigation.* Final Revision 2, prepared for P4 Production, LLC. August.

MWH, 2009b. *2009 Monitoring Well Installation Technical Memorandum.* Final Revision 2, prepared for P4 Production, LLC. August.

MWH, 2009c. *Quality Assurance Project Plan Addendum.* Final Revision 2, prepared for P4 Production, LLC. May.

P4 Production, LLC (P4). 2009. *Direct Push Groundwater Continuation Sampling and Analysis Plan.* Final Revision 2. June.

TABLES

TABLE 1
2009 DIRECT PUSH BOREHOLES

Mine	Area	Borehole or Well ID	Completion Date	Latitude (dd.mm.ss)	Longitude (dd.mm.ss)	Surface Elevation (ft-AMSL)	Water Level (ft bgs)	Dissolved Selenium (mg/L)	Field Parameters Temp °C	pH	Conductivity µS/cm	Notes (depths in ft bgs)
Ballard (east)	E	BH126	5/11/2009	42 49 48	111 27 48	6462	1.5	0.0015	NR	NR	NR	
Ballard (east)	E	BH127	5/11/2009	42 49 34	111 27 25	6416	8.5	0.0046	NR	NR	NR	soil core
Ballard (east)	E	BH128	5/11/2009	42 49 46	111 27 01	6432	1.0	<0.0005 U	NR	NR	NR	
Ballard (east)	E	BH129	5/11/2009	42 49 30	111 27 06	6419	1.0	<0.0005 U	NR	NR	NR	
Ballard (east)	E	MBW130	5/11/2009	42 49 40	111 27 10	6399	18.0	0.0022	NR	NR	NR	Well: TD 25, screen 20-25; soil core
Ballard (east)	E	MBW131	5/11/2009	42 50 24	111 28 33	6475	1.5	<0.0005 U	NR	NR	NR	Well: TD 8, screen 3-8
Ballard (east)	E	BH132	5/11/2009	42 50 16	111 28 16	6463	2.0	0.0060	7.4	7.5	380	
Ballard (east)	E	BH133	5/12/2009	42 50 11	111 28 08	6419	1.5	<0.0005 U	4.4	7.6	660	
Ballard (west)	F	BH134	5/14/2009	42 48 40	111 29 31	6311	5.0	<0.0005 UJ	NR	NR	NR	temporary piezometer used
Ballard (west)	F	MBW135	5/14/2009	42 48 40	111 29 43	6299	15.0	<0.0008 UJ	NR	NR	NR	Well: TD 20, screen 15-20; soil core
Ballard (west)	F	BH136	5/14/2009	42 48 42	111 29 48	6298	2.0	0.012 J	7.0	7.8	420	
Ballard (west)	F	BH137	5/15/2009	42 49 18	111 30 03	6345	DRY	DRY	NR	NR	NR	refusal at 20
Ballard (west)	F	BH138	5/15/2009	42 49 13	111 30 11	6324	DRY	DRY	NR	NR	NR	refusal at 20
Ballard (west)	F	BH139	5/15/2009	42 49 11	111 30 17	6307	9.5	0.0018 J	9.2	7.6	180	refusal at 11; temporary piezometer used
Ballard (west)	F	BH140	5/15/2009	42 49 18	111 30 23	6314	DRY	DRY	NR	NR	NR	refusal at 18.5
Ballard (west)	F	BH141	5/15/2009	42 49 25	111 30 12	6319	DRY	DRY	NR	NR	NR	refusal at 12
Ballard (west)	F	BH142	5/15/2009	42 49 27	111 30 03	6322	4.0	0.033 J	5.2	7.3	600	
Ballard (west)	F	BH143	5/15/2009	42 49 29	111 30 07	6324	DRY	DRY	NR	NR	NR	refusal at 12
Ballard (west)	G	BH144	5/15/2009	42 49 39	111 30 01	6342	DRY	DRY	NR	NR	NR	refusal at 18
Ballard (west)	G	BH145	5/15/2009	42 49 40	111 29 51	6357	DRY	DRY	NR	NR	NR	refusal at 25
Ballard (west)	G	BH146	5/15/2009	42 49 45	111 30 07	6347	DRY	DRY	NR	NR	NR	refusal at 20
Ballard (west)	G	BH147	5/15/2009	42 49 50	111 30 11	6347	DRY	DRY	NR	NR	NR	refusal at 18
Ballard (west)	G	BH148	5/15/2009	42 50 04	111 30 07	6332	7.0	0.0047 J	NR	NR	NR	temporary piezometer used
Ballard (west)	G	BH149	5/15/2009	42 50 13	111 30 05	6324	13.0	0.030 J	NR	NR	NR	temporary piezometer used
Henry (south)	C	BH157	5/12/2009	42 51 56	111 26 40	6435	2.0	0.018 J	7.9	8.0	940	
Henry (south)	C	BH158	5/12/2009	42 51 49	111 26 36	6424	1.0	0.032 J	7.1	8.0	670	
Henry (north)	D	BH150	5/12/2009	42 54 04	111 28 47	6321	DRY	DRY	NR	NR	NR	refusal at 11.5
Henry (north)	D	BH151	5/12/2009	42 54 04	111 28 57	6306	2.0	<0.0005 U	NR	NR	NR	
Henry (north)	D	MBW152	5/12/2009	42 54 14	111 29 23	6303	7.5	0.0054 J	NR	NR	NR	Well: TD 15, screen 10-15
Henry (north)	D	MBW152	5/12/2009	43 54 14	112 29 23	6303	7.5	0.0042	NR	NR	NR	Triplicate ID - GW404
Henry (north)	D	MBW152	5/12/2009	44 54 14	113 29 23	6303	7.5	0.0046	NR	NR	NR	Triplicate ID - GW405
Henry (north)	D	MBW152 AVE	5/12/2009	45 54 14	114 29 23	6303	7.5	0.0047 J	NR	NR	NR	
Henry (north)	D	BH153	5/12/2009	42 53 57	111 29 13	6303	1.5	0.0055	NR	NR	NR	
Enoch Valley (south)	A	BH154	5/13/2009	42 51 58	111 24 05	6626	0.5	0.010 J	4.8	7.8	390	
Enoch Valley (south)	A	BH155	5/13/2009	42 52 07	111 24 21	6644	1.0	<0.0006 UJ	3.3	7.6	100	soil core
Enoch Valley (south)	A	BH156	5/13/2009	42 52 12	111 24 12	6690	5.0	0.19 J	NR	NR	NR	
Enoch Valley (south)	A	BH156	5/13/2009	43 52 12	112 24 12	6690	5.0	0.19	NR	NR	NR	Triplicate ID - GW402
Enoch Valley (south)	A	BH156	5/13/2009	44 52 12	113 24 12	6690	5.0	0.19	NR	NR	NR	Triplicate ID - GW403
Enoch Valley (south)	A	BH156 AVE	5/13/2009	45 52 12	114 24 12	6690	5.0	0.19	NR	NR	NR	

Notes:
dd.mm.ss - Degrees, Minutes, Seconds
ft-AMSL - Feet Above Mean Sea Level
NR - Not Recorded (due to insufficient water)
TD - Total Depth
µS/cm – microsiemens per centimeter
U - The analyte was not detected at or above the sample quantitation limit.
J - The result is an estimated quantity. The associated numerical value is the approximated concentration of the analyte in the sample.
UJ - The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate.

TABLE 2
SUMMARY OF SAMPLE ANALYSIS AND QUALITY CONTROL

Field Sample Identification	Location	Matrix	Filtered	QC Sample Type	Date Collected	Time Collected	Microbac Lab Identification	Dissolved Se (SW6020A)
0905BallardE-GW129	BH129	Water	Filtered	Primary	5/11/2009	14:10	L09050524-13	X
0905BallardE-GW128	BH128	Water	Filtered	Primary	5/11/2009	14:25	L09050524-14	X
0905BallardE-GW126	BH126	Water	Filtered	Primary	5/11/2009	14:45	L09050524-16	X
0905BallardE-GW127	BH127	Water	Filtered	Primary	5/11/2009	15:00	L09050524-12	X
0905BallardE-GW132	BH132	Water	Filtered	Primary	5/11/2009	17:35	L09050524-02	X
0905BallardE-GW133	BH133	Water	Filtered	Primary	5/12/2009	8:40	L09050524-05	X
0905BallardE-EQ400	Field QC	Water	Filtered	Equipment rinsate	5/12/2009	8:50	L09050524-07	X
0905HenryD-GW153	BH153	Water	Filtered	Primary	5/12/2009	12:20	L09050524-03	X
0905HenryD-GW151	BH151	Water	Filtered	Primary	5/12/2009	12:55	L09050524-04	X
0905HenryC-GW158	BH158	Water	Filtered	Primary	5/12/2009	16:00	L09050524-23	X
0905HenryC-GW157	BH157	Water	Filtered	Primary	5/12/2009	16:45	L09050524-27	X
0905EnochA-GW155	BH155	Water	Filtered	Primary	5/13/2009	9:10	L09050524-26	X
0905EnochA-EQ401	Field QC	Water	Filtered	Equipment rinsate	5/13/2009	9:35	L09050524-06	X
0905EnochA-GW154	BH154	Water	Filtered	Primary	5/13/2009	9:50	L09050524-24	X
0905EnochA-GW156	BH156	Water	Filtered	Primary	5/13/2009	10:35	L09050524-21	X
0905EnochA-GW402	BH156	Water	Filtered	Triplicate of BH156	5/13/2009	10:40	L09050524-09	X
0905EnochA-GW403	BH156	Water	Filtered	Triplicate of BH156	5/13/2009	10:45	L09050524-10	X
0905BallardF-GW136	BH136	Water	Filtered	Primary	5/14/2009	15:05	L09050524-29	X
0905BallardF-GW142	BH142	Water	Filtered	Primary	5/15/2009	9:45	L09050524-19	X
0905BallardE-GWMBW131	MBW131	Water	Filtered	Primary	5/15/2009	12:32	L09050524-01	X
0905BallardE-GWMBW130	MBW130	Water	Filtered	Primary	5/15/2009	15:00	L09050524-15	X
0905BallardF-GW139	BH139	Water	Filtered	Primary	5/15/2009	16:40	L09050524-18	X
0905BallardF-GWMBW135	MBW135	Water	Filtered	Primary	5/15/2009	16:40	L09050524-28	X
0905BallardG-GW149	BH149	Water	Filtered	Primary	5/16/2009	8:00	L09050524-22	X
0905HenryD-GWMBW152	MBW152	Water	Filtered	Primary	5/16/2009	12:40	L09050524-20	X
0905HenryD-GW404	MBW152	Water	Filtered	Triplicate of BH152	5/16/2009	12:45	L09050524-11	X
0905HenryD-GW405	MBW152	Water	Filtered	Triplicate of BH152	5/16/2009	12:50	L09050524-08	X
0905BallardG-GW148	BH148	Water	Filtered	Primary	5/16/2009	14:25	L09050524-17	X
0905BallardF-GW134	BH134	Water	Filtered	Primary	5/18/2009	9:30	L09050524-25	X

Notes:
QC - quality control
Se - selenium

DRAWINGS

LEGEND:

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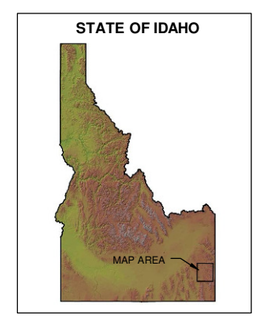
- WASTE ROCK DUMP LOCATION (APPROXIMATE)
- WASTE ROCK DUMP LOCATION OR PIT BACKFILL (APPROXIMATE)
- A 2008 DIRECT PUSH INVESTIGATION AREA

KEY:

MMP = MINE PIT
MWD = WASTE ROCK DUMP



KEY MAP
N.T.S.

ISSUE REV	DESCRIPTION	TECH	ENG	DATE
2	FINAL	CHF	LWM	02/24/11
1	ISSUED DRAFT FOR AGENCY REVIEW	CHF	CLF	07/17/10

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DRAWN BY	E MARKS	02/24/11
CHECKED BY	C FOULK	02/24/11
APPROVED BY	C FOULK	02/24/11
PROJECT MANAGER	C FOULK	02/24/11
CLIENT APPROVAL	B KOCH	02/24/11
CLIENT REFERENCE NO.		

P4 Production, LLC

PROJECT LOCATION: BALLARD, HENRY AND ENOCH VALLEY MINES
PROJECT: 2009 DIRECT PUSH RESULTS
TITLE: PROJECT LOCATION MAP

MWH

SHEET 1 of 8
REVISION 2
FILE NAME 1005813D126

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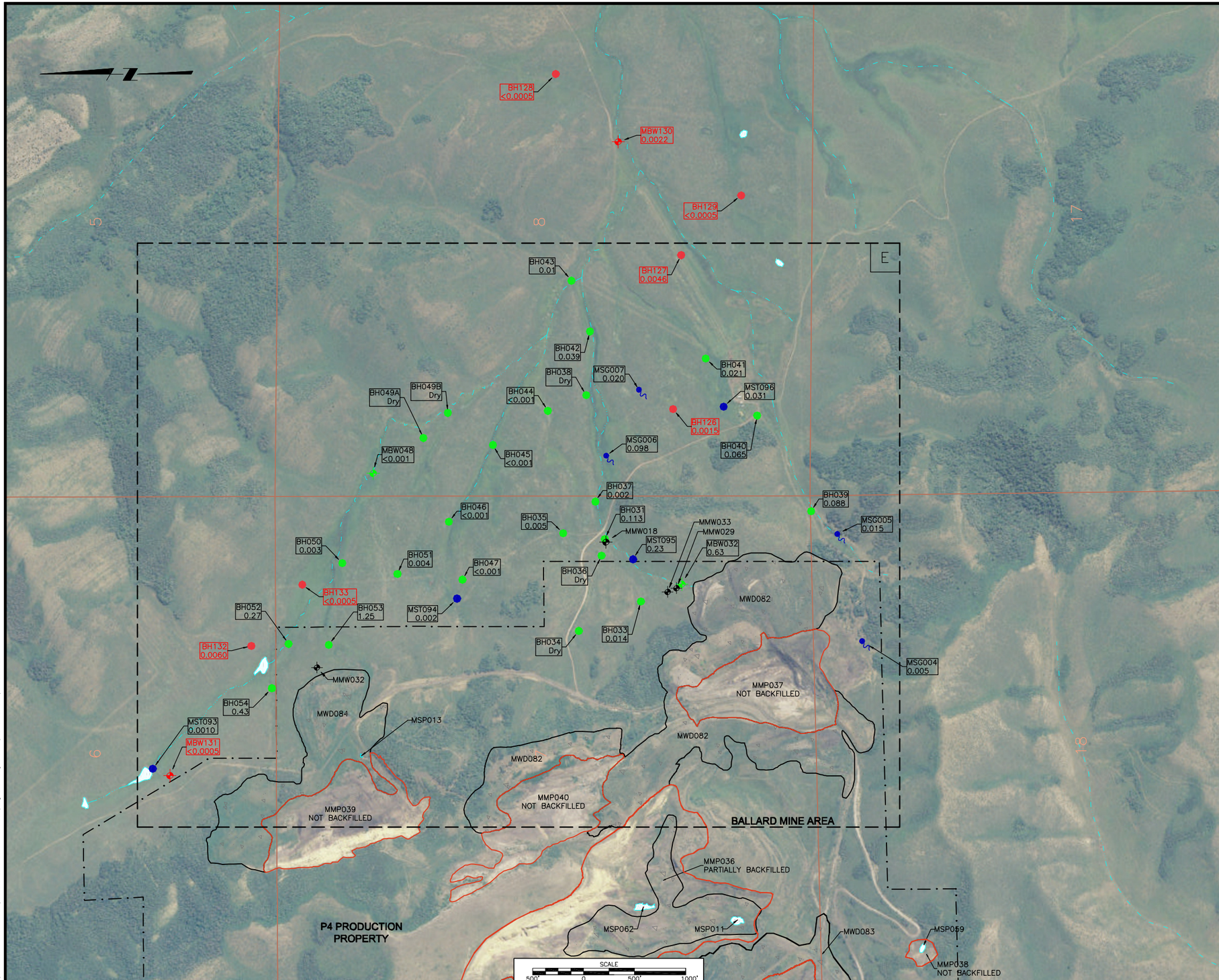

LEGEND:

- MINE PIT LOCATION (APPROXIMATE WHERE COVERED BY BACKFILL)
- WASTE ROCK DUMP LOCATION (APPROXIMATE)
- WASTE ROCK DUMP LOCATION OR PIT BACKFILL (APPROXIMATE)
- POND OR LAKE
- P4 PRODUCTION PROPERTY BOUNDARY (APPROXIMATE)
- SECTION LINES
- 8 SECTION NUMBER
- BLM LANDS
- US NATIONAL FORESTS
- STATE LANDS
- NON FEDERAL LANDS
- A 2008 DIRECT PUSH INVESTIGATION AREA

STATION TYPE:

- MSG = SPRING STATION
- MST = STREAM STATION
- MMW = GROUNDWATER MONITORING WELL
- MBW = DIRECT PUSH MONITORING WELL INSTALLED IN 2008
- MBW = DIRECT PUSH MONITORING WELL INSTALLED IN 2009
- BH = 2008 DIRECT PUSH BOREHOLE
- BH = 2009 DIRECT PUSH BOREHOLE

KEY:

MMP = MINE PIT
MWD = WASTE ROCK DUMP
MSP = POND

BH043 0.01	2008 DIRECT PUSH BOREHOLE ID AND DISSOLVED SELENIUM CONCENTRATION
BH043 0.01	2009 DIRECT PUSH BOREHOLE ID AND DISSOLVED SELENIUM CONCENTRATION
<0.001	CONCENTRATION LESS THAN THE METHOD DETECTION LIMIT

NOTES:

1. DIRECT PUSH RESULTS ARE FOR GRAB GROUNDWATER SAMPLES AND ARE DISSOLVED CONCENTRATIONS OF SELENIUM IN mg/L.
2. SPRING 2008 TOTAL SELENIUM CONCENTRATIONS ARE USED FOR MONITORING WELLS, SPRINGS AND HEADWATER STREAMS WHERE APPROPRIATE.
3. BEDROCK WELLS ARE SHOWN FOR REFERENCE. SELENIUM CONCENTRATIONS ARE NOT SHOWN FOR THESE WELLS.

ISSUE REV	DESCRIPTION	TECH	ENG	DATE
2	FINAL	CHF	LWM	02/24/11
1	ISSUED DRAFT FOR AGENCY REVIEW	CHF	CLF	07/17/10

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PROJECT MANAGER	C FOULK	02/24/11
CLIENT APPROVAL	B KOCH	02/24/11
CLIENT REFERENCE NO.		

P4 Production, LLC

PROJECT LOCATION: BALLARD, HENRY AND ENOCH VALLEY MINES
PROJECT: 2009 DIRECT PUSH RESULTS
TITLE: BALLARD MINE AREA EAST DIRECT PUSH BOREHOLE LOCATIONS

MWH

SHEET: 2 of 8
REVISION: 2
FILE NAME: 1005813D127

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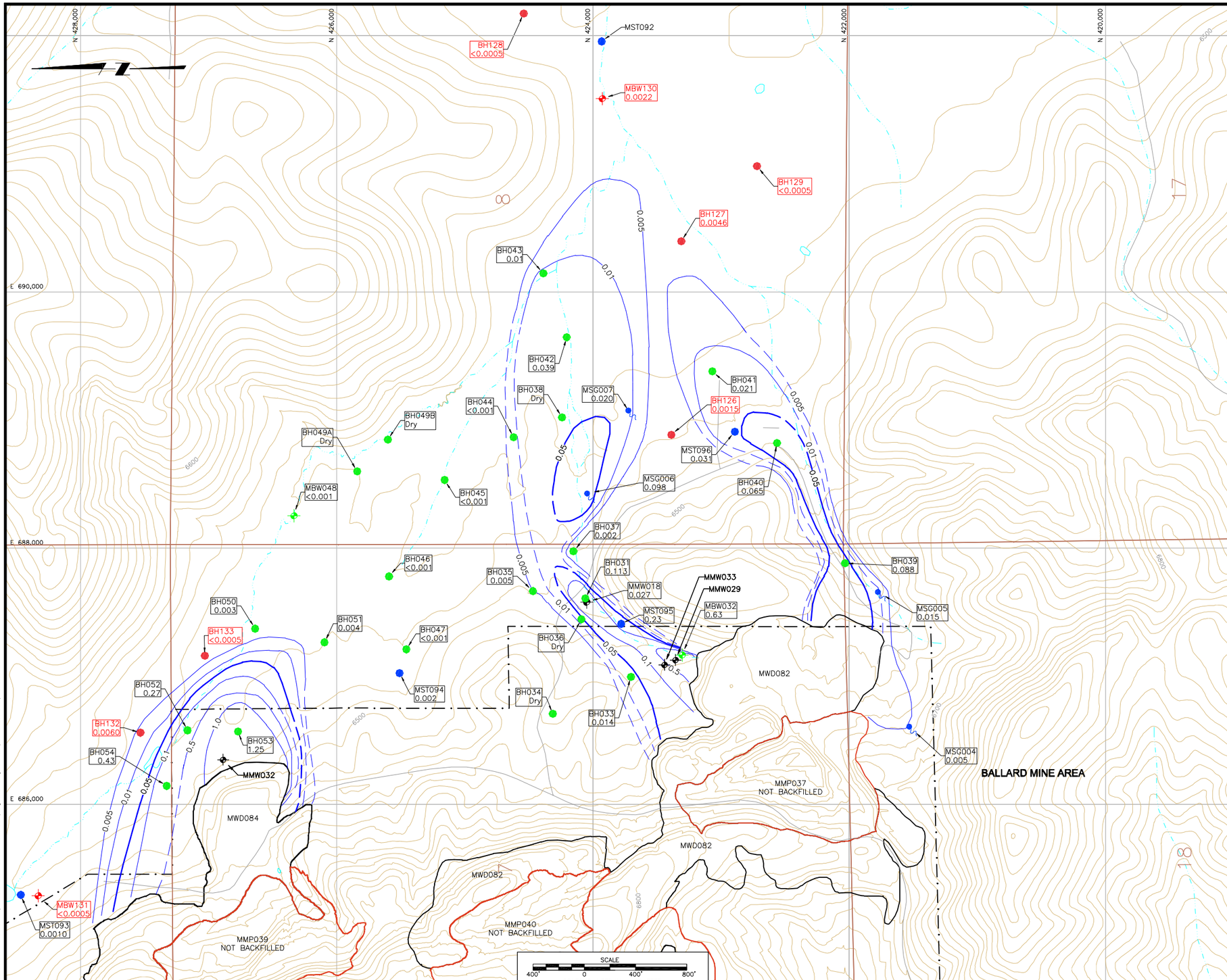

LEGEND:

- POST-MINE CONTOUR & ELEVATION, FEET
- POND OR LAKE
- STREAM – PERENNIAL
- STREAM – INTERMITTENT
- MINE PIT LOCATION (APPROXIMATE WHERE COVERED BY BACKFILL)
- WASTE ROCK DUMP LOCATION (APPROXIMATE)
- WASTE ROCK DUMP LOCATION OR PIT BACKFILL (APPROXIMATE)
- HIGHWAY
- ROAD
- RAILROAD
- P4 PRODUCTION HAUL ROAD (ACTIVE & INACTIVE)
- TOTAL SELENIUM ISOCONCENTRATION CONTOUR (mg/L)
- INFERRED TOTAL SELENIUM ISOCONCENTRATION CONTOUR (mg/L)
- P4 PRODUCTION PROPERTY BOUNDARY (APPROXIMATE)
- SECTION LINES
- SECTION NUMBER
- BLM LANDS
- STATE LANDS
- NON FEDERAL LANDS

STATION TYPE:

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- MBW = DIRECT PUSH MONITORING WELL INSTALLED IN 2008
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KEY:

MMP = MINE PIT
MWD = WASTE ROCK DUMP

BH043 0.01	2008 DIRECT PUSH BOREHOLE ID AND DISSOLVED SELENIUM CONCENTRATION
BH043 0.01	2009 DIRECT PUSH BOREHOLE ID AND DISSOLVED SELENIUM CONCENTRATION
<0.001	CONCENTRATION LESS THAN THE METHOD DETECTION LIMIT

NOTES:

1. WHERE WELLS ARE NESTED IN THE ALLUVIAL FLOW SYSTEM (I.E. SHALLOW AND DEEPER) THE HIGHEST MEASURED CONCENTRATION IS USED FOR CONTOURING.
2. SPRING 2008 TOTAL SELENIUM CONCENTRATIONS ARE USED FOR MONITORING WELLS, SPRINGS AND HEADWATER STREAMS WHERE APPROPRIATE.
3. ISOCONCENTRATION CONTOUR INTERVAL=LOG WITH SUPPLEMENTAL HALF CYCLE CONTOURS.
4. BEDROCK WELLS ARE SHOWN FOR REFERENCE. SELENIUM CONCENTRATIONS ARE NOT SHOWN FOR THESE WELLS.

ISSUE REV	DESCRIPTION	TECH	ENG	DATE
2	FINAL	CHF	LWM	02/24/11
1	ISSUED DRAFT FOR AGENCY REVIEW	CHF	CLF	07/17/10

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DRAWING REFERENCE(S):
1. POST-MINE TOPOGRAPHY GENERATED FROM:
- USGS DIGITAL ELEVATION MODELS (DEM)-24K.
- SURVEY DATA FOR BALLARD MINE PROVIDED BY OLYMPUS AERIAL SURVEYS, INC. DATED: JUNE 2005.
- SURVEY DATA FOR HENRY MINE AREA PROVIDED BY OLYMPUS AERIAL SURVEYS, INC. DATED: NOVEMBER 2008.
- SURVEY DATA FOR ENOCH VALLEY MINE AREA PROVIDED BY P4 PRODUCTION DATED: DECEMBER 2007.

PROJECTION: STATE PLANE COORDINATE SYSTEM
ZONE: IDAHO EAST
DATUM: NAD27
VERTICAL DATUM: NAVD29
UNITS: U.S. FEET

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CLIENT REFERENCE NO.		

P4 Production, LLC

PROJECT LOCATION: BALLARD, HENRY AND ENOCH VALLEY MINES
PROJECT: 2009 DIRECT PUSH RESULTS
TITLE: BALLARD MINE AREA EAST DIRECT PUSH SELENIUM ISOCONTOUR MAPS

MWH

SHEET 3 of 8
REVISION 2
FILE NAME 1005813D128

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LEGEND:

- MINE PIT LOCATION (APPROXIMATE WHERE COVERED BY BACKFILL)
- WASTE ROCK DUMP LOCATION (APPROXIMATE)
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BH043 0.01 — 2009 DIRECT PUSH BOREHOLE ID AND DISSOLVED SELENIUM CONCENTRATION

<0.001 — CONCENTRATION LESS THAN THE METHOD DETECTION LIMIT

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SCALE
500' 0 500' 1000'

ISSUE REV	DESCRIPTION	TECH	ENG	DATE
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P4 Production, LLC

PROJECT LOCATION: BALLARD, HENRY AND ENOCH VALLEY MINES
PROJECT: 2009 DIRECT PUSH RESULTS
TITLE: BALLARD MINE AREA WEST DIRECT PUSH BOREHOLE LOCATIONS

MWH

SHEET: 4 of 8
REVISION: 2
FILE NAME: 1005813D129

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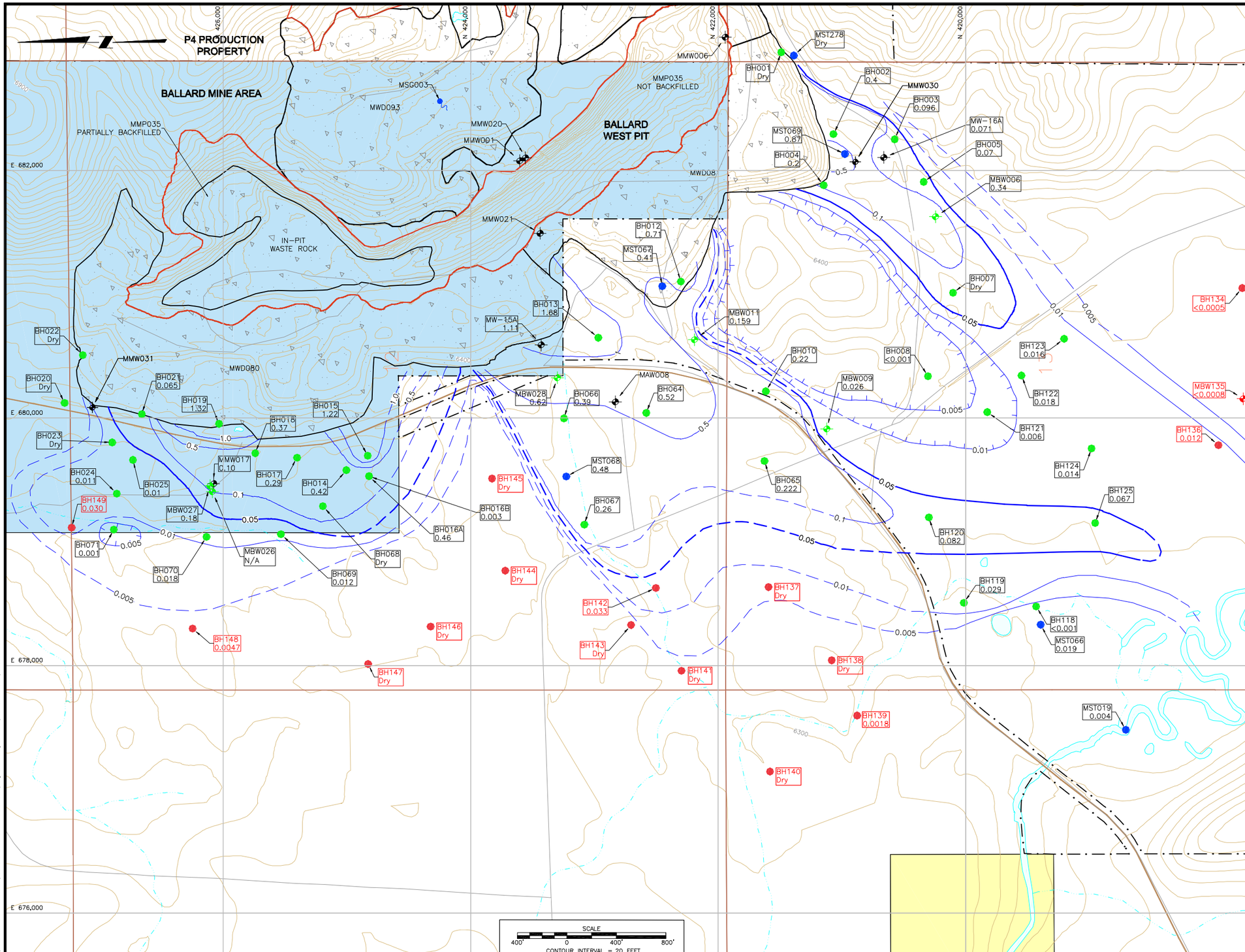

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- MINE PIT LOCATION (APPROXIMATE WHERE COVERED BY BACKFILL)
- WASTE ROCK DUMP LOCATION (APPROXIMATE)
- WASTE ROCK DUMP LOCATION OR PIT BACKFILL (APPROXIMATE)
- HIGHWAY
- ROAD
- RAILROAD
- P4 PRODUCTION HAUL ROAD (ACTIVE & INACTIVE)
- 0.05 TOTAL SELENIUM ISOCONCENTRATION CONTOUR (mg/L)
- 0.05 INFERRED TOTAL SELENIUM ISOCONCENTRATION CONTOUR (mg/L)
- P4 PRODUCTION PROPERTY BOUNDARY (APPROXIMATE)
- SECTION LINES
- 8 SECTION NUMBER
- BLM LANDS
- STATE LANDS
- NON FEDERAL LANDS

STATION TYPE:

- MSG = SPRING STATION
- MST = STREAM STATION
- MMW = GROUND WATER MONITORING WELL
- MAW = AGRICULTURAL WELL
- MBW = DIRECT PUSH MONITORING WELL INSTALLED IN 2008
- MBW = DIRECT PUSH MONITORING WELL INSTALLED IN 2009
- BH = 2008 DIRECT PUSH BOREHOLE
- BH = 2009 DIRECT PUSH BOREHOLE

KEY:

MMP = MINE PIT
MWD = WASTE ROCK DUMP

BH043 0.01	2008 DIRECT PUSH BOREHOLE ID AND DISSOLVED SELENIUM CONCENTRATION
BH043 0.01	2009 DIRECT PUSH BOREHOLE ID AND DISSOLVED SELENIUM CONCENTRATION
<0.001	CONCENTRATION LESS THAN THE METHOD DETECTION LIMIT

NOTES:

1. WHERE WELLS ARE NESTED IN THE ALLUVIAL FLOW SYSTEM (I.E. SHALLOW AND DEEPER) THE HIGHEST MEASURED CONCENTRATION IS USED FOR CONTOURING.
2. SPRING 2008 TOTAL SELENIUM CONCENTRATIONS ARE USED FOR MONITORING WELLS, SPRINGS AND HEADWATER STREAMS WHERE APPROPRIATE.
3. ISOCONCENTRATION CONTOUR INTERVAL=LOG WITH SUPPLEMENTAL HALF CYCLE CONTOURS.
4. BEDROCK WELLS ARE SHOWN FOR REFERENCE. SELENIUM CONCENTRATIONS ARE NOT SHOWN FOR THESE WELLS.

SCALE
400' 0 400' 800'
CONTOUR INTERVAL = 20 FEET

REV	DESCRIPTION	TECH	ENG	DATE
2	FINAL	CHF	LWM	02/24/11
1	ISSUED DRAFT FOR AGENCY REVIEW	CHF	CLF	07/17/10

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DRAWING REFERENCE(S):
1. POST-MINE TOPOGRAPHY GENERATED FROM:
- USGS DIGITAL ELEVATION MODELS (DEM)-24K.
- SURVEY DATA FOR BALLARD MINE PROVIDED BY OLYMPUS AERIAL SURVEYS, INC. DATED: JUNE 2005.
- SURVEY DATA FOR HENRY MINE AREA PROVIDED BY OLYMPUS AERIAL SURVEYS, INC. DATED: NOVEMBER 2008.
- SURVEY DATA FOR ENOCH VALLEY MINE AREA PROVIDED BY P4 PRODUCTION DATED: DECEMBER 2007.

PROJECTION: STATE PLANE COORDINATE SYSTEM
ZONE: IDAHO EAST
DATUM: NAD27
VERTICAL DATUM: NAVD29
UNITS: U.S. FEET

DESIGNED BY	C FOULK	02/24/11
DRAWN BY	E MARKS	02/24/11
CHECKED BY	C FOULK	02/24/11
APPROVED BY	C FOULK	02/24/11
PROJECT MANAGER	C FOULK	02/24/11
CLIENT APPROVAL	B KOCH	02/24/11
CLIENT REFERENCE NO.		

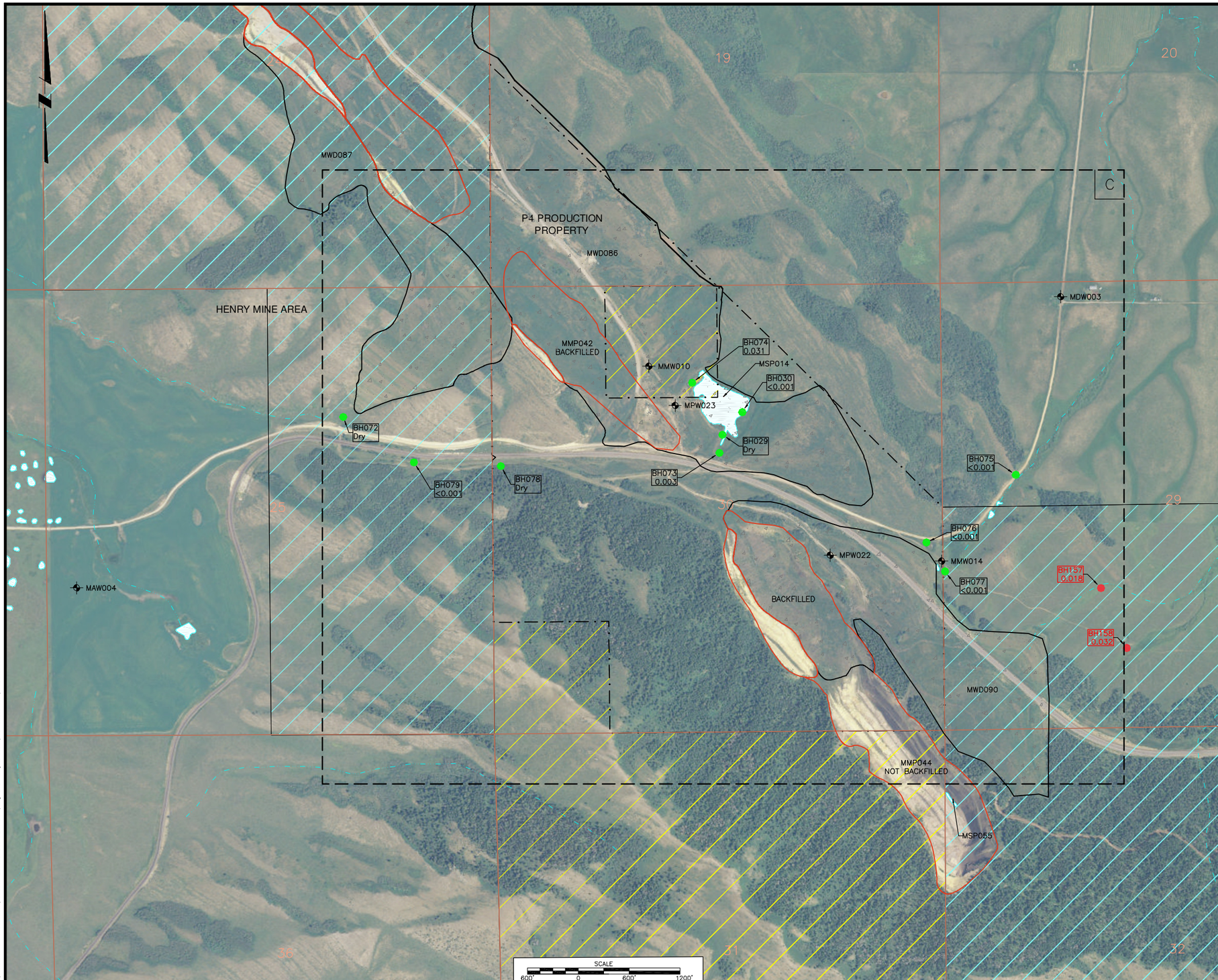
P4 Production, LLC

PROJECT LOCATION: BALLARD, HENRY AND ENOCH VALLEY MINES
PROJECT: 2009 DIRECT PUSH RESULTS
TITLE: BALLARD MINE AREA WEST DIRECT PUSH SELENIUM ISOCONTOUR MAPS

MWH

SHEET 5 of 8
REVISION 2
FILE NAME 1005813D130

N:\Design-Drafting\Clients_J-P\Monsanto-P4 Production\1005813 2009 Direct-Push Sampling and Analysis Plan\013-Sheet Set\1005813D130



LEGEND:

- MINE PIT LOCATION (APPROXIMATE WHERE COVERED BY BACKFILL)
- WASTE ROCK DUMP LOCATION (APPROXIMATE)
- WASTE ROCK DUMP LOCATION OR PIT BACKFILL (APPROXIMATE)
- POND OR LAKE
- P4 PRODUCTION PROPERTY BOUNDARY (APPROXIMATE)
- SECTION LINES
- 8 SECTION NUMBER
- BLM LANDS
- US NATIONAL FORESTS
- STATE LANDS
- NON FEDERAL LANDS
- A 2008 DIRECT PUSH INVESTIGATION AREA

STATION TYPE:

- MMW = GROUND WATER MONITORING WELL
- MAW = AGRICULTURAL WELL
- MDW = DOMESTIC WELL
- MPW = PRODUCTION WELL
- BH = 2008 DIRECT PUSH BOREHOLE
- BH = 2009 DIRECT PUSH BOREHOLE

KEY:

MMP = MINE PIT
MWD = WASTE ROCK DUMP
MSP = POND

BH043 0.01	2008 DIRECT PUSH BOREHOLE ID AND DISSOLVED SELENIUM CONCENTRATION
BH043 0.01	2009 DIRECT PUSH BOREHOLE ID AND DISSOLVED SELENIUM CONCENTRATION
<0.001	CONCENTRATION LESS THAN THE METHOD DETECTION LIMIT

NOTES:

1. DIRECT PUSH RESULTS ARE FOR GRAB GROUNDWATER SAMPLES AND ARE DISSOLVED CONCENTRATIONS OF SELENIUM IN mg/L.
2. SPRING 2008 TOTAL SELENIUM CONCENTRATIONS ARE USED FOR MONITORING WELLS, SPRINGS AND HEADWATER STREAMS WHERE APPROPRIATE.
3. BEDROCK WELLS ARE SHOWN FOR REFERENCE. SELENIUM CONCENTRATIONS ARE NOT SHOWN FOR THESE WELLS.

REV	DESCRIPTION	TECH	ENG	DATE
2	FINAL	CHF	LWM	02/24/11
1	ISSUED DRAFT FOR AGENCY REVIEW	CHF	CLF	07/17/10

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2. ORIGINAL FILE LOCATED:
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DRAWN BY	E MARKS	02/24/11
CHECKED BY	C FOULK	02/24/11
APPROVED BY	C FOULK	02/24/11
PROJECT MANAGER	C FOULK	02/24/11
CLIENT APPROVAL	B KOCH	02/24/11
CLIENT REFERENCE NO.		

P4 Production, LLC

PROJECT LOCATION: BALLARD, HENRY AND ENOCH VALLEY MINES
PROJECT: 2009 DIRECT PUSH RESULTS
TITLE: HENRY MINE AREA SOUTH DIRECT PUSH BOREHOLE LOCATIONS

MWH

SHEET 6 of 8
REVISION 2
FILE NAME 1005813D133

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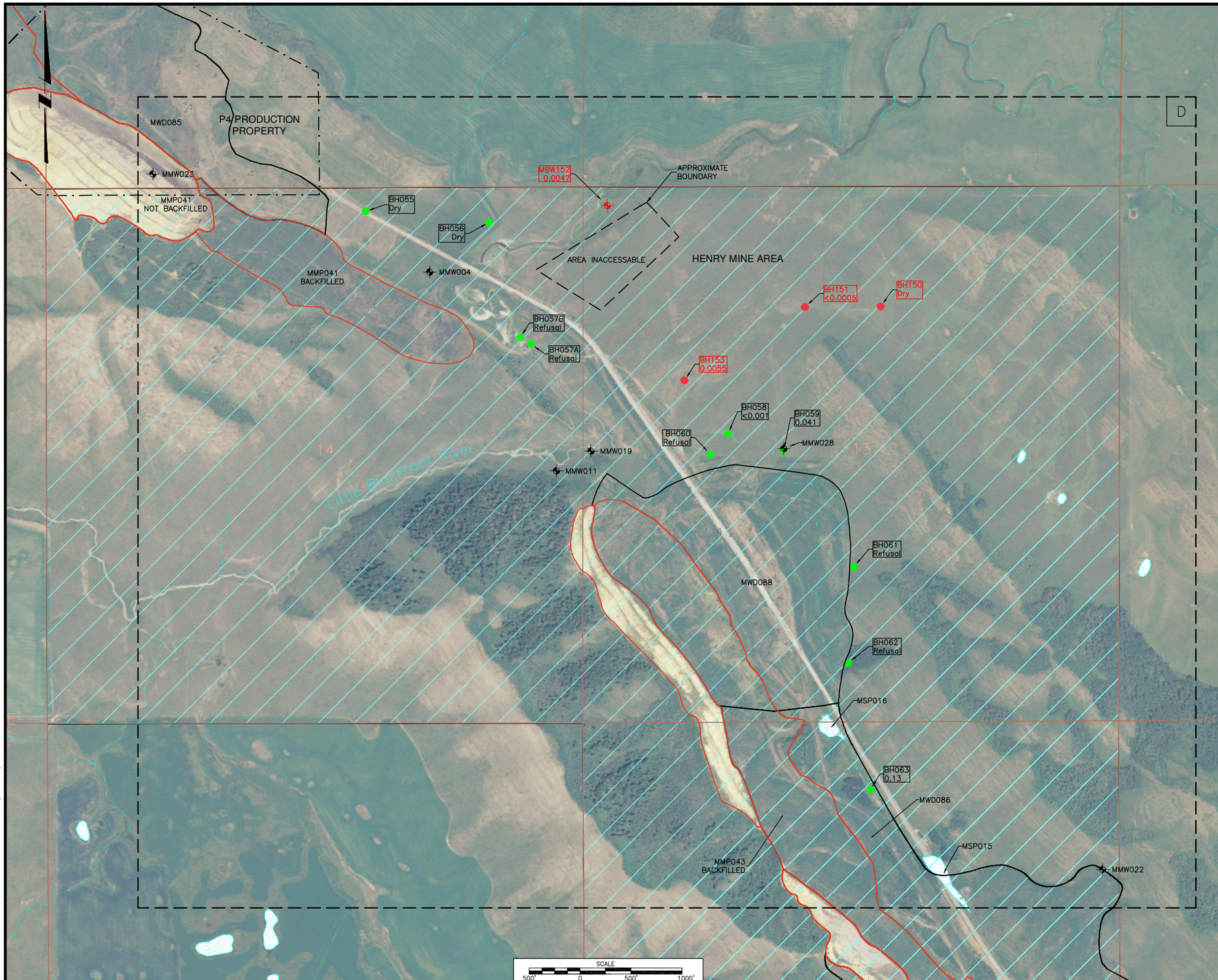

LEGEND:

- MINE PIT LOCATION (APPROXIMATE WHERE COVERED BY BACKFILL)
- WASTE ROCK DUMP LOCATION (APPROXIMATE)
- WASTE ROCK DUMP LOCATION OR PIT BACKFILL (APPROXIMATE)
- POND OR LAKE
- P4 PRODUCTION PROPERTY BOUNDARY (APPROXIMATE)
- SECTION LINES
- 8 SECTION NUMBER
- BLM LANDS
- US NATIONAL FORESTS
- STATE LANDS
- NON FEDERAL LANDS
- A 2008 DIRECT PUSH INVESTIGATION AREA

STATION TYPE:

- MMW = GROUND WATER MONITORING WELL
- MBW = DIRECT PUSH MONITORING WELL INSTALLED IN 2009
- BH = 2008 DIRECT PUSH BOREHOLE
- BH = 2009 DIRECT PUSH BOREHOLE

KEY:

MMP = MINE PIT
MWD = WASTE ROCK DUMP
MSP = POND

BH043 0.01	2008 DIRECT PUSH BOREHOLE ID AND DISSOLVED SELENIUM CONCENTRATION
BH043 0.01	2009 DIRECT PUSH BOREHOLE ID AND DISSOLVED SELENIUM CONCENTRATION
<0.001	CONCENTRATION LESS THAN THE METHOD DETECTION LIMIT

NOTES:

1. DIRECT PUSH RESULTS ARE FOR GRAB GROUNDWATER SAMPLES AND ARE DISSOLVED CONCENTRATIONS OF SELENIUM IN mg/L.
2. SPRING 2008 TOTAL SELENIUM CONCENTRATIONS ARE USED FOR MONITORING WELLS, SPRINGS AND HEADWATER STREAMS WHERE APPROPRIATE.
3. BEDROCK WELLS ARE SHOWN FOR REFERENCE. SELENIUM CONCENTRATIONS ARE NOT SHOWN FOR THESE WELLS.

ISSUE REV	DESCRIPTION	TECH	ENG	DATE
2	FINAL	CHF	LWM	02/24/11
1	ISSUED DRAFT FOR AGENCY REVIEW	CHF	CLF	07/17/10

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DRAWN BY	E MARKS	02/24/11
CHECKED BY	C FOULK	02/24/11
APPROVED BY	C FOULK	02/24/11
PROJECT MANAGER	C FOULK	02/24/11
CLIENT APPROVAL	B KOCH	02/24/11
CLIENT REFERENCE NO.		

P4 Production, LLC

PROJECT LOCATION: BALLARD, HENRY AND ENOCH VALLEY MINES
PROJECT: 2009 DIRECT PUSH RESULTS
TITLE: HENRY MINE AREA NORTH DIRECT PUSH BOREHOLE LOCATIONS

MWH

SHEET: 7 of 8
REVISION: 2
FILE NAME: 1005813D131

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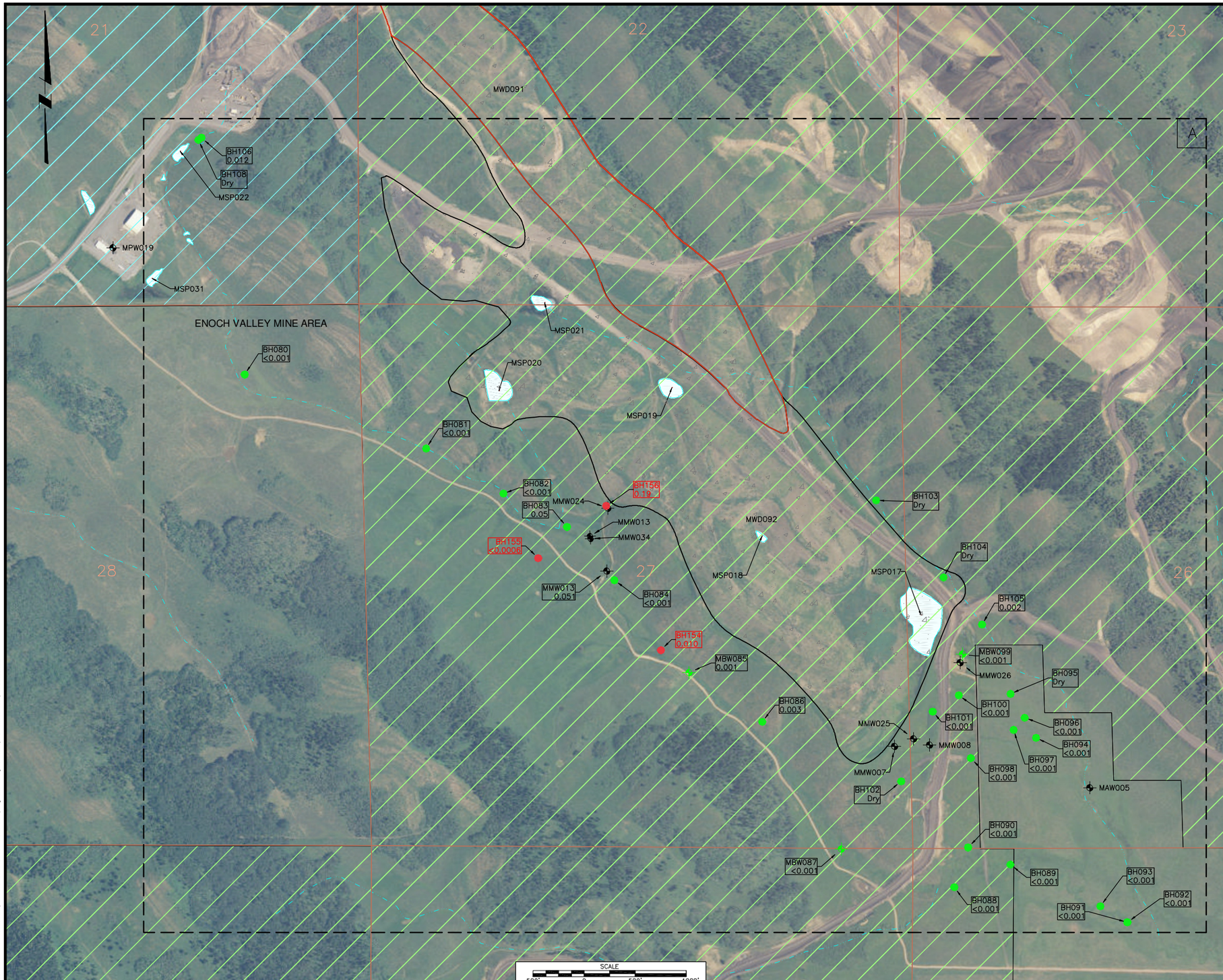

LEGEND:

- MINE PIT LOCATION (APPROXIMATE WHERE COVERED BY BACKFILL)
- WASTE ROCK DUMP LOCATION (APPROXIMATE)
- WASTE ROCK DUMP LOCATION OR PIT BACKFILL (APPROXIMATE)
- POND OR LAKE
- P4 PRODUCTION PROPERTY BOUNDARY (APPROXIMATE)
- SECTION LINES
- 8 SECTION NUMBER
- BLM LANDS
- US NATIONAL FORESTS
- STATE LANDS
- NON FEDERAL LANDS
- A 2008 DIRECT PUSH INVESTIGATION AREA

STATION TYPE:

- MMW = GROUND WATER MONITORING WELL
- MAW = AGRICULTURAL WELL
- MPW = PRODUCTION WELL
- MBW = DIRECT PUSH MONITORING WELL INSTALLED IN 2008
- BH = 2008 DIRECT PUSH BOREHOLE
- BH = 2009 DIRECT PUSH BOREHOLE

KEY:

MMP = MINE PIT
MWD = WASTE ROCK DUMP
MSP = POND

BH043 0.01	2008 DIRECT PUSH BOREHOLE ID AND DISSOLVED SELENIUM CONCENTRATION
BH043 0.01	2009 DIRECT PUSH BOREHOLE ID AND DISSOLVED SELENIUM CONCENTRATION
<0.001	CONCENTRATION LESS THAN THE METHOD DETECTION LIMIT

NOTES:

1. DIRECT PUSH RESULTS ARE FOR GRAB GROUNDWATER SAMPLES AND ARE DISSOLVED CONCENTRATIONS OF SELENIUM IN mg/L.
2. SPRING 2008 TOTAL SELENIUM CONCENTRATIONS ARE USED FOR MONITORING WELLS, SPRINGS AND HEADWATER STREAMS WHERE APPROPRIATE.
3. BEDROCK WELLS ARE SHOWN FOR REFERENCE. SELENIUM CONCENTRATIONS ARE NOT SHOWN FOR THESE WELLS.

SCALE
500' 0 500' 1000'

ISSUE REV	DESCRIPTION	TECH	ENG	DATE
2	FINAL	CHF	LWM	02/24/11
1	ISSUED DRAFT FOR AGENCY REVIEW	CHF	CLF	07/17/10

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2. ORIGINAL FILE LOCATED:
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DESIGNED BY	C FOULK	02/24/11
DRAWN BY	E MARKS	02/24/11
CHECKED BY	C FOULK	02/24/11
APPROVED BY	C FOULK	02/24/11
PROJECT MANAGER	C FOULK	02/24/11
CLIENT APPROVAL	B KOCH	02/24/11
CLIENT REFERENCE NO.		

P4 Production, LLC

PROJECT LOCATION
BALLARD, HENRY AND ENOCH VALLEY MINES

PROJECT
2009 DIRECT PUSH RESULTS

TITLE
ENOCH VALLEY MINE AREA SOUTH
DIRECT PUSH BOREHOLE LOCATIONS

MWH

SHEET 8 of 8
REVISION 2
FILE NAME 1005813D132

N:\Design-Drafting\Clients_J-P\Monsanto-P4 Production\1005813 2009 Direct-Push Sampling and Analysis Plan\013-Sheet Set\1005813D132

ATTACHMENT A

WELL AND SOIL CORE LOGS

RECORD OF BOREHOLE: MBW130

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: NA	Drilling Method / Rig	: Geoprobe 6620DT
Drilling Date(s)	: 5/11/2009	Drilled By	: M. Taggart (Earth Probe Env.)
Latitude	: N 42 49' 40"	Logged By	: D. Brame (MWH)
Longitude	: W 111 27' 10"	Installed By	: M. Taggart (Earth Probe Env.)
Elevation (ft) AMSL	: 6,399	Surveyed By	: D. Brame (MWH)

Water Levels
- ▼ Water Level Before Sampling
- ▽ Depth to First Water

Well: MBW130
Elev.: 6,399 ft AMSL

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	1315	Clay (CH), very dark brown (10YR, 2/2), moist, soft, high plasticity, no HCL reaction.	Alluvium
	2		Clay (CH), dark yellowish-brown (10YR, 4/4), moist, soft, high plasticity, weak HCL reaction.	
5	3		Clayey gravel (GC), brown (10YR, 5/3), moist, low plasticity, no HCL reaction.	
	4		Clay (CH), dark yellowish-brown (10YR, 4/4), moist, medium soft, high plasticity, weak HCL reaction.	
10	5		Clay (CH), dark yellowish-brown (10YR, 4/4), moist, medium soft, high plasticity, weak HCL reaction.	
	6			
	7		Clayey gravel (GC), brown (10YR, 5/3), dry, low plasticity, no HCL reaction.	
	8		Clay (CL), brown (10YR, 5/3), moist, stiff, no HCL reaction.	
15			Clayey gravel (GC), brown (10YR, 5/3), dry, low plasticity, no HCL reaction.	
	9		Clayey sand (SC), yellowish-brown (10YR, 5/6), gravel up to 3/4" Ø, sand fine grained, wet, medium plasticity, no HCL reaction.	
20				
25				

Well Details

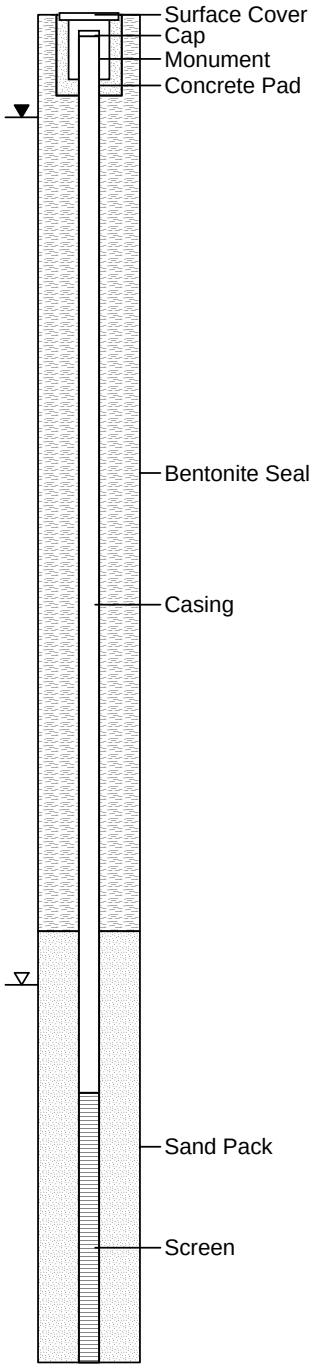
CONSTRUCTION DETAILS

Installation Date	: 5/11/2009
Boring Total Depth (ft bgs)	: 25
Well Total Depth (ft bgs)	: 25
Casing Type	: Schedule 80 PVC
Screen Slot Size	: 0.011
Screen Length (ft)	: 5
Screened Interval (ft bgs)	: 20-25
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 17-25
Secondary Filter Interval (ft bgs)	: NA
Bentonite Seal (Chips) Interval (ft bgs)	: 0-17
Bentonite Seal (slurry) Interval (ft bgs)	: Not used
Formation at Screen	: Alluvium
Depth Water Encountered when Drilling (ft bgs)	: 18
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: NA
Backfill (ft bgs)	: NA
Steel Casing Depth (ft bgs)	: NA
Pump Depth (ft bgs)	: NA
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: Ground Surface

SAMPLE DETAILS

Spring 09 Static Water Level (ft bgs)	: 1.9
Spring 09 Diss. Se (mg/L)	: 0.0022

NOTES:
Originally labeled and sampled as BH130.



RECORD OF BOREHOLE: MBW131

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: NA	Drilling Method / Rig	: Geoprobe 6620DT
Drilling Date(s)	: 5/11/2009	Drilled By	: M. Taggart (Earth Probe Env.)
Latitude	: N 42 50' 24"	Logged By	: D. Brame (MWH)
Longitude	: W 111 28' 33"	Installed By	: M. Taggart (Earth Probe Env.)
Elevation (ft) AMSL	: 6,475	Surveyed By	: D. Brame (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ Depth to First Water

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	1640	Clay (CH), very dark brown (10YR, 2/2), wet, very soft, low plasticity, weak HCL reaction.	Alluvium
5	2		No sample collected.	
10				
15				
20				
25				

Well Details

CONSTRUCTION DETAILS

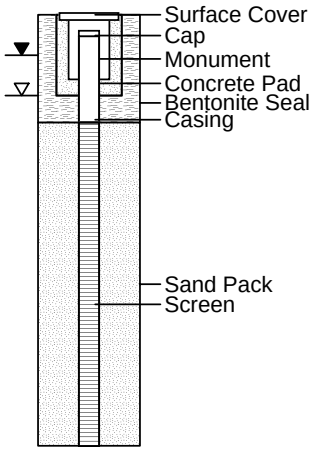
Installation Date	: 5/11/2009
Boring Total Depth (ft bgs)	: 8
Well Total Depth (ft bgs)	: 8
Casing Type	: Schedule 80 PVC
Screen Slot Size	: 0.011
Screen Length (ft)	: 5
Screened Interval (ft bgs)	: 3-8
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 2-8
Secondary Filter Interval (ft bgs)	: NA
Bentonite Seal (Chips) Interval (ft bgs)	: 0-2
Bentonite Seal (slurry) Interval (ft bgs)	: Not used
Formation at Screen	: Alluvium
Depth Water Encountered when Drilling (ft bgs)	: 1.5
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: NA
Backfill (ft bgs)	: NA
Steel Casing Depth (ft bgs)	: NA
Pump Depth (ft bgs)	: NA
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: Ground Surface

SAMPLE DETAILS

Spring 09 Static Water Level (ft bgs)	: 0.75
Spring 09 Diss. Se (mg/L)	: <0.0005

NOTES:
Originally labeled and sampled as BH131.
Push probe used to determine water level. No sample collected from depths 1-8 ft bgs.

Well: MBW131
Elev.: 6,475 ft AMSL



RECORD OF BOREHOLE: MBW135

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: NA	Drilling Method / Rig	: Geoprobe 6620DT
Drilling Date(s)	: 5/14/2009	Drilled By	: M. Taggart (Earth Probe Env.)
Latitude	: N 42 48' 40"	Logged By	: D. Brame (MWH)
Longitude	: W 111 29' 43"	Installed By	: M. Taggart (Earth Probe Env.)
Elevation (ft) AMSL	: 6,299	Surveyed By	: D. Brame (MWH)

Water Levels
- ▼ Water Level Before Sampling
- ▽ Depth to First Water

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	1350	Silty clay (CL-ML), brown (5YR, 3/1), moist, very soft, low plasticity, contains rootlets, no HCL reaction.	Alluvium
5	2		Clay (CL), very dark gray (10YR, 3/1), moist, soft, medium plastic, no HCL reaction.	
10	3		Silty clay (CL-ML), brown (5YR, 3/1), moist, soft, low plasticity, no HCL reaction.	
15	4		Clayey gravel (GC), brown (10YR, 5/3), wet, low plasticity, weak HCL reaction.	
20	5		Silty sand (SM), reddish-brown (10R, 3/4), medium grained sand, wet, low plasticity, no HCL reaction.	
25				

Well Details

CONSTRUCTION DETAILS

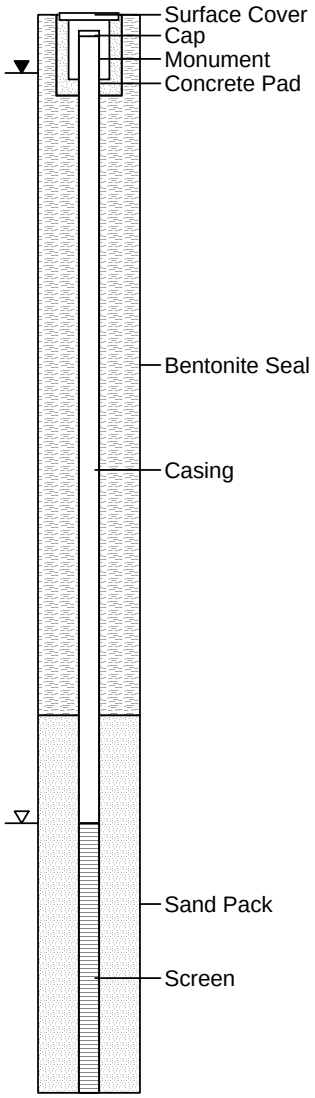
Installation Date	: 5/14/2009
Boring Total Depth (ft bgs)	: 20
Well Total Depth (ft bgs)	: 20
Casing Type	: Schedule 80 PVC
Screen Slot Size	: 0.011
Screen Length (ft)	: 5
Screened Interval (ft bgs)	: 15-20
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 13-20
Secondary Filter Interval	: NA
(ft bgs)	:
Bentonite Seal (Chips)	:
Interval (ft bgs)	: 0-13
Bentonite Seal (slurry)	: Not used
Interval (ft bgs)	:
Formation at Screen	: Alluvium
Depth Water Encountered	:
when Drilling (ft bgs)	: 15
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: NA
Backfill (ft bgs)	: NA
Steel Casing Depth	: NA
(ft bgs)	:
Pump Depth (ft bgs)	: NA
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: Ground Surface

SAMPLE DETAILS

Spring 09 Static Water Level (ft bgs)	: 1.08
Spring 09 Diss. Se (mg/L)	: 0.0008

NOTES:
Originally labeled and sampled as BH135.

Well: MBW135
Elev.: 6,299 ft AMSL



RECORD OF BOREHOLE: MBW152

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: NA	Drilling Method / Rig	: Geoprobe 6620DT
Drilling Date(s)	: 5/12/2009	Drilled By	: M. Taggart (Earth Probe Env.)
Latitude	: N 42 54' 14"	Logged By	: D. Brame (MWH)
Longitude	: W 111 29' 23"	Installed By	: M. Taggart (Earth Probe Env.)
Elevation (ft) AMSL	: 6,303	Surveyed By	: D. Brame (MWH)

Water Levels
▼ Water Level Before Sampling
▽ Depth to First Water

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	1010	Clay (CH), brown (5YR, 3/1), moist, medium soft, high plasticity, weak HCL reaction.	Alluvium
5	2		No Sample Collected.	
10				
15				
20				
25				

Well Details

CONSTRUCTION DETAILS

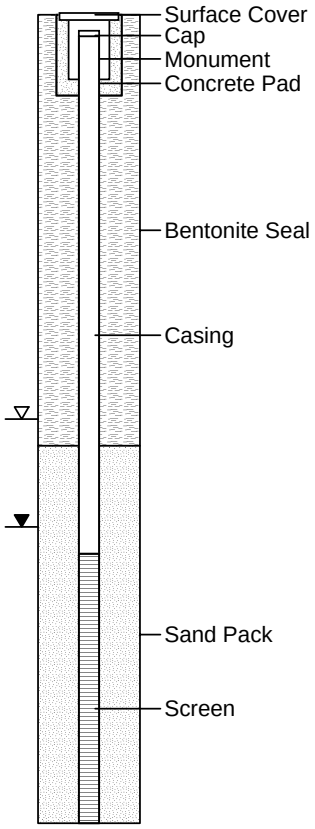
Installation Date	: 5/12/2009
Boring Total Depth (ft bgs)	: 15
Well Total Depth (ft bgs)	: 15
Casing Type	: Schedule 80 PVC
Screen Slot Size	: 0.011
Screen Length (ft)	: 5
Screened Interval (ft bgs)	: 10-15
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 8-15
Secondary Filter Interval (ft bgs)	: NA
Bentonite Seal (Chips) Interval (ft bgs)	: 0-8
Bentonite Seal (slurry) Interval (ft bgs)	: Not used
Formation at Screen	: Alluvium
Depth Water Encountered when Drilling (ft bgs)	: 7.5
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: NA
Backfill (ft bgs)	: NA
Steel Casing Depth (ft bgs)	: NA
Pump Depth (ft bgs)	: NA
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: Ground Surface

SAMPLE DETAILS

Spring 09 Static Water Level (ft bgs)	: 9.5
Spring 09 Diss. Se (mg/L)	: 0.0047

NOTES:
Originally labeled and sampled as BH152.
Push probe used to determine water level. No sample collected from depths 2-15 ft bgs.

Well: MBW152
Elev.: 6,303 ft AMSL



RECORD OF BOREHOLE: BH127

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: NA	Drilling Method / Rig	: Geoprobe 6620DT
Drilling Date(s)	: 5/11/2009	Drilled By	: M. Taggart (Earth Probe Env.)
Latitude	: N 42 49' 34"	Logged By	: D. Brame (MWH)
Longitude	: W 111 27' 25"	Installed By	: M. Taggart (Earth Probe Env.)
Elevation (ft) AMSL	: 6,416	Surveyed By	: D. Brame (MWH)

Sample Condition: Clay, Gravel, Sand, Silt

Water Levels: Sample Level, First Water

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	1240	Silty clay (CL-ML), very dark brown (10YR, 2/2), moist, very soft, medium plasticity, contains rootlets, no HCL reaction.	Alluvium
	2		Silty clay (CL-ML), brown (10YR, 5/3), moist, very soft, medium plasticity, no HCL reaction.	
5	3		Clay (CL), brown (5YR, 3/1), dry, very stiff, nonplastic, oxidized iron streaks, no HCL reaction.	
	4		Clayey gravel (GC), brown (10YR, 5/3), moist, stiff, low plasticity, no HCL reaction.	
10	5		Clay (CL), dark yellowish-brown (10YR, 4/4), dry, stiff, low plasticity, no HCL reaction.	
15	6		Clay (CL), dark yellowish-brown (10YR, 4/4), moist, soft, medium plasticity, no HCL reaction.	
20				
25				

Borehole Details

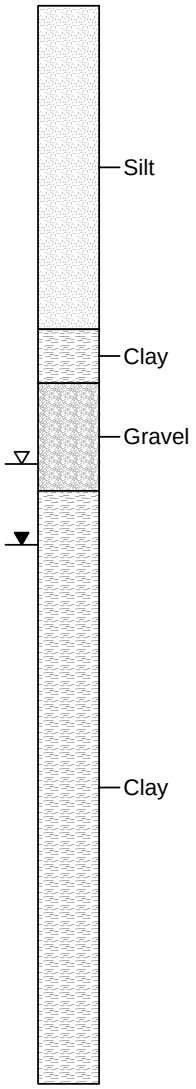
BOREHOLE DETAILS

Drilling Date : 5/11/2009
Boring Total Depth (ft bgs): 20
Depth Water Encountered when Drilling (ft bgs) : 8.5

SAMPLE DETAILS

Depth Water Sampled (ft bgs) : 10.0
Spring 09 Diss. Se (mg/L) : 0.0046

NOTES:
Archived soil sample collected from 9 ft bgs.



RECORD OF BOREHOLE: BH155

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: NA	Drilling Method / Rig	: Geoprobe 6620DT
Drilling Date(s)	: 5/13/2009	Drilled By	: M. Taggart (Earth Probe Env.)
Latitude	: N 42 52' 07"	Logged By	: D. Brame (MWH)
Longitude	: W 111 24' 21"	Installed By	: M. Taggart (Earth Probe Env.)
Elevation (ft) AMSL	: 6,644	Surveyed By	: D. Brame (MWH)

Sample Condition: Clay, Gravel, Sand, Silt

Water Levels: Sample Level, First Water

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	0830	Silty clay (CL-ML), very dark grayish-brown (10YR, 3/2), moist, very soft, medium plasticity, no HCL reaction.	Alluvium
5	2		Clay (CL), yellowish-brown (10YR, 5/8), dry, weak cementation, orange oxidized iron streaks, no HCL reaction.	Alluvium
10	3		Clay (CL), very dark brown (10YR, 2/2), wet, soft, high plasticity, no HCL reaction.	Alluvium
	4		Clay (CL), brownish-yellow (10YR, 6/8), moist, hard, weak cementation, layered clay with red streaks, no HCL reaction, Dinwoody.	Dinwoody
15	5		Clay (CL), brownish-yellow (10YR, 6/8), moist, very stiff, weak cementation, low plasticity, no HCL reaction, Dinwoody.	Dinwoody
20				
25				

Borehole Details

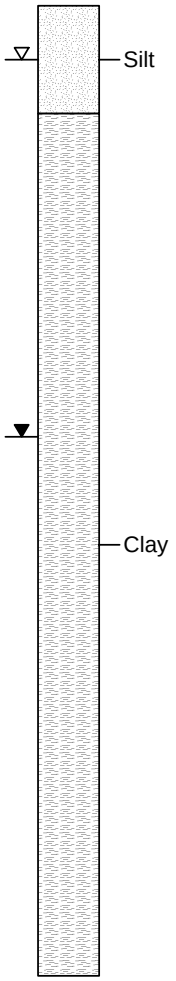
BOREHOLE DETAILS

Drilling Date : 5/13/2009
Boring Total Depth (ft bgs): 18
Depth Water Encountered when Drilling (ft bgs) : 1.0

SAMPLE DETAILS

Depth Water Sampled (ft bgs) : 8.0
Spring 09 Diss. Se (mg/L) : 0.0006

NOTES:
Archived soil sample collected from 16 ft bgs.



ATTACHMENT B

RESPONSE TO AGENCIES AND TRIBES COMMENTS

Response to Agencies and Tribes Comments on
***Draft Direct-Push Groundwater Sampling Technical Memorandum, Revision 0*,**
prepared for P4 Production by MWH, December 16, 2009.

General Comments

No remaining or new data gaps were identified for the shallow aquifers at the Ballard, Henry, and Enoch Valley Mines. Please add a data gap analysis to the referenced document or specify that this data gap analysis is forthcoming in a subsequent report (such as the RI/FS work plan). Note that the Agencies and Tribes (A/T) strongly support identification of data gaps (if they exist) as soon as possible in order to allow time to develop appropriate work plans to resolve those data gaps within the next field season, if possible.

A refined CSM for the shallow aquifers at Ballard, Henry, and Enoch Valley Mines was not included in the report. Please add a refined CSM for the shallow aquifers to the referenced document or specify that a revised CSM is forthcoming in a subsequent report.

The decision error lower bound (DELB) is the lower bound above which the groundwater may be potentially impacted in relation to the selenium groundwater standard. The referenced report does not include any discussion of findings relative to the DELB. Note also that such an assessment must include potential impacts to local surface water quality even if adjoining groundwater is below the DELB, as warranted by local hydrogeologic conditions. As P4 states in DQO Step 6 of the DP work plan (*Final Direct Push Groundwater Continuation Sampling and Analysis Plan Final Revision 2*, dated June 2009):

> "For areas where the selenium concentration is found to be below the DELB, there is a reasonable expectation that the groundwater standard is not being exceeded at that location. However, hydrogeologic factors also need to be considered when evaluating concentrations above and below the DELB, including for example, groundwater discharges to surface water in the area. If groundwater is discharging to surface water in an area being evaluated, then the surface water standard also needs to be considered when evaluating groundwater concentrations."

Please include a discussion of the findings of the direct push (DP) study relative to the DELB or specify that this analysis is forthcoming in a subsequent report. The analysis must include an evaluation if the need for further characterization based on both potential impacts to groundwater and surface water quality.

P4 Response: *The intent of the technical memorandum was simply to report the data. The analysis of the data has been conducted in the RI/FS Work Plan. The following text has been added to the Technical Memorandum:*

The results of the Direct Push Program will also be utilized in accordance with the requirements of the Administrative Settlement Agreement and Order on Consent/Consent Order for Remedial Investigation/Feasibility Study (2009 CO/AOC; USEPA, 2009) and the Statement of Work (SOW). The purpose of the 2009 CO/AOC is to conduct a Remedial Investigation and Feasibility Study (RI/FS)

for P4's Ballard, Henry and Enoch Valley Mines (the Sites). The 2009 CO/AOC supersedes the previous 2003 CO/AOC.

Evaluation of the direct push results is not presented herein but has been utilized in RI/FS Work Plan for the following:

- *Analysis of remaining data gaps in the shallow aquifers at the Ballard, Henry, and Enoch Valley Mines*
- *Refining the conceptual site model (CSM) for the shallow aquifers*
- *Evaluation of the direct push results in relation to the decision error lower bound (DELB) for both adjoining groundwater and potentially impacted surface water*
- *Proposing additional characterization of the shallow groundwater where necessary*

This addition has been underlined in the technical memorandum text.

Specific Comments

Section 3.1.2, page 4. The reason for drilling BH134, BH135, and BH136 at Ballard Mine was to evaluate potential impacts of groundwater on the Blackfoot River southwest of MWD081. The referenced report indicates that Boreholes BH134, BH135 and BH136 had to be relocated further east because the planned locations near the Blackfoot River were too marshy and soft for the direct push rig. The A/T considers this to remain a data gap because the leading edge of the selenium plume is not defined by BH134, BH135, and BH136 and the potential impact of the selenium plume to the Blackfoot River remains unknown. The A/T recognizes that it is impractical to mob a drill rig onto the marsh. However, given the marshy conditions and the shallow nature of groundwater in this area, we recommend that P4 devise a way of collecting representative water samples from the marsh, either by hand auguring or similar means, as practicable.

P4 Response: *This data gap has been evaluated in the RI/FS Work Plan and a following sampling program has been proposed.*

Section 5.1.2.2, Page 14, paragraph 1. Both Table 1 and Drawings 4 and 5 indicate that the selenium concentration in BH135/MBW135 was <0.0008 mg/L, whereas, the cited selenium concentration in the referenced paragraph is the absolute value 0.0008 mg/L. Table 1 flags this selenium value with both "U" and ""J" flags indicating that it is both a laboratory detection limit and an estimated value. The "U" and ""J" flags are apparently due to laboratory instrument contamination bias as noted in Section 4.10. Given the situation, the A/T agrees that the document text should cite the absolute value because this is the more conservative approach (i.e., compared to referring to it as a "less than" value). However, to help alleviate any potential confusion, please include a reference in Section 5.1.2.2 that directs the reader to Section 4.10 and to Footnote *a* of Table 1. Furthermore, the values cited on the Drawings should be the same as what is cited in the text. Note that similar revisions should also made for the selenium concentration at BH134 (Ballard Mine) and BH155 (Enoch Valley Mine), as applicable.

P4 Response: *Omission of the less than symbol in the text was an error. At the method detection limit reported by the laboratory the estimated flag has little material effect on the conclusions (i.e., it is a very low concentration). We propose to include the less than symbol in the text and not reference and footnote as suggested for this data report. Such qualification may be appropriate for later presentations (e.g., risk assessment analyses). However, for this presentation it adds an addition level of complication and is not consistent with other recent presentations.*

Section 5.2.1.2. The reason for drilling BH157 and BH158 at southern end of Henry Mine was to evaluate potential impacts to groundwater and surface water in the area between the Henry and Wooley Valley Mines. Selenium at both of these DP locations exceeded the DELB concentration. Please identify any data gaps associated with these findings or specify that a discussion of this data gap is forthcoming in a subsequent report. Include a discussion of the potential implications of the DELB excedences to both local groundwater and surface water.

P4 Response: *This data gap has been evaluated in the RI/FS Work Plan and text has been inserted into the Technical Memorandum as described in the response to the General Comments above. A follow up investigation for this area has been proposed in the RI/FS Work Plan.*

TABLE A1
SUMMARY OF DIRECT PUSH BOREHOLE DATA

Mine	Area	Borehole or Well ID	Completion Date	Latitude (dd.mm.ss)	Longitude (dd.mm.ss)	Surface Elevation (ft-AMSL)	Water Level (ft bgs)	Borehole Depth (ft-bgs)	Dissolved Selenium (mg/L)	Notes (depths in ft bgs)
Ballard (east)	E	BH031	5/27/2008	42 49 42	111 28 02	6457	4	14	0.113	cored borehole
		MBW032	5/28/2008	42 49 34	111 28 08	6503	3.5	15	0.63	well: TD 15, screen 10-15
		BH033	5/28/2008	42 49 38	111 28 11	6500	3.5	9	0.014	
		BH034	5/28/2008	42 49 44	111 28 14	6542	Dry	19	---	
		BH035	5/28/2008	42 49 46	111 28 02	6459	5.5	15	0.005	
		BH036	5/28/2008	42 49 42	111 28 05	6466	Dry	15	---	
		BH037	5/28/2008	42 49 43	111 27 57	6440	8	10	0.002 J	
		BH038	5/28/2008	42 49 43	111 27 43	6417	Dry	21	---	cored borehole
		BH039	5/29/2008	42 49 22	111 27 59	6529	NR	14	0.088	cored borehole
		BH040	5/29/2008	42 49 27	111 27 46	6457	7.5	20	0.065	
		BH041	5/29/2008	42 49 32	111 27 39	6424	0.5	15	0.021	
		BH042	5/29/2008	42 49 43	111 27 35	6401	2.6	6	0.039	
		BH043	5/29/2008	42 49 44	111 27 28	6398	16	20	0.01	
		BH044	5/29/2008	42 49 47	111 27 45	6411	NR	15	<0.001 U	
		BH045	5/29/2008	42 49 52	111 27 50	6417	2.5	10	<0.001 U	
		BH046	5/29/2008	42 49 57	111 28 00	6424	0.5	10	<0.001 U	
		BH047	5/30/2008	42 49 55	111 28 08	6444	NR	10	<0.001 U	
		MBW048	5/30/2008	42 50 04	111 27 54	6434	4	10	<0.001 U	well: TD 9 screen 4-9; cored
		BH049A	5/30/2008	42 49 59	111 27 49	6424	Dry	15	---	
		BH049B	5/30/2008	42 49 57	111 27 46	6424	Dry	10	---	
		BH050	5/30/2008	42 50 07	111 28 05	6434	1	5	0.003 J	
		BH051	5/30/2008	42 50 02	111 28 07	6437	1	10	0.004 J	
		BH052	5/31/2008	42 50 12	111 28 16	6444	10.5	15	0.27	cored borehole
		BH053	5/31/2008	42 50 08	111 28 16	6445	0.5	10	1.25	
		BH054	5/31/2008	42 50 14	111 28 22	6457	0.5	10	0.43	
		BH126	5/11/2009	42 49 48	111 27 48	6462	1.5	15	0.0015	
		BH127	5/11/2009	42 49 34	111 27 25	6416	8.5	20	0.0046	cored borehole
		BH128	5/11/2009	42 49 46	111 27 01	6432	1.0	15	<0.0005 U	
		BH129	5/11/2009	42 49 30	111 27 06	6419	1.0	15	<0.0005 U	
		MBW130	5/11/2009	42 49 40	111 27 10	6399	18.0	25	0.0022	well: TD 25, screen 20-25; core
		MBW131	5/11/2009	42 50 24	111 28 33	6475	1.5	8	<0.0005 U	well: TD 8, screen 3-8
		BH132	5/11/2009	42 50 16	111 28 16	6463	2.0	20	0.0060	
		BH133	5/12/2009	42 50 11	111 28 08	6419	1.5	10	<0.0005 U	
Ballard (west)	F	BH001	5/13/2008	42 49 17	111 29 05	6391	Dry	25	---	cored borehole
		BH002	5/13/2008	42 49 13	111 29 14	6358	8	15	0.4	cored borehole
		BH003	5/13/2008	42 49 08	111 29 15	6354	11	15	0.096	cored borehole
		BH004	5/13/2008	42 49 13	111 29 19	6347	4.5	12.5	0.2	
		BH005	5/13/2008	42 49 05	111 29 19	6338	5.75	11.5	0.07	
		MBW006	5/13/2008	42 49 04	111 29 23	6328	5.5	14	0.34	well: TD 14, screen 9-14
		BH007	5/13/2008	42 49 03	111 29 31	6319	Dry	18	---	
		BH008	5/13/2008	42 49 05	111 29 40	6319	12.5	20	<0.001 U	
		MBW009	5/14/2008	42 49 13	111 29 46	6307	3.3	11	0.026	well: TD 11, screen 6-11; cored
		BH010	5/14/2008	42 49 18	111 29 42	6327	5	7	0.222	
		MBW011	5/14/2008	42 49 24	111 29 36	6345	9	15	0.159	well: TD 15, screen 10-15; cored
		BH012	5/14/2008	42 49 25	111 29 30	6360	8.5	15	0.71	
		BH013	5/15/2008	42 49 31	111 29 36	6368	5	15	1.68	
		MBW028	5/21/2008	42 49 35	111 29 40	6348	5.79	21	0.62	well: TD 21, Screen 16-21; cored
		BH064	6/03/2008	42 49 28	111 29 44	6340	5.5	10	0.54	
									0.49	duplicate
									0.52	*duplicate average*
		BH065	6/03/2008	42 49 18	111 29 49	6322	5.5	10	0.22	
		BH066	6/03/2008	42 49 34	111 29 45	6348	Dry	25	---	
		BH067	6/03/2008	42 49 33	111 29 56	6328	9	25	0.26	
		BH118	6/18/2008	42 48 57	111 30 05	6281	14.5	18	<0.001 U	
		BH119	6/18/2008	42 49 02	111 30 05	6283	1.5	5	0.029	
		BH120	6/18/2008	42 49 05	111 29 56	6285	4.5	10	0.082	
		BH121	6/18/2008	42 49 00	111 29 44	6298	10.5	20	0.006	
		BH122	6/18/2008	42 48 58	111 29 40	6300	13.25	20	0.018	
		BH123	6/18/2008	42 48 54	111 29 36	6299	15	20	0.016	
		BH124	6/18/2008	42 48 52	111 29 48	6291	9	20	0.014	
		BH125	6/18/2008	42 48 52	111 29 56	6284	13	16.5	0.067	
		BH134	5/14/2009	42 48 40	111 29 31	6311	5.0	10	<0.0005 UJ	temporary piezometer used
		MBW135	5/14/2009	42 48 40	111 29 43	6299	15.0	20	<0.0008 UJ	well: TD 20, screen 15-20; core
		BH136	5/14/2009	42 48 42	111 29 48	6298	2.0	10	0.012 J	
		BH137	5/15/2009	42 49 18	111 30 03	6345	Dry	20	---	refusal
		BH138	5/15/2009	42 49 13	111 30 11	6324	Dry	20	---	refusal
		BH139	5/15/2009	42 49 11	111 30 17	6307	9.5	11	0.0018 J	refusal; temporary piezo. used
		BH140	5/15/2009	42 49 18	111 30 23	6314	Dry	18.5	---	refusal
		BH141	5/15/2009	42 49 25	111 30 12	6319	Dry	12	---	refusal
		BH142	5/15/2009	42 49 27	111 30 03	6322	4.0	20	0.033 J	
		BH143	5/15/2009	42 49 29	111 30 07	6324	Dry	12	---	Refusal

TABLE A1
SUMMARY OF DIRECT PUSH BOREHOLE DATA

Mine	Area	Borehole or Well ID	Completion Date	Latitude (dd.mm.ss)	Longitude (dd.mm.ss)	Surface Elevation (ft-AMSL)	Water Level (ft bgs)	Borehole Depth (ft-bgs)	Dissolved Selenium (mg/L)	Notes (depths in ft bgs)
Ballard	G	BH014	5/15/2008	42 49 52	111 29 50	6316	27	50	0.42	cored borehole
(west)		BH015	5/16/2008	42 49 50	111 29 48	6322	9	13	1.22	
		BH016A[1]	5/16/2008	42 49 50	111 29 51	6319	25.5	29	0.46	
		BH016B[1]	5/16/2008	42 49 50	111 29 51	6319	35	38.5	0.003 J	
		BH017	5/16/2008	42 49 56	111 29 49	6325	12.5	29	0.29	
		BH018	5/16/2008	42 49 59	111 29 48	6293	5.5	31	0.37	
		BH019	5/17/2008	42 50 02	111 29 45	6325	29	51	1.32	cored borehole
		BH020	5/18/2008	42 50 14	111 29 42	6335	Dry	26	---	cored borehole
		BH021	5/18/2008	42 50 08	111 29 44	6342	NR	52	0.065	cored borehole
		BH022	5/19/2008	42 50 13	111 29 37	6386	Dry	20	---	
		BH023	5/20/2008	42 50 10	111 29 47	6322	Dry	20	---	
		BH024	5/20/2008	42 50 10	111 29 52	6306	3.5	10	0.011	
		BH025	5/20/2008	42 50 09	111 29 49	6319	5	10	0.01	
		MBW026[2]	5/20/2008	42 50 02	111 29 55	6308	Dry[2]	11	---	well: TD 11, screen 6-11; cored
		MBW027	5/21/2008	42 50 03	111 29 52	6312	9.9	25	0.18	well: TD 16.5, scrn.11-16 cored
		BH068	6/03/2008	42 49 54	111 29 54	6309	28	30	0.39	
		BH069	6/03/2008	42 49 57	111 29 57	6306	NA	16	0.012	
		BH070	6/03/2008	42 50 03	111 29 57	6303	14	20	0.018	
		BH071	6/03/2008	42 50 10	111 29 56	6299	3	15	0.001 J	
		BH144	5/15/2009	42 49 39	111 30 01	6342	Dry	18	---	refusal
		BH145	5/15/2009	42 49 40	111 29 51	6357	Dry	25	---	refusal
		BH146	5/15/2009	42 49 45	111 30 07	6347	Dry	20	---	refusal
		BH147	5/15/2009	42 49 50	111 30 11	6347	Dry	18	---	refusal
		BH148	5/15/2009	42 50 04	111 30 07	6332	7.0	20	0.0047 J	temporary piezometer used
		BH149	5/15/2009	42 50 13	111 30 05	6324	13.0	20	0.030 J	temporary piezometer used
Henry	C	BH029	5/22/2008	42 52 14	111 27 40	6440	Dry	NA	---	cored borehole
(south)		BH030	5/22/2008	42 52 17	111 27 37	6447	Dry	15	<0.001 U	
		BH072	6/04/2008	42 52 17	111 28 40	6358	Dry	45	---	cored borehole
		BH073	6/04/2008	42 52 12	111 27 40	6444	4	20	0.003 J	
		BH074	6/04/2008	42 52 20	111 27 44	6437	7	15	0.031	
		BH075	6/04/2008	42 52 09	111 26 53	6401	Dry	10	<0.001 U	cored borehole
		BH076	6/04/2008	42 52 01	111 27 08	6437	9	10	<0.001 U	
		BH077	6/04/2008	42 51 58	111 27 05	6430	1	10	<0.001 U	
		BH078	6/04/2008	42 52 11	111 28 15	6409	Dry	35	---	cored borehole
		BH079	6/04/2008	42 52 11	111 28 29	6378	NR	25	<0.001 U	
		BH157	5/12/2009	42 51 56	111 26 40	6435	2.0	10	0.018 J	
		BH158	5/12/2009	42 51 49	111 26 36	6424	0.5	10	0.032 J	
Henry	D	BH055	5/31/2008	42 54 14	111 29 55	6280	Dry	55	---	cored borehole
(north)		BH056	6/01/2008	42 54 12	111 29 39	6273	Dry	18	---	
		BH057A	6/01/2008	42 54 01	111 29 33	6276	Dry	6	---	refusal
		BH057B	6/01/2008	42 54 01	111 29 35	6273	Dry	4	---	refusal
		BH058	6/01/2008	42 53 52	111 29 07	6287	4	28	<0.001 U	cored borehole
		BH059	6/01/2008	42 53 50	111 29 00	6312	23	25	0.041	
		BH060	6/01/2008	42 53 50	111 29 10	6286	Dry	13	---	refusal
		BH061	6/02/2008	42 53 39	111 28 51	6372	Dry	19	---	refusal
		BH062	6/02/2008	42 53 29	111 28 52	6377	Dry	17	---	refusal
		BH063	6/02/2008	42 53 17	111 28 49	6391	20.5	20	0.13	
		BH150	5/12/2009	42 54 04	111 28 47	6321	Dry	11.5	---	refusal
		BH151	5/12/2009	42 54 04	111 28 57	6306	2.0	15	<0.0005 U	
		MBW152	5/12/2009	42 54 14	111 29 23	6303	7.5	15	0.0054 J	well: TD 15, screen 10-15
									0.0042	triplicate sample
									0.0046	triplicate sample
									0.0047 J	*triplicate average*
		BH153	5/12/2009	42 53 57	111 29 13	6303	1.5	20	0.0055	
Enoch	A	BH080	6/10/2008	42 52 25	111 24 59	6673	1.75	10	<0.001 U	
Valley		BH081	6/10/2008	42 52 18	111 24 36	6666	1.5	10	<0.001 U	
(south)		BH082	6/10/2008	42 52 13	111 24 26	6650	3	15	<0.001 U	
		BH083	6/10/2008	42 52 10	111 24 17	6627	3	10	0.05	
		BH084	6/11/2008	42 52 05	111 24 11	6631	1	5	<0.001 U	
		MBW085	6/12/2008	42 51 56	111 24 01	6620	2.1	12	0.001 J	well: TD 12, screen 7-12; cored
		BH086	6/12/2008	42 51 51	111 23 52	6649	1.5	5	0.003 J	
		MBW087	6/12/2008	42 51 39	111 23 42	6574	1.2	12	<0.001 U	well: TD 12, screen 7-12; cored
		BH088	6/12/2008	42 51 35	111 23 27	6558	3	5	<0.001 U	
		BH089	6/12/2008	42 51 37	111 23 19	6555	3	5	<0.001 U	
		BH090	6/12/2008	42 51 39	111 23 25	6558	3	20	<0.001 U	
		BH091	6/13/2008	42 51 31	111 23 04	6542	NR	20	<0.001 U	
		BH092	6/13/2008	42 51 31	111 23 04	6542	2	5	<0.001 U	
		BH093	6/13/2008	42 51 33	111 23 08	6549	5	18	<0.001 U	
		BH094	6/13/2008	42 51 49	111 23 16	6572	3	10	<0.001 U	
		BH095	6/13/2008	42 51 53	111 23 19	6585	Dry	29.5	---	
		BH096	6/13/2008	42 51 51	111 23 17	6581	2	5	<0.001 U	
		BH097	6/13/2008	42 51 50	111 23 19	6581	1.5	5	<0.001 U	

TABLE A1
SUMMARY OF DIRECT PUSH BOREHOLE DATA

Mine	Area	Borehole or Well ID	Completion Date	Latitude (dd.mm.ss)	Longitude (dd.mm.ss)	Surface Elevation (ft-AMSL)	Water Level (ft bgs)	Borehole Depth (ft-bgs)	Dissolved Selenium (mg/L)	Notes (depths in ft bgs)
Enoch	A	BH098	6/13/2008	42 51 47	111 23 24	6591	7	10	<0.001 U	
Valley		MBW099	6/13/2008	42 51 57	111 23 25	6604	4.65	29	<0.001 U	well: TD 29, screen 24-29; cored
(south)		BH100	6/14/2008	42 51 53	111 23 26	6601	14	25	<0.001 U	cored borehole
continued		BH101	6/14/2008	42 51 52	111 23 29	6604	5	10	<0.001 U	
		BH102	6/14/2008	42 51 45	111 23 34	6623	Dry	25	---	
		BH103	6/14/2008	42 52 12	111 23 37	6637	Dry	20	---	cored borehole
		BH104	6/14/2008	42 52 05	111 23 28	6618	Dry	25	---	
		BH105	6/15/2008	42 52 00	111 23 23	6601	7	15	0.002 J	cored borehole
		BH106	6/15/2008	42 52 48	111 25 05	6739	2	10	0.012	cored borehole
		BH108	6/16/2008	42 52 48	111 25 05	6739	Dry	39	---	
		BH154	5/13/2009	42 51 58	111 24 05	6626	0.5	10	0.010 J	
		BH155	5/13/2009	42 52 07	111 24 21	6644	1.0	18	<0.0006 UJ	cored borehole
		BH156	5/13/2009	42 52 12	111 24 12	6690	5.0	12	0.19 J	triplicate, refusal
									0.19	triplicate
									0.19	triplicate
									0.19	*triplicate average*
Enoch	B	MBW107	6/16/2008	42 53 29	111 25 53	6483	37.2	40	0.001 J	well: TD 40, screen 35-40; cored
Valley		BH109	6/16/2008	42 53 26	111 26 08	6384	Dry	20	---	cored borehole
(north)		BH110	6/16/2008	42 53 38	111 25 59	6339	Dry	40	---	cored borehole
		BH111	6/16/2008	42 53 38	111 26 02	6180	Dry	40	---	
		MBW112	6/17/2008	42 53 35	111 26 11	6394	Dry	20	---	well: TD 18, screen 13-18; cored
		BH113	6/17/2008	42 53 36	111 26 20	6365	32.5	40	<0.001 U	
		BH114	6/17/2008	42 53 46	111 26 07	6464	Dry	54	---	cored borehole
		BH115	6/17/2008	42 53 44	111 26 17	6465	Dry	40	---	
		BH116	6/17/2008	42 53 43	111 26 19	6383	Dry	40	---	
		BH117	6/17/2008	42 53 31	111 26 20	6368	38	40	0.001 J	

Notes:
(1) - Two samples were collected from the BH016 borehole at two different depths: BH016A at 29 ft bgs; BH016B at 38.5 ft bgs.
(2) – MBW026 was sampled in Fall 2008 with a concentration of 0.2 mg/L and a water level at 10.5 ft bgs.
dd.mm.ss - Degrees, Minutes, Seconds
ft-AMSL - Feet Above Mean Sea Level
NR - Not Recorded (due to insufficient water)
NA: Not available
TD - Total Depth
µS/cm – microsiemens per centimeter
U - The analyte was not detected at or above the sample quantitation limit indicated with less than symbol.
J - The result is an estimated quantity. The associated numerical value is the approximated concentration of the analyte in the sample.
UJ - The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate.

APPENDIX A2

SOIL AND VEGETATION TECHNICAL MEMORANDUM (2009)

SUPPLEMENTAL SOIL AND VEGETATION CHARACTERIZATION DATA SUMMARY TECHNICAL MEMORANDUM

Final
Revision 2

May 2011

Prepared by:

MWH AMERICAS, INC.

Prepared for:

P4 PRODUCTION, LLC

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ACRONYMS AND ABBREVIATIONS

A/T	Agencies and Tribes
BLM	United States Bureau of Land Management
CCV	continuing calibration verification
COPC	constituent of potential concern
CO/AOC	Administrative Settlement Agreement and Order on Consent/Consent Order
DOI	Department of the Interior
DQO	data quality objective
dw	dry weight
EE/CA	Engineering Evaluations/Cost Analysis
FSP	Field Sampling Plan
ft	feet or foot
GPS	global positioning system
ICP	inductively coupled plasma atomic emission spectrometry
ICPMS	inductively coupled plasma atomic emission mass spectrometry
ICV	initial calibration verification
IDEQ	Idaho Department of Environmental Quality
ID	identification
LCS	laboratory control limit
LDC	Laboratory Data Consultants, Inc.
MDL	method detection limit
mg/kg	milligrams per kilogram
MWH	MWH Americas, Inc.
P4	P4 Production, LLC
QAPP	Quality Assurance Project Plan
QC	quality control
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
RPD	relative percent difference
SAP	Sampling and Analysis Plan
SI	Site Investigation
SOP	standard operating procedure

USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
%RSD	percent relative standard deviation

1.0 INTRODUCTION

This technical memorandum describes field procedures implemented, any deviations from planned procedures, and delivers the results obtained from the spring and fall 2009 soil and vegetation sampling events at the Ballard, Henry and Enoch Valley Mines.

This work was conducted to satisfy, in part, conditions of Consent Order/Administrative Order on Consent for the Performance of Site Investigations and Engineering Evaluations/Cost Analysis (EE/CAs) at P4 Production, LLC, Phosphate Mine Sites in Southeastern Idaho (08/20/03), EPA Docket No. CERCLA-10-2003-0117. However, on November 30, 2009, the EE/CA project and agreement was superseded by an Administrative Settlement Agreement and Order on Consent/Consent Order (CO/AOC) for Remedial Investigation/Feasibility Study (RI/FS). This 2009 CO/AOC is a voluntary agreement between P4 and the United States Environmental Protection Agency (USEPA), the Idaho Department of Environmental Quality (IDEQ), the United States Department of Agriculture (USDA), the United States Forest Service (USFS), the United States Department of the Interior (DOI), the United States Bureau of Land Management (BLM), the Shoshone-Bannock Tribes (Tribes), collectively referred to as the "Agencies and Tribes" or A/T. The overall purpose of the 2009 CO/AOC is to conduct a RI/FS for P4's Ballard, Henry and Enoch Valley Mines (the Sites). The work described herein is also consistent with the objectives of the RI/FS.

The soil and vegetation sampling program conducted in 2009 was agreed to by P4 at the request of the A/T. The A/T had previously identified data gaps that needed to be filled to satisfy objectives of the EE/CA site investigation (SI) (now superseded by the 2009 AOC). Generally, the A/T concluded that upland soil and vegetation are among the primary risk drivers at the Sites, and that prior data were not sufficient to address the data gap, in part because they were not consistent with current data quality protocols and constituents of potential concern (COPCs). Sampling was conducted on potential source areas including

waste rock dumps; partially backfilled pits; historic ore haul roads; active and historic facilities; and background areas in spring and fall 2009 to fill the data gap.

The primary objective of the 2009 soil and vegetation sampling was the characterization of the nature of and extent of COPCs within the study boundaries. The sampling also addressed potential seasonal concentration variation in vegetation, in particular forbs. A subset of stations sampled in the spring event was re-sampled for forbs in the fall for this purpose. The rationale and overall objective of the sampling program are explained in more detail in the *Supplemental Mine Waste Rock Dump and Facility Soil and Vegetation Characterization Sampling and Analysis Plan* (SAP) (MWH, 2009a).

2.0 FIELD METHODS AND PROCEDURES

The soil and vegetation characterization was performed in two parts: a survey and sample collection. The components of both are discussed below. Results of the survey are provided in Section 3.1 and 3.2 and results of the sampling activities are provided in Section 3.3.

The survey and sampling activities were conducted in specific potential source areas and background locations at each Site. These areas are listed in Table 2-1, and Drawing 2-1 presents the Site map with waste rock dump and mine pit boundaries. The rationale for selection of potential source areas and background locations was described in the SAP (MWH, 2009a).

Data Quality Objectives (DQOs) for this study were developed for both potential source areas and background areas and can also be found in the SAP as Tables 1 and 2. The DQOs were used as a guide to the development of the SAP, and they identify the quantity and quality of data that was obtained in the soil and vegetation characterization.

2.1 Survey of Material Cover and Vegetation

The soil and vegetation survey was conducted by soil and range scientists working concurrently in each potential source area and background location. Surveys were completed June 3 – 8, 2009, prior to the sampling events. Information gathered from the survey was used to refine the sampling design. The objectives of the survey were to: (1) identify the type and relative abundance of cover materials; (2) determine the relative abundance of vegetation species; and; (3) determine the presence of culturally significant vegetation.

The following survey methods were employed to help ensure each area was accurately delineated and adequately characterized:

- The perimeter of each source and background area was walked in its entirety; and
- Additional transects (typically covering 1/4 to 1/3 of the total area) were walked.

The survey was also used to field-verify the boundaries of each potential source area and to verify that each background area was undisturbed. Results of the survey are provided in Sections 3.1 and 3.2, soil and vegetation, respectively.

2.1.1 Survey of Material Cover

Material classification was conducted in accordance with SOP-NW-9.0a, *Soil and Waste Rock Dump Cover Material Classification Specific for P4 Production, LLC Site Investigation* (MWH, 2009a). The observed cover material was classified into the following major categories:

- Topsoil Stockpile
- Topsoil cover
- Brown shale
- Cherty shale
- Black shale

Information gathered from all transects walked in each area was used to estimate the relative abundance of cover material for an entire source or background area as follows:

- dominant – 50 to 100% of area
- abundant – 25 to 50%
- common – 10 to 25%
- uncommon – 5 to 10%
- rare – 0 to 5%

2.1.2 Survey of Vegetation Cover

During the vegetation survey, the relative abundance of the overall vegetative cover for each entire source and background area, as well as the relative abundance of each species encountered of all life forms (i.e., grasses, forbs and shrubs) was determined. This estimation of relative abundance is based on the vegetation community and does not

account for the percentage of the ground surface that the vegetation covers. Refer to Table 2-2 or details regarding the vegetation sampling at each location. At this time, data was not collected to determine the biomass of specific vegetation species. The relative abundance was classified in the same manner as material cover as follows:

- dominant – 50 to 100% of area or life form
- abundant – 25 to 50%
- common – 10 to 25%
- uncommon – 5 to 10%
- rare – 0 to 5%

Vegetation was identified to species, if possible, and if not, to the lowest taxonomic level determined. Each vegetation species was further classified as to selenium uptake potential using the three-category system described in Table 2-3: primary selenium accumulators, secondary selenium absorbers, and normal plants. It should be noted that this classification system describes selenium uptake *potential,* not actual uptake. Of further note, accumulator Group 1 species have been known to grow only on seleniferous soil, and in the Southeast Idaho Phosphate Resource Area, normal Group 3 species have been found to contain selenium at concentrations over 100 mg/kg dw when growing in affected soils. While the nature and extent of COPC concentrations will be evaluated from the sampling results, this information may identify the need for some follow-up assessments or interim actions (e.g., an eradication program).

2.1.3 Survey of Culturally Significant Vegetation

The following list of culturally significant plants was provided by the A/T:

All water plants (e.g. water cress, mint)	Aspen
Bitterroot	Camas
Carrots (upland)	Chokecherry
Conifers	Currants
Gooseberry	Huckleberry
Junipers	Onions
Raspberry	Red willows (ten bark)

Sage tops
Sweet milky white
Turnips (upland)
Strawberry
Tullees (bull rush)

The survey of these plants was performed in conjunction with the vegetation cover survey. The relative abundance of the culturally significant plants was estimated in the same manner as other vegetation. A plan for collection of culturally significant plant samples was developed following the survey (MWH, 2009b). The culturally significant plants observed during the survey are included in Section 3.2 along with further discussion of the sampling results in Section 3.3.

2.2 Sample Collection

A summary of the sampling events, methods, and any deviations from the SAP are discussed in this Section.

Samples were collected during two events in the 2009 field season. The first sampling event, in late spring/early summer, was conducted June 17-23 and July 8 -10 (the SAP defined that the spring event would occur between June 15 and July 15). Both soil and vegetation samples were collected during the first event. The second sampling event was conducted in fall from August 24 to 25 (the SAP defined that the fall event would occur between August 17 and September 15). The second event included sampling of forbs from pre-designated life form stations only.

Quadrat locations were randomly selected for soil and vegetation sampling on each potential source area and background location. Sampling stations were located by field teams using GPS coordinates. The coordinates for each sampling location is listed in Table 2-2. Once located, the quadrats were assembled in accordance to protocol detailed in the SAP. Within each quadrat, five one-square foot (1-ft^2) sampling grid points were selected using random numbers. The individual vegetation and soil samples collected from the 1-ft^2 points were composited to form one laboratory sample set per quadrat.

If a quadrat could not be accessed due to safety concerns or if it was determined that the quadrat was not within the boundary of the potential source or background area, an alternate station was randomly selected. These alternate stations are noted by inclusion of the letters "AL" in the sample ID.

Vegetation samples were collected in accordance with SOP-NW-19.0 *Collection of Vegetation Samples,* included in Appendix B of the Field Sampling Plan (FSP) attached to the SAP. Grasses and forbs were clipped at the ground surface from the entire 1-ft^2 grid point and composited directly into a paper bag. If five composited samples were not sufficient to reach the minimum weight requirement for grasses and forbs, up to five additional co-located samples were collected. Shrubs within the same 1-ft^2 quadrats were clipped to remove the current year's growth of stems, leaves and fruit. Each shrub species was sampled separately, and the stems, leaves and fruits of each species were analyzed separately.

A soil sample was collected from each 1-ft^2 grid point after the vegetation sample was collected. If no vegetation was present in the grid point, a soil sample was still collected.

The soil samples were collected in accordance with SOP-NW-7.2, *Collection of Soil Samples,* located in Appendix B of the FSP. A soil coring device sized 1.5 by 6 inches (in) was used to ensure a consistent volume of soil was collected from each grid. The soil samples from each grid were combined into one plastic bag to form a single sample per quadrat. Field sieving, described in the FSP, was not necessary because the plastic bags were large enough to hold all of the soil cores collected for one quadrat, unlike the originally proposed glass jar containers. Therefore, compositing and splitting of the soil samples was performed by the laboratory.

Forty sampling stations, divided among the waste rock dumps and background areas in each mine, were designated as life form stations. Vegetation samples collected during the first sampling event at these stations were separated by the following life forms: grasses, forbs, and woody species. A permanent stake was left in the northwest corner of each life form quadrat such that the exact location could be sampled again in the fall. Samples of only

forbs were collected from the life form stations during the second sampling event. No grass, shrub or soil samples were collected during the second event. These forb samples collected in the second event were from different and non-adjacent 1-ft^2 grid points than were used in the first event.

The location coordinates and field descriptions of each quadrat are given in Table 2-2. Quadrat descriptions include vegetation type and other general field notes. Table 2-4 presents the soil sampling field information, and includes a detailed description of the soil types and percentages found at each location. Sampling results for all area types (as summarized below) are discussed in Section 3.3.

2.2.1 Waste Rock Dumps

Table 2-1 lists the waste rock dumps included in the characterization. The boundaries of the dumps are also displayed on Drawing 2-1. Note that for the soil and vegetation characterization only, the Enoch Valley Mine waste rock dump, MWD091, was divided into north and south areas, designated MWD091N and MWD091S, which are separated by mine pit MMP045.

At each waste rock dump, vegetation and co-located soil samples were collected during the early summer event from ten randomly selected 50 foot (ft) by 50 ft quadrats. Samples of forbs were collected again during the fall event at the predetermined life form stations on each dump. A soil sample was not co-located with the forb samples collected in fall.

2.2.2 Partially Backfilled Pits

Two partially backfilled pits at the Ballard Mine, MMP035 and MMP036, were included in the characterization work. The boundaries of the areas were confirmed during the field survey and have been updated on subsequent drawings. Similar to the waste rock dumps, ten 50 ft x 50 ft quadrats locations were randomly selected in each area. Vegetation and co-located soil samples were collected from five 1-ft^2 grid points in each quadrat. Soil samples

were collected during the spring sampling event only. Forb samples were collected during the fall event from one predetermined life form station in each pit.

2.2.3 Historic Ore Haul Roads

Two former haul roads, one each in the Ballard and Henry Mines, and one active haul road in the Enoch Valley Mine were included in the characterization work. The originally planned 200 ft long quadrats were not feasible due to the irregular shape of the haul roads; therefore, an alternative method was used. The process involved flipping a coin to choose which side of the road would be sampled, visually determining the midpoint of the shoulder and laying a 100-ft tape along this midline. Five samples were then taken, by placing the 1-ft^2 grid at 20, 40, 60, 80 and 100 ft along the tape. Soil samples were co-located with each vegetation sample collected. If no vegetation was present, a soil sample was still collected.

2.2.4 Historic Facilities

The Ballard Mine Shop was the only historic facility included in the characterization work. The facility has not been reclaimed and is currently actively used by P4. This area is also relatively small and sparsely vegetated. For these reasons, five judgmental discrete grab samples were taken and submitted individually. The locations of the grab samples were selected based on the survey information to reflect the composition and abundance of plant species and soil variability in the area. The five samples were all grass/forb samples. There was no life form sample collected from the Ballard Mine Shop area. The results of these samples are to be used for preliminary screening only.

2.2.5 Active Facilities

Two active facilities at the Enoch Valley Mine, the tipple area and an active haul road, were included in the characterization work. At the tipple area, five quadrats were sampled. The size of the quadrats was altered to 50-ft x 50-ft, 100-ft by 25-ft, or 200-ft by 12.5-ft, as necessary to accommodate the shape of the sampling area and steepness of the berm slopes. For the active haul road, five judgmental grab samples were collected after a survey of the

area to locate potential vegetation for sampling. Elongated quadrats, 100-ft x 25-ft were used along the haul road.

In each of the quadrats, up to ten randomly selected 1-ft^2 locations were sampled in an effort to obtain sufficient vegetation and soil sample size. If after ten locations, vegetation was not found in sufficient quantity, then no vegetation sample was submitted. Soil samples were still taken at each quadrat location regardless if vegetation was present or not.

2.2.6 Background Locations

A background area was selected for each of the three P4 Sites. The areas were required to meet the following criteria: (1) undisturbed by mining or waste rock disposal;
(2) representative of the geology where other waste rock dumps have been placed;
(3) comparable in extent to other waste rock dumps being characterized.

The suitability of each background area was confirmed during the field survey.

The originally proposed background areas, for the Ballard and Enoch Valley mines, MBB001 and MBE001 respectively, were utilized. At Henry mine, two potential background areas were proposed with one to be selected following the survey. During the survey it was discovered that the first background area, MBH001, had been disturbed by farming practices that had left very little native vegetation remaining. The second proposed background area, MBH002, had not been disturbed and was therefore chosen for the Henry Mine.

At each background location, vegetation and co-located soil samples were collected during the spring event from ten randomly selected 50-ft x 50-ft quadrats. Samples of forbs were also collected again during the fall event from the three pre-determined life form locations at each background area. A soil sample was not co-located with the forb samples collected in fall.

2.2.7 Life Form Stations

Table 2-2 lists the locations of the life form stations. These stations were randomly selected prior to sampling as detailed in the SAP. At life form locations, sampling protocol was followed as at other sampling locations, the only difference being the separation of grasses and forbs into individual samples. Forbs were then subsequently sampled in the fall from the same general locations within the quadrats.

2.2.8 Culturally Significant Plants

Culturally significant plants were identified during both the vegetation survey and first sampling event. A culturally significant onion (species not determined), was sampled at Enoch Valley Mine during the first sampling event. Prior to the second sampling event, the technical memorandum, *"Culturally Significant Plant Sampling Henry, Ballard, and Enoch Valley Mine Sites Late Summer/Fall 2009"* (MWH 2009b) was submitted for A/T review. The A/T approved the plan August 17, 2009. The technical memorandum listed the mine location, culturally significant plant species, and specific plant parts for each that would be sampled. Table 2-5 identifies the six culturally significant plant species that were successfully sampled.

Some plants or plant parts listed in the sampling memorandum were not sampled. The fruit of *Juniperus scopulorum* was not present on any specimens examined, and thus was not collected. The Ribes species in question was determined to not be a culturally significant species; instead it is believed to be *Ribes oxyacanthoides*. Finally, the *Juncus arcticus* community, previously observed at the Henry Mine during the first sampling event, was not sampled because it had been severely trampled by livestock to the point where collection of a specimen was not possible.

2.3 Sample Processing and Quality Control

All samples were collected and handled in accordance with the Quality Assurance Project Plan (QAPP) as attached to the SAP (MWH, 2009a). Following collection, each sample was labeled with all necessary information using pre-printed laboratory supplied labels. The

unique sample identification nomenclature is described in the FSP. In addition to this nomenclature, sample identification for woody species was also included as the four-letter species code. The general sample ID codes for location and media type are given below.

Locations:

AR	Active Ore Haul Road
CS	Culturally Significant plant
BB	Ballard Mine Background
BH	Henry Mine Background
BE	Enoch Valley Mine Background
BS	Ballard Mine Shop
HR	Historic Ore Haul Road
TA	Enoch Valley Mine Tipple Area
WD	Waste Rock Dump

Media:

SS	Surface Soil
GF	Grasses and Forbs
GS	Grasses
FB	Forbs
SF	Shrub Fruit
SL	Shrub Leaves
SM	Shrub Stems

2.3.1 Sample Handling and Shipping

Vegetation and soil samples were stored on ice in separate coolers along with the associated equipment rinsate sample, while in the field or in the secure storage facility provided by P4. All samples were shipped on ice in secured coolers with appropriate chain-of-custody forms via overnight Federal Express to the following laboratory:

Microbac Laboratories Inc.
158 Starlite Drive
Marietta, OH 45750
(740) 373-4071

2.3.2 Sample Analysis

Preparation and analysis of the soil and vegetation samples, including laboratory quality control measures, is discussed in the QAPP. Microbac analyzed the samples for the target analytes listed in Table 2-6.

Soil and vegetation samples were analyzed and validated according to the requirements specified in the QAPP with the exceptions noted as follows:

Analytical Method Changes

Antimony and manganese were specified for analysis by inductively coupled plasma atomic emission mass spectrometry (ICPMS) using USEPA method 6020A. The laboratory proposed analysis of antimony by inductively coupled plasma atomic emission spectrometry (ICP) using USEPA method 6010B in soil and vegetation samples because of spectral interferences using ICPMS. The laboratory proposed analysis of manganese by ICP because concentrations in the soil and vegetation samples for this analyte were relatively high; the laboratory wanted to avoid multiple analyses for each sample (digestate analyzed undiluted for the other ICPMS target analytes and rerun at a dilution to quantify manganese within the calibration range). Antimony was analyzed by axial ICP to obtain reporting limits less than the screening levels listed on Table 2-1 of the QAPP. Vanadium was specified for analysis by ICP, but the laboratory proposed analysis of it by ICPMS because it was better recovered from the soil and vegetation samples using ICPMS.

Analytical Quality Control Requirement Changes

Table 1-7 of the QAPP specifies the method requirements for the analysis of hexavalent chromium in soil samples. The initial calibration specified daily initial calibration; however, the USEPA method does not require daily calibration. The laboratory requested and received a correction for this requirement. Initial calibration was performed when continuing calibration failed.

Method Validation of Vegetation Samples

The standard operating procedure SOP VEG-1 for the method validation and preparation and analysis of vegetation samples stated that method detection limits (MDLs) would be determined for vegetation using a surrogate vegetation matrix. For the MDL procedure referenced in SOP-VEG-1 (40 CRF 136 Appendix B), an MDL is defined as the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte. As indicated in the SOP, the laboratory used spinach for the MDL study. However, this surrogate matrix contained elevated concentrations of many of the target analytes (specifically, arsenic, boron, cadmium, chromium, cobalt, copper, manganese, mercury, nickel, selenium, thallium, vanadium, and zinc – all but antimony, molybdenum, silver, and uranium – 13 of the 17 target analytes). The A/T suggested performing an MDL study on background samples collected from outside the boundaries of the historical mine sites (that is, distinct from the samples identified in the SAP as mine-specific background samples).

Background samples of Western Wheat, Phleum, and Lupine were collected based on the assumption that there likely would be non-detections of all 17 target analytes between these three species. The results of the background samples were similar to the method validation surrogate matrix (spinach), except that arsenic, boron, cobalt, mercury, and thallium were also not detected in the Western Wheat, the species that contained the most non-detected analytes, and eight of the target analytes (cadmium, chromium, copper, manganese, nickel, selenium, vanadium, and zinc) were detected in each species. Thus, the MDL study would not have been possible to implement even with background samples. The MDLs reported for the vegetation data are based on the laboratory's previously-generated MDLs established using Teflon® beads.

Because the MDL study could not be completed, the A/T requested analysis of a low-level laboratory control limit (LCS) with each preparation batch of vegetation samples. An LCS is defined as a sample matrix, free from the analytes of interest, spiked with verified known

amounts of analytes; it is generally used to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system (USEPA, 2003). An LCS is a required QC sample for each analysis per the QAPP, and is typically spiked at a concentration at or near the mid-point of the initial calibration curve. The A/T directed that, in addition to the required mid-level LCS, a low-level LCS would be analyzed, and it would be spiked at approximately two times the MDL. As per agreement with the A/T, results of low-level LCSs would not be used as quality control because control limits had not been established (that is, the data generated from the low-level LCSs would not require corrective action on the part of the laboratory). Low-level LCSs were prepared in batches for the remaining spring 2009 samples (a total of six batches) that had not yet been prepared as of the date of the A/T requirement to include low-level LCS (24 batches had already been prepared) and for each batch of fall 2009 vegetation samples (a total of five batches). A summary of the low-level LCS results is provided in Table 2-7.

2.3.3 Sample Collection Quality Control and Assessment

Field quality control sampling was implemented as specified in the SAP. All non-disposable or non-dedicated sampling equipment was cleaned and decontaminated prior to use at each location using distilled water and Alconox detergent. Equipment rinsates were collected each day by each team for each matrix. The equipment rinsate blanks were prepared by passing laboratory-provided water of known quality through decontaminated, non-dedicated equipment. Microbac analyzed equipment rinsate samples according to the procedure listed in the QAPP, with the exceptions noted in Section 2.3.2. Samples of equipment rinsate were analyzed for all target analytes except chromium (VI). Total chromium values will be used to evaluate impact of potential contamination for chromium (VI).

<u>Triplicate Samples</u>

At 10 percent (%) of the sample locations, primary samples of soil and vegetation were collected in triplicate. The three individual samples were collected in the same manner as associated primary samples as discussed in Section 3.2. For triplicate stations on historic

haul roads, the shoulder was divided into thirds and a sample was collected at 20, 40, 60, 80 and 100 ft along the tape for each of the three sections.

There were 21 sets of soil triplicate samples and 30 sets of vegetation triplicate samples. Percent relative standard deviations (%RSDs), relative percent differences (RPDs), or absolute differences were calculated from the triplicate data according to the criteria listed in Section 1.4.4.1 of the QAPP. The following is a summary of those data:

- Soil triplicates: Based on the 21 sets of soil triplicate samples, 342, %RSDs were calculated, ranging from 0.8 to 138; the majority of those %RSDs (88%) were less than 50. There was one calculated RPD (5.0), and five calculated absolute differences (ranging from 0.125 to 3.54 mg/kg).
- Vegetation triplicates: Based on the 30 sets of vegetation triplicate samples, 356, %RSDs were calculated, ranging from 1.1 to 167; the majority of those %RSDs (87%) were less than 50. There were two calculated RPDs (0.7 and 23), and 16 calculated absolute differences (ranging from 0.0012 to 13.7 mg/kg).

Results for %RSD, RPD, and absolute differences are used for qualitative assessment of the data, and the average result was not flagged or qualified based on the %RSD, RPD, or absolute differences.

Prior to evaluation, the triplicate data require treatment in order to derive single COPC concentration values within each sample procured. Table 2-8 lists how the triplicate data were treated for use in this technical memorandum; these are also described below. In addition, Table 2-9 provides a summary of these data. Data qualification flags were maintained and when averaging, any J flags associated with detected values were carried through to the final result.

- If all three results were reported as detected concentrations, the average concentration was calculated and used in all further data analysis steps.
- If any two of the three results was reported as detected and the other result was reported as not detected, the average concentration of the detected results was calculated and used in all further data analysis steps.

- If any one of the three results was reported as detected and the other two results were both reported as not detected, the detected result was selected and used in all further data analysis steps.
- If all three results were reported as not detected, the higher detection limit of the three analyses was assigned to the sample and used in all further data analysis steps.

Equipment Rinsate Sample Results

Equipment rinsate samples were collected once per day per team per matrix, and the results are summarized as follows:

- Equipment rinsate samples associated with soil samples: 33 equipment rinsates were collected along with the soil samples. 28 of the 33 samples (82%) reported concentrations below the reporting limit for all target analytes. For those samples that did exceed, only six individual analyte results reported concentrations of analytes above the reporting limit. The detected analytes were chromium, copper, and manganese.
- Equipment rinsate samples associated with vegetation samples: 36 equipment rinsates were collected along with the vegetation samples. 26 of the 36 samples (72%) reported concentrations below the reporting limit for all target analytes. For those samples that did exceed, only 15 individual analyte results reported concentrations of analytes above the reporting limit. The detected analytes were arsenic, chromium, copper, manganese, selenium, and zinc.

None of the soil sample results were qualified because the detected value in the equipment rinsate samples were negligible compared to the concentrations detected in the associated field samples. A total of 22 vegetation sample results for arsenic, mercury, and selenium were qualified as estimated because of detections in associated equipment rinsate samples. Of these 22 results, only one (selenium for sample 0906-MBH002-08-SM-SYAL) was changed from a detected value to a not detected value.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Results

Per the QAPP Addendum, site-specific samples were used for MS/MSDs. Field sampling personnel collected extra volume and designated (on the chain-of-custody forms) the samples that were used for the MS/MSD. One MS/MSD sample was analyzed for every 20 samples per matrix type. A summary of MS/MSD results is provided in Table 2-10.

2.4 Data Validation and Final Data Quality Assessment

Laboratory Data Consultants, Inc. (LDC), located in Carlsbad, California, validated the laboratory data. All data were qualified as specified in the SAP (MWH, 2009a) with the exception of the following:

Data Validation Change

Table 1-7 of the QAPP specified the data validation requirements for the flagged data. The initial calibration verification (ICV), continuing calibration verification (CCV), and laboratory control limit (LCS) requirements specified flagging of data when recovery of analytes were less than 80% and greater than 120%. These were corrected to 90 and 110%, respectively.

Through the validation process, the results for mercury in 30 vegetation samples were rejected because the holding time was exceeded by one to two days and mercury was not detected in the samples. The holding times for these samples were exceeded, because these vegetation samples had been collected and submitted to the laboratory, but not yet prepared for analysis, but prior to the decision to include low-level LCS in preparation batches (as discussed in Section 2.3.2). Preparation of these samples was pending the A/T decision regarding the appropriate spike amount for a low-level LCS. The timing of the decision impacted 30 vegetation samples for mercury, and not the other metals, because mercury has a holding time of 28 days, as opposed to a 6-month holding time for other metals. The rejection of these data is not expected to result in a data gap. All other data are usable as qualified.

The final laboratory data and data validation reports for the spring 2009 soil and vegetation and fall 2009 vegetation sampling events are provided in Attachment D of the *Data Quality and Usability Report* (MWH, 2010). The final, qualified soil and vegetation data are of known quality and, with the exception of data that were rejected, should be considered usable for all intended uses in the RI/FS per final assessments of data usability in the RI/FS Work Plan.

3.0 PRELIMINARY RESULTS AND DISCUSSION

This section presents the information gathered from the pre-sampling survey and the analytical results of the samples collected during the first and second sampling events. A brief discussion of the results is included herein. These data may be evaluated further and included in risk assessment calculations as part of the RI/FS process.

3.1 Survey of Cover Material

The relative abundance of cover material types is given in Table 3-1. A brief discussion of cover materials and associated observations is given below.

3.1.1 Ballard Mine Cover Material

At the Ballard Mine cover material on the six waste rock dumps is predominantly brown and black shale. In most areas the brown and black shale has weathered into a soil-like material. The depth of weathering in the rock cover, where soil characteristics are developing, is approximately one to two feet on the tops of dumps and on gentle slopes. Unweathered cover is present on steeper slopes and is typically less than or equal to six inches thick consisting of black shale or cherty shale. Slopes at angle of repose are predominately unweathered black shale.

Other potential source areas surveyed at the Ballard Mine include partially backfilled pits (MMP035 and MMP036), the historic ore haul road (MHR001), and the Ballard shop facility (MBS001). Each partially backfilled pit has brown shale as the dominant material; which has weathered similarly to that on the waste rock dumps. There are also relatively small amounts of black shale present in the partially backfilled pits. The historic ore haul road is primarily limestone mixed with cherty shale and some is chip sealed. Cover material at the historic facility (the Ballard Mine Shop) is predominantly slag from the Monsanto Plant in Soda Spring, Idaho, that has been spread around the buildings and stockpiled for road maintenance purposes.

3.1.2 Henry Mine Cover Material

Cover material on waste rock dumps at the Henry Mine consists primarily of weathered brown shale. Limestone, mixed up to <5% with the weathered brown shale, comprises approximately <5% of the total area of the dumps. Limestone and sandstone cover is found primarily near the base of highwalls along with scattered dolomite boulders. No topsoil is used as cover at the Henry Mine dumps; however the weathered brown shale closely resembles topsoil over the majority of the dumps. Black shale cover is rare and comprises less than 1% of the total area of any dump.

Based on a hand shovel pits at key location, it was observed that the cover material averages two to three feet thick in flat areas on the Henry Mine dumps. Slopes are typically gentle with cover material approximately one foot thick. Steeper slopes are benched with the sloped portions covered approximately six inches thick and benched areas covered approximately one foot thick. Uncovered areas at angle of repose are not present on the Henry Mine dumps and occur only at Wells Formation highwalls and the road cut through the Dinwoody Formation near central Henry Mine.

The historic ore haul road at the Henry Mine (MHR002) is made primarily of limestone and the majority of the road has a chip seal surface.

3.1.3 Enoch Valley Mine Cover Material

Surficial cover material on waste rock dumps at the Enoch Valley Mine consists primarily of reclaimed soil with some weathered brown shale. The appearance of top soil and weathered brown shale in the field, after several years of use as cover, is similar and difficult to distinguish. However, observations during the 2009 soil and vegetation reconnaissance and reclamation records indicate that only the extreme northern and southern ends of the Enoch Valley Mine did not receive a top soil cover (personal communication, Mike Vice, P4). Two to three feet of limestone was placed between the waste rock (generally run-of-mine) and the top soil cover in all of the areas that received top soil. In addition, limestone is occasionally found mixed up to 5% with the weathered top soil in areas near highwalls.

Two active facilities at the Enoch Valley Mine, an active haul road (MAR001) and the tipple area (MTA001) were also surveyed. The active road is made primarily of limestone. The tipple area consists primarily of stockpile phosphate ore. Top soil or soil-like material was not observed at either the active road or tipple area.

3.1.4 Background Areas Cover Material

The three background areas, MBB001, MBH002, and MBE001, consisted primarily of native top soil material. At both the Ballard and Henry Mine background areas (MBB001 and MBH002) limestone rock was commonly present in the topsoil; whereas, Dinwoody Formation was commonly found mixed with topsoil in the Enoch Valley background area.

Although each background area consisted predominately of undisturbed native ground some dissimilarity in the soils were noted at the time of the survey. The Ballard Mine background area is in a low lying native meadow and the soils were dark colored and moderately moist. The Henry Mine background area is situated on a steep hillside and the soils were dry and the surface armored. The background area at the Enoch Valley Mine is covered in aspen and the soils were dark colored, moderately moist, and contained some organic matter. The Enoch Valley background area is also adjacent to the active ore stockpile and tipple area.

3.2 Survey of Vegetation Cover and Culturally Significant Plants

The species of grasses, forbs and shrubs identified at the Sites and the relative abundance of each plant by Site are listed in Tables 3-2 to 3-4. A brief discussion of the plants observed at each Site is given below.

3.2.1 Ballard Mine Vegetation

- GRASSES: Of the 17 grasses identified at the Ballard Mine, smooth brome (*Bromus inermis*) was found to be the dominant species comprising 50% or more of the total mine area vegetation. The second most abundant grasses found at the Site, comprising 25 to 50% of the grass coverage, were orchard grass (*Dactylis glomerata*) and western wheatgrass (*Pascopyrum smithii*) (Table 3-2). These three dominant and abundant grasses were also present in the reclamation seed mixes used on the waste rock dumps.

- FORBS: Alfalfa (*Medicago sativa*) is the most abundant of the 47 different forb species found at the Ballard Mine. The second most abundant forbs, are dandelion (*Taraxacum officinale*); Great Basin lupine (*Lupinus ×alpestris*); sulfur buckwheat (*Eriogonum umbellatum*); western yarrow (*Achillea millefolium*); and yellow salsify (*Tragopogon dubius*) (Table 3-3).

- Two forbs classified as selenium accumulators (Table 2-3) were also found at the Ballard Mine. Milk-vetch (*Astragalus sp.*) was observed to be common and is a Group 1-primary selenium accumulator species. Scarlet Indian paintbrush (*Castilleja miniata*) was rarely observed, and is a Group 2- secondary selenium absorber.

- SHRUBS: At the Ballard Mine, 20 different shrub species were identified, more than double the number observed at either the Henry or Enoch Valley Mine. The large number of different shrub species at the Ballard Mine is likely contributable to the USFS plots established on the northwestern portion of the mine on waste rock dump MWD080 in the late 1960s. Most of the shrubs identified at the Ballard Mine are growing in these plots. No shrub observed throughout the Site was found in relative abundance greater than about 25% of the total mine area (Table 3-4).

- CULTURALLY SIGNIFICANT PLANTS: The five culturally significant plants observed at the Ballard Mine are included in Tables 3-3 and 3-4. Three of the five culturally significant plants observed were uncommon or rare including white sagebrush, chokecherry, and Rocky Mountain juniper. The two most abundant culturally significant species of the five observed were big sagebrush (*Artemisia tridentata*) and quaking aspen (*Populus tremuloides*).

3.2.2 Henry Mine Vegetation

- GRASSES: There were 16 different species of grasses identified at the Henry Mine. Smooth brome (*Bromus inermis*) was found to be the dominant grass species comprising 50% or more of the grass coverage and much of the total vegetation coverage. The second most abundant grass was orchard grass (*Dactylis glomerata*) (Table 3-2). Both of these grasses were used in the seed mixes for waste rock dump reclamation.

- FORBS: Alfalfa (*Medicago sativa*) is the most abundant of the 51 different forb species found at the Henry Mine. The second most abundant forbs, were Great Basin lupine (*Lupinus ×alpestris*) and tapertip hawksbeard (*Crepis acuminate*) (Table 3-3).

  Three forbs classified as selenium accumulators (Table 2-3) were also found at the Henry Mine: milk-vetch (*Astragalus sp.*) was observed at 5 to 10% relative abundance and is a Group 1-primary selenium accumulator species; scarlet Indian paintbrush (*Castilleja miniata*) and sulphur Indian paintbrush (*Castilleja sulphurea*) were both rarely observed, at a relative abundance of <5%, and are Group 2- secondary selenium absorber species.

- SHRUBS: There were nine species of shrubs identified at the Henry Mine. Shrubs were found least often of all vegetation types. No shrub was classified as abundant in the mine area (Table 3-4).

- CULTURALLY SIGNIFICANT PLANTS: The five culturally significant plants observed at the Henry Mine are included in Tables 3-3 and 3-4. Four of the five culturally significant plants observed were uncommon or rare. The most abundant species, big sagebrush (*Artemisia tridentata*), was classified as common in the mine area (Table 3-4).

3.2.3 Enoch Valley Mine Vegetation

- GRASSES: Thirteen different grass species were identified at the Enoch Valley Mine. The dominant species was orchard grass (*Dactylis glomerata*), comprising 50% or more of the total grasses in the mine area. Smooth brome (*Bromus inermis*) and western wheatgrass (*Pascopyrum smithii*) were the second most abundant grasses (Table 3-2). Enoch Valley had the fewest observed different grass species.

- FORBS: Alfalfa (*Medicago sativa*) was the most abundant of the 26 different forb species found at the Enoch Valley Mine and was classified as abundent. The second most abundant forbs were dandelion (*Taraxacum officinale*); Great Basin lupine (*Lupinus ×alpestris*); Lewis flax (*Linum lewisii*); mule's ears (*Wyethia amplexicaulis*); and sainfoin (*Onobrychis viciifolia*) (Table 3-3).

- SHRUBS: There were eight species of shrubs identified at the Enoch Valley Mine. Shrubs were found least often of all vegetation types. No shrub was classified as abundant in the mine area (Table 3-4).

- CULTURALLY SIGNIFICANT PLANTS: Six culturally significant plants were observed at the Enoch Valley Mine and are included in Tables 3-3 and 3-4. Four of the six culturally significant plants observed were uncommon or rare in the mine area. Two of the six species, big sagebrush (*Artemisia tridentata*) and quaking aspen (*Populus tremuloides*), were classified as common (Table 3-4).

3.2.4 Background Areas Vegetation

The three background areas, MBB001, MBH002, and MBE001, consist of primarily native vegetation. The Ballard Mine background area is a quaking aspen forest with open patches of sagebrush community. Woody species in the Ballard Mine background include quaking aspen (*Populus tremuloides*), serviceberry (*Amelanchier alnifolia*), and snowberry (*Symphoricarpos oreophilus*). Forbs present are Great Basin lupine (*Lupinus ×alpestris*) and sticky geranium

(*Geranium viscosissimum*); and grasses include bluegrass (*Poa spp.*), smooth brome (*Bromus inermis*) and intermediate wheatgrass.

The Henry Mine background area is a sagebrush shrub community. Woody species include big sagebrush (*Artemisia tridentata*), serviceberry (*Amelanchier alnifolia*), snowberry (*Symphoricarpos oreophilus*), yellow rabbitbrush (*Chrysothamnus viscidiflorus*) and antelope bitterbrush (*Purshia tridentata*). Forbs include Rocky Mountain penstemon (*Penstemon strictus*), western yarrow (*Achillea millefolium*), and Lewis flax (*Linum lewisii*); and grass species are western wheatgrass (*Pascopyrum smithii*) and fescue (*Festuca spp.*).

The Enoch Valley Mine background is comprised of both aspen forest and sagebrush shrub community areas. Woody species in the area are quaking aspen (*Populus tremuloides*), big sagebrush (*Artemisia tridentata*), and snowberry (*Symphoricarpos oreophilus*). Forbs present include mules ears (*Wyethia amplexicaulis*), Rocky Mountain penstemon (*Penstemon strictus*), and Lewis flax (*Linum lewisii*); and grass species are bluegrass (*Poa spp.*), mountain brome (*Bromus marginatus*), and orchard grass (*Dactylis glomerata*).

3.3 Chemical Concentrations in Soil and Vegetation

This section discusses the analyte concentrations found in the soil and vegetation from the three P4 Sites and identifies analytes and areas where the concentrations exceeded the screening levels as indicated by Tables 3-7 to 3-12. These soil and vegetation sampling locations are shown on Drawings 3-1 to 3-6. Screening levels are discussed in the appropriate sections below. While the following sections discuss background as a range of values and makes comparisons between Site data and screening values, this memorandum does not propose a final background value or screening value determination. Subsequent and more complete analyses will be included in the upcoming RI documents. In addition, uranium concentration data were collected during the soils investigation. If a determination of carcinogenic risks to human receptors from exposure to radionuclides in soil is required during the RI risk assessment, a RESRAD model or similar approach can be developed to estimate concentrations of uranium daughter products as described in the SAP.

3.3.1 Background Soils

The concentrations of chemicals collected from soils at the three mine-specific background sites were generally comparable, as shown in the statistical summary tables, Tables 3-13 to 3-15. The selenium mean was higher at the Enoch Valley Mine than at Ballard and Henry Mines (1.59 compared to 0.37 and 0.79, respectively). In regard to other analytes of interest (discussed further, below), the following diagram can be used to interpret which background areas were found with the highest concentrations:

- Arsenic: Henry > Enoch Valley > Ballard
- Cadmium: Enoch Valley > Ballard > Henry
- Cobalt: Henry > Enoch Valley > Ballard
- Manganese: Henry > Enoch Valley > Ballard
- Vanadium: Enoch Valley > Henry > Ballard

In general, it appears that the Ballard Mine background area contains the lowest concentration of analytes of interest in soils of the three Mines. Henry and Enoch Valley Mines appear to have higher background concentrations.

3.3.2 Ballard Mine Soils

Soil sampling was conducted following the soil survey at the ten Ballard Mine potential source areas (six waste rock dumps, two partially backfilled mine pits, one historic ore haul road, and one historic facility) and background location. Drawing 3-1 shows the locations and also reports the total selenium result for each sample. A total of 105 composite surface soils samples were collected from the Ballard Mine areas. The soil samples were analyzed for antimony, arsenic, boron, cadmium, total chromium, hexavalent chromium, cobalt, copper, manganese, mercury, molybdenum, nickel, selenium, silver, thallium, uranium, vanadium, and zinc.

Table 3-7 presents the analyte concentration ranges and number of exceedances for soil samples taken at Ballard Mine that exceeded the preliminary screening levels (USEPA Regional Screening Levels for Residential Soil). Based upon this table, the following analytes

were identified as those that have at least one soil sample exceeding its preliminary screening level:

- Arsenic
- Cadmium
- Cobalt
- Manganese
- Vanadium

Also included in the table is selenium, of which no exceedances were found.

As shown in Table 3-7, at the Ballard Mine maximum selenium values ranged from 24.9 to 209 mg/kg dw and did not exceed the screening level of 390 mg/kg dw at any of the potential source areas. The selenium values are elevated compared to the background samples collected. Background concentrations ranged from 0.25 to 0.49 mg/kg dw.

Concentrations of arsenic, cadmium, cobalt, manganese, and vanadium did exceed the screening level at one or more potential source areas; however, as shown in Table 3-7 most of the occurrences were fairly isolated with the exception of arsenic.

Arsenic concentrations in all soil samples collected from the potential source areas exceeded the screening level of 0.39 mg/kg dw. Concentrations of arsenic ranged from 3.51 to 45.5 mg/kg dw across all source areas. Arsenic concentrations in the background locations ranged from 2.55 to 3.66 mg/kg dw, which suggests arsenic is naturally elevated above the screening level. However, all but one potential source area sample (one location at MWD083) exceeded the maximum Ballard Mine background area concentration of 3.66 mg/kg dw.

Chemical concentration statistical summary tables of the potential source areas at Ballard Mine are presented as Tables 3-16 to 3-25. Tables present the number of samples, percent of laboratory detection, maximum and minimum concentrations, means, and standard deviations for the entire analytical suite.

3.3.3 Henry Mine Soils

Soil sampling was conducted following the soil survey at the six Henry Mine potential source areas (five waste rock dumps and one historic ore haul road) and background location. Drawing 3-3 shows the locations and also reports the total selenium result for each sample. A total of 70 composite surface soils samples were collected from the Henry Mine areas.

Table 3-8 presents the analyte concentration ranges and number of exceedances for soil samples taken at the Henry Mine that exceeded the preliminary screening levels (USEPA Regional Screening Levels for Residential Soil). Based upon this table the following analytes were identified as those that have at least one soil sample exceeding its preliminary screening level:

- Arsenic
- Manganese
- Vanadium

Also included in the table is selenium, of which no exceedances were found.

As shown in Table 3-8, at the Henry Mine, maximum selenium values ranged from 57.1 to 318 mg/kg dw and did not exceed the screening level of 390 mg/kg dw at any of the potential source areas. Selenium concentrations were elevated compared to the background area, where selenium concentrations ranged from 0.48 to 1.26 mg/kg dw.

Concentrations of arsenic, manganese, and vanadium did exceed the screening level at one or more potential source areas; however, as shown in Table 3-8, most of the occurrences were fairly isolated with the exception of arsenic. Although two samples from waste rock dumps exceeded the manganese screening value of 1,800 mg/kg dw, none of the samples exceeded the maximum background concentration of 3,990 mg/kg dw.

Arsenic concentrations in all soil samples collected from the potential source areas at the Henry Mine exceeded the screening level of 0.39 mg/kg dw. Concentrations of arsenic

ranged from 4.0 to 45.5 mg/kg dw across all source areas. Although, arsenic concentrations in the background location ranged from 6.60 to 9.01 mg/kg dw, which suggests arsenic is naturally elevated above the residential screening level, all but two samples from potential sources areas (two locations at the historic haul road MHR002) exceeded the maximum Henry Mine area background concentration of 9.01 mg/kg dw.

Chemical concentration statistical summary tables of the potential source areas at the Henry Mine are presented as Tables 3-26 to 3-31. Tables present the number of samples, percent of laboratory detection, maximum and minimum concentrations, means, and standard deviations for the entire analytical suite.

3.3.4 Enoch Valley Mine Soils

Soil sampling was conducted following the soil survey at the five Enoch Valley Mine potential source areas (three waste rock dumps and two active facilities, the tipple area and a haul road) and background location. Drawing 3-5 shows the locations and also reports the total selenium result for each sample. A total of 51 composite surface soils samples were collected from the Enoch Valley Mine areas.

Table 3-9 presents the analyte concentration ranges and number of exceedances for soil samples at the Enoch Valley Mine that exceeded the preliminary screening levels (USEPA Regional Screening Levels for Residential Soil). Based upon this table the following analytes were identified as those that have at least one soil sample exceeding its preliminary screening level:

- Arsenic
- Cadmium
- Vanadium

Also included in the table is selenium, of which no exceedances were found.

As shown in Table 3-9, at the Enoch Valley Mine maximum selenium values ranged from 39.7 to 128 mg/kg dw and did not exceed the screening level of 390 mg/kg dw at any of the potential source areas. Selenium was elevated compared to background, with background concentrations ranging from 0.54 to 6.89 mg/kg dw.

Concentrations of arsenic, cadmium, and vanadium did exceed the screening level at one or more potential source areas; however, as shown in Table 3-9, most of the occurrences were isolated with the exception of arsenic.

Arsenic concentrations in all soil samples collected from the potential source areas at the Enoch Valley Mine exceeded the screening level of 0.39 mg/kg dw. Concentrations of arsenic ranged from 4.57 to 30.2 mg/kg dw across all source areas. Although, arsenic concentrations in the background location ranged from 3.77 to 7.65 mg/kg dw, which suggests arsenic is naturally elevated above the screening level, over half of the samples, 20 of 30 from the waste rock dumps and six of ten from the active facilities exceeded the maximum Enoch Valley Mine area background concentration of 7.65 mg/kg dw.

Chemical concentration statistical summary tables of the potential source areas at the Enoch Valley Mine are presented as Tables 3-32 to 3-36. Tables present the number of samples, percent of laboratory detection, maximum and minimum concentrations, means, and standard deviations for the entire analytical suite.

3.3.5 Background Vegetation

The concentrations of chemicals collected from vegetation at the three mine-specific background sites were generally comparable, as shown in the statistical summary tables: Tables 3-37 to 3-39 (grasses/forbs), Tables 3-61 to 3-63 (shrub leaves), Tables 3-67 to 3-69 (shrub steams), Tables 3-73 to 3-75 (grasses), Tables 3-79 to 3-81 (spring forbs), and Tables 3-85 to 3-87 (fall forbs). In composited grasses and forbs (Tables 3-37 to 3-39), the selenium mean was slightly higher at the Ballard Mine than at the Henry and Enoch Valley Mines (0.67compared to 0.54 and 0.49, respectively). In regard to other analytes of interest,

molybdenum (as discussed further, below), the following diagram can be used to interpret which background area was found with the highest concentration:

- Molybdenum: Ballard > Henry > Enoch Valley

Opposite to what was found in soils, it appears that the Ballard Mine background area contains the highest concentration of analytes of interest in composited forbs and grasses of the three P4 Sites. For both selenium and molybdenum, background concentrations are the highest at Ballard Mine, followed by the Henry Mine and then the Enoch Valley Mine.

3.3.6 Ballard Mine Vegetation

The vegetation survey was conducted prior to the sampling event. The relative abundance of the overall vegetative cover for each source and background area, as well as the relative abundance of each species encountered of all life forms (i.e., grasses, forbs and shrubs) was estimated. Vegetation was identified to species, if possible, and if not, to the lowest taxonomic level. At this time, data was not collected to determine the biomass of specific vegetation species. The species of grasses, forbs, and shrubs identified at the Sites and the relative abundance of each plant species by mine was detailed above in Section 3.2.

Vegetation sampling was conducted following the vegetation survey at ten Ballard Mine potential source areas (six waste rock dumps, two partially backfilled mine pits, one historic ore haul road, and one historic facility) and one background location. Drawing 3-2 shows the locations and also presents the total selenium result for each sample. A total of 189 vegetation samples were collected from the Ballard Mine areas. The majority of the vegetation samples were composites of grasses and forbs. Samples of vegetation separated by life form (grasses, forbs and shrubs), and plants classified as culturally significant were also collected at some locations. All samples were analyzed for antimony, arsenic, boron, cadmium, total chromium, cobalt, copper, manganese, mercury, molybdenum, nickel, selenium, silver, thallium, uranium, vanadium, and zinc.

Table 3-10 presents the analyte concentration range and number of exceedances for the composited grass and forb samples taken at the Ballard Mine that exceeded the preliminary screening levels (from mineral tolerance of animals (NRC, 2005)). Analytes that exceeded the preliminary screening level included:

- Selenium
- Molybdenum

As shown on Table 3-10, at the Ballard Mine, concentrations of selenium and molybdenum exceeded the screening level of 5 mg/kg dw in greater than half of the waste rock dump samples. This was also true in all other potential source areas except the historic haul road for selenium. Concentrations of selenium ranged from 0.30 to 366 mg/kg dw from all areas. The highest selenium concentrations were reported on the waste rock dumps, but the partially backfilled pit samples also reported elevated selenium concentrations (0.37 to 122 mg/kg dw). Molybdenum concentrations ranged from not detected at a detection limit of 1.48 to 425 mg/kg dw at the Ballard Mine Shop. The next highest molybdenum concentration from the Ballard Mine Shop was 10.5 mg/kg dw and the highest concentration from any other Ballard Mine potential source area was 45.8 mg/kg dw at MWD084. The large difference in maximum values suggests that the 425 mg/kg dw value may be an outlier. Molybdenum in the background area ranged from 1.74 to 99.6 mg/kg dw and also exceeded the 5 mg/kg dw screening level. Given the similarity of the background concentrations to the other measured concentrations, the issue of an elevated background will need to be evaluated during the RI/FS.

Chemical concentration statistical summary tables of the potential source areas and all media types sampled at the Ballard Mine are presented as Tables 3-40 to 3-49 (grasses/forbs), Table 3-64 (shrub leaves), Table 3-70 (shrub stems), Table 3-76 (grasses), Table 3-82 (spring forbs), and Table 3-88 (fall forbs). Tables present the number of samples, percent of laboratory detection, maximum and minimum concentrations, means, and standard deviations for the entire analytical suite.

3.3.7 Henry Mine Vegetation

Vegetation sampling was conducted following the vegetation survey at the six Henry Mine potential source areas (five waste rock dumps and one historic ore haul road) and one background location. Drawing 3-4 shows the locations and also reports the total selenium result for each sample. A total of 170 vegetation samples were collected from the Henry Mine areas.

Table 3-11 presents the analyte concentration range and number of exceedances for composited grass and forb samples taken at the Henry Mine that exceeded the preliminary screening levels (from mineral tolerance of animals (NRC, 2005)). Analytes that exceeded the preliminary screening level included:

- Selenium
- Molybdenum

As shown in Table 3-11, at the Henry Mine, concentrations of molybdenum exceeded the screening level of 5 mg/kg dw in greater than half of the waste rock dump samples and exactly half of the haul road samples. Molybdenum concentrations ranged from not detected at a detection limit of 1.46 to 74.6 mg/kg dw at MWD087. The highest concentrations of molybdenum were reported at the waste rock dumps. Molybdenum in the background area ranged from not detected at a detection limit of 1.48 to 2.63 mg/kg dw. Selenium concentration exceedances were much fewer. Selenium concentration ranged from 0.45 to 146 mg/kg dw from all source areas. The highest selenium concentrations were reported on the waste rock dumps, but the historic haul road samples also reported elevated selenium concentrations (1.27 to 8.26 mg/kg dw).

Chemical concentration statistical summary tables of the potential source areas and all media types sampled at the Henry Mine are presented as Tables 3-50 to 3-55 (grasses/forbs), Table 3-65 (shrub leaves), Table 3-71 (shrub stems), Table 3-77 (grasses), Table 3-83 (spring forbs), and Table 3-89 (fall forbs). Tables present the number of samples, percent of laboratory

detection, maximum and minimum concentrations, means, and standard deviations for the entire analytical suite.

3.3.8 Enoch Valley Mine Vegetation

Vegetation sampling was conducted following the vegetation survey at the five Enoch Valley Mine potential source areas (three waste rock dumps and two active facilities, the tipple area and a haul road) and background location. Drawing 3-6 shows the locations and also reports the total selenium result for each sample. A total of 121 vegetation samples were collected from the Enoch Valley Mine areas.

Table 3-12 presents the analyte concentration range and number of exceedances for composited grass and forb samples taken at the Enoch Valley Mine that exceeded the preliminary screening levels (from mineral tolerance of animals (NRC, 2005)). Analytes that exceeded the preliminary screening level included:

- Selenium
- Molybdenum

As shown in Table 3-12, at the Enoch Valley Mine, concentrations of molybdenum exceeded the screening level of 5 mg/kg dw more than half of the waste rock dump samples and only two of seven active facility samples. Molybdenum concentrations ranged from not detected at a detection limit of 1.48 to 33.9 mg/kg dw. The highest concentrations of molybdenum were reported at the waste rock dumps. Molybdenum in the background area ranged from not detected at a detection limit of 1.46 to 3.63 mg/kg dw, and did not exceed the 5 mg/kg dw screening criteria.

Selenium concentrations exceeded the screening level of 5 mg/kg dw in 11 of 20 waste rock dump samples and only two of seven active facility samples. Selenium concentration ranged from 0.39 to 71.1 mg/kg dw from all source areas. The highest selenium concentrations were reported on the waste rock dumps, but the active facilities samples also reported elevated selenium concentrations (0.39 to 16.0 mg/kg).

Chemical concentration statistical summary tables of the potential source areas and all media types sampled at Enoch Valley Mine are presented as Tables 3-56 to 3-60 (grasses/forbs), Table 3-66 (shrub leaves), Table 3-72 (shrub stems), Table 3-78 (grasses), Table 3-84 (spring forbs), and Table 3-90 (fall forbs). Tables present the number of samples, percent of laboratory detection, maximum and minimum concentrations, means, and standard deviations for the entire analytical suite.

3.3.9 Culturally Significant Plants

As discussed above in Section 2.1.4, sampling of culturally significant plants was conducted following the survey at the potential source areas and background locations at all three P4 Sites. At the Ballard Mine, four samples were collected from waste rock dumps, three from partially backfilled pits, and three from locations that were not recorded. At the Henry Mine, five samples were collected from waste rock dumps and two from the background location. At the Enoch Valley Mine, nine samples were collected from waste rock dump and the background location. Table 2-5 presents the culturally significant plants that were sampled at each Site, as well as, which part of the plant was sampled.

Tables 3-91 to 3-93 present exceedances for selenium and molybdenum concentrations in culturally significant plants sampled at the Ballard, Henry and Enoch Valley Mines. The tables were limited to selenium and molybdenum because, as discussed in Section 3.3 above, they were the only two analytes with concentration exceedances above the preliminary screening levels (from mineral tolerance of animals (NRC, 2005)) in vegetation on the Site.

As shown in Tables 3-91 to 3-93, only three culturally significant plant samples were found exceeding the selenium screening level of 5 mg/kg dw, and none exceeding the molybdenum screening level. A white sagebrush sample and big sagebrush leaf sample, both from the Enoch Valley Mine, were found with selenium concentrations of 12.3 and 8.00 mg/kg dw, respectively. And at the Henry Mine, a quaking aspen leaf sample was found with a selenium concentration of 5.26 mg/kg dw.

3.4 Seasonal Variation in Forbs

The vegetation sampling also addressed potential seasonal variation of COPC concentrations in forbs. The life form stations sampled during the spring event were re-sampled for forbs in the fall for this purpose. Tables 3-79 to 3-90 provide the statistical summaries for spring and fall COPC concentrations for all of the forb samples. Figures 3-1 to 3-3 show the relative percent difference (RPD) between the spring and fall mean selenium and molybdenum concentrations in background and waste rock dump forbs samples.

As shown in Figure 3-1, the RPDs between spring and fall concentrations at Ballard Mine are above 50% for both selenium and molybdenum at a majority of background and dump locations. Selenium concentrations at background locations appear to decrease in the fall, and a majority of the dump locations show a selenium increase. Molybdenum concentrations show no general pattern at the background locations, but similarly to selenium, also show an increasing concentration trend at dump locations.

As shown in Figure 3-2, the RPDs between spring and fall concentrations at Henry Mine are generally below 50% for molybdenum at background and dump locations, whereas RPDs for selenium are above 50% for the majority of background locations and below 50% for the majority of dump locations. Selenium concentrations at Henry Mine increased in the fall at two of the three background locations and increased at the majority of dump locations. Molybdenum concentrations show little seasonal change at the background locations but opposite to selenium, a majority of dump locations show a decrease in concentration in the fall.

As shown in Figure 3-3, the RPDs between spring and fall concentrations at Enoch Valley Mine are below 50% for both selenium and molybdenum at a majority of background and dump locations. Both selenium and molybdenum concentrations appear to be increasing at background locations, whereas molybdenum is shown to be decreasing in the fall at a majority of the dump locations and selenium is shown to be increasing at the majority of dump locations.

While the data for seasonal samples show variation between the spring and fall samples, there appears not to be a consistent trend. Variability associated with sampling and variability in species may be masking any systematic seasonal increase or decrease. While the study does not answer the question as to if individual forbs accumulates more selenium in the fall, it does address what differences a potential receptor might be exposed to in the spring versus fall.

4.0 REFERENCES

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TABLES

TABLES

TABLE 2-1
SURVEY AND SAMPLING POTENTIAL SOURCE AREAS AND BACKGROUND LOCATIONS

Ballard Mine		Henry Mine		Enoch Valley Mine	
MBB001	MWD093	MBH002	MWD088	MBE001	MWD092
MWD081	MMP035	MWD085	MWD090	MWD091N	MAR001
MWD082	MMP036	MWD086	MHR002	MWD091S	MTA001
MWD083	MBS001	MWD087			
MWD084	MHR001				

notes:
AR - Active Ore Haul Road
BB - Ballard Mine Background
BH - Henry Mine Background
BE - Enoch Valley Mine Background
BS - Ballard Mine shop
HR - Historic Ore Haul Road
TA - Enoch Valley Mine Tipple Area
WD - Waste Rock Dump

TABLE 2-2

VEGETATION SAMPLING FIELD INFORMATION AND SAMPLING LOCATIONS

									Distribution (%)[b]				
Station	**Mine**	**Station Type**	**Latitude**	**Longitude**	**Slope (°)**	**Aspect**	**Ground Cover (%)[a]**	**Sample Type**	**Grasses**	**Forbs**	**Woody**	**Notes**	**Vegetation Present**
MWD080-01	Ballard	Dump	N42° 50' 06.11"	W111° 29' 40.85"	30-40	NW	>75%	General	80	15	5		BRIN2, AGCR, PASM Festuca, MESA, PUTR, SYAL
MWD080-02	Ballard	Dump	N42° 50' 07.17"	W111° 29' 35.96"	0-10	SW	50-75	General	85	10	5	PUTR, Poa, AMAL, present but not sampled	BRW some DAGL, MESA some PHHA
MWD080-03	Ballard	Dump	N42° 50' 07.04"	W111° 29' 34.51"	0-10	NE	50-75	Life Form	60	30	10	This was made a lifeform, Station 2 was bisected by a road	BRIN2, AGCR, Festuca, eringanum, PUTR
MWD080-04	Ballard	Dump	N42° 49' 59.10"	W111° 29' 42.85"	0-10	SW	>75	General	95	5	-		BRIN2, PASM, THIN6, AGCR, MESA, TRDU, PHHA
MWD080-05	Ballard	Dump	N42° 49' 57.04"	W111° 29' 38.76"	-	-	NR	General	90	10	-		BRIN2, PASM, AGCR, MESA
MWD080-06	Ballard	Dump	N42° 49' 55.98"	W111° 29' 42.30"	0-10/30-40	SW	>75	Life Form	90	10	-	One of the subquadrats fell on highly weathered black rock. Possible ore, rock was highy reactive to HCl.	
MWD080-07	Ballard	Dump	N42° 49' 50.27"	W111° 29' 34.51"	10-30	NE	>75	General	90	10	-		BRIN2, THIN6, MESA
MWD080-08	Ballard	Dump	N42° 49' 42.23"	W111° 29' 30.68"	0-10	-	NR	General	90	10	-		BRIN2, PASM, MESA
MWD080-09	Ballard	Dump	N42° 49' 41.46"	W111° 29' 29.78"	-	-	NR	General	95	5	-	Mixed grass community. Sod over waste rock.	PASM, THIN6, BRIN2, MESA
MWD080-10	Ballard	Dump	N42° 49' 37.17"	W111° 29' 34.30"	0-10	SE	>75	General	95	5	-	Grass with scattered clumps of MESA.	BRIN2, THIN6, AGCR, MESA
MWD081-01	Ballard	Dump	N42° 49' 35.77"	W111° 29' 27.59"	30-40	N	>75	General	98	2	-	Sod over waste rock.	MESA, BRIN2
MWD081-02	Ballard	Dump	N42° 49' 34.64"	W111° 29' 23.10"	0-10	N	25-50	General	95	5	-		MESA, BRIN2
MWD081-03	Ballard	Dump	N42° 49' 29.75"	W111° 29' 24.22"	0-10	-	<25	General	99	1	-		
MWD081-04	Ballard	Dump	N42° 49' 26.66"	W111° 29' 31.84"	0-10	-	<25	Life Form	-	100	-		
MWD081-05	Ballard	Dump	N42° 49' 23.61"	W111° 29' 25.79"	>45	SW	25%	General	99	1	-		MESA, THIN6
MWD081-06	Ballard	Dump	N42° 49' 25.04"	W111° 29' 17.58"	<25	Flat	<25	General	99	1	-		MESA, THIN6
MWD081-AL03	Ballard	Dump	N42° 49' 24.86"	W111° 29' 23.67"	30-40	SW	<25	General	60	40	-		MESA, BRIN2
MWD081-08	Ballard	Dump	N42° 49' 20.90"	W111° 29' 19.15"	>45	-	<25	General	99	1	-		THIN6
MWD081-09	Ballard	Dump	N42° 49' 17.27"	W111° 29' 08.83"	0-10	SW	NR	General	97	2	1		THIN6, PUTR
MWD081-10	Ballard	Dump	N42° 49' 18.74"	W111° 29' 06.96"	0-10	SE	NR	General	98	2	-		MESA, THIN6, scorpionweed
MWD082-01	Ballard	Dump	N42° 49' 52.43"	W111° 28' 33.13"	-	-	NR	Life Form	85	15	-		THIN6, BRIN2, mullen, lupine
MWD082-02	Ballard	Dump	N42° 49' 45.97"	W111° 28' 30.18"	0-10	N	>75	General	50	40	10		THIN6, BRIN2, mullen, lupine, larkspur, ARTR, willow
MWD082-03	Ballard	Dump	N42° 49' 43.87"	W111° 28' 30.90"	10-30	SE	25-50	General	20	60	20		larkspur, mullen, lupine, ARTR, BRIN2, Goat's beard, scorpion weed
MWD082-04	Ballard	Dump	N42° 49' 41.40"	W111° 28' 36.00"	10-30	E	>75	General	98	2	-		BRIN2, MESA
MWD082-05	Ballard	Dump	N42° 49' 28.81"	W111° 28' 28.59"	10-30	W	NR	General	70	30	-		BRIN2, MESA
MWD082-06	Ballard	Dump	N42° 49' 16.53"	W111° 28' 27.67"	0-10	SE	50-75	General	20	20	60		fescue, penstemon, ARTR, BRMA4
MWD082-AL07	Ballard	Dump	N42° 28' 27.6"	W111° 49' 31.4"	0-10	W	>75	General	85	15	-		BRIN2, THIN6, MESA
MWD082-08	Ballard	Dump	N42° 49' 29.19"	W111° 28' 09.46"	0-10	NW	25-50	General	80	20	-		BRIN2, MESA
MWD082-09	Ballard	Dump	N42° 49' 23.39"	W111° 28' 12.07"	10-30	SW	>75	General	95	4	1		BRIN2, MESA
MWD082-10	Ballard	Dump	N42° 49' 19.65"	W111° 28' 07.11"	30-40	ESE	>75	General	60	10	30		BRMA4, yarrow, POTR, ARTR
MWD083-01	Ballard	Dump	N42° 49' 32.82"	W111° 29' 03.21"	0-10	SW	-	Life Form	-	94	6		MESA, PHPR3, BRIN2
MWD083-02	Ballard	Dump	N42° 49' 32.83"	W111° 29' 00.35"	0-10	NE	>75	General	90	10	-		MESA, PHPR3, BRIN2
MWD083-03	Ballard	Dump	N42° 49' 30.64"	W111° 28' 58.49"	0-10	NE	>75	General	-	100	-		MESA, BRIN2
MWD083-04	Ballard	Dump	N42° 49' 29.72"	W111° 28' 56.58"	-	-	NR	General	-	91	9		PHPR3, POPR
MWD083-05	Ballard	Dump	N42° 49' 28.09"	W111° 28' 58.65"	10-30	SE	>75	General	90	10	-		BRIN2, MESA, POPR
MWD083-06	Ballard	Dump	N42° 49' 26.42"	W111° 28' 59.62"	10-30	W	<25	General	98	-	2		THIN6, MESA, POTR
MWD083-07	Ballard	Dump	N42° 49' 25.69"	W111° 28' 57.17"	0-10 NE	-	NR	General	99	1	-	Slope is 0-10 NE, >45 bank of road to SW	THIN6, scorpion weed
MWD083-08	Ballard	Dump	N42° 49' 24.52"	W111° 28' 55.64"	10-30	E	50-75	General	15	85	-		fescue
MWD083-09	Ballard	Dump	N42° 49' 22.75"	W111° 28' 57.44"	0-10	SW	25-50	General	85	15	-		THIN6, MESA
MWD083-AL01	Ballard	Dump	N42° 49' 23.73"	W111° 28' 57.84"	0-10 SE	-	25-50	General	95	5	-	Slope is 0-10 SE, 30-40 NE past road	BRIN2, fescue, MESA present
MWD084-01	Ballard	Dump	N42° 50' 18.03"	W111° 28' 43.53"	10-30	N	NR	General	99	1	-		MESA, BRIN2
MWD084-02	Ballard	Dump	N42° 50' 16.28"	W111° 28' 42.32"	10-30	SE	>75	General	99	1	-		BRIN2, MESA, PHPR3
MWD084-03	Ballard	Dump	N42° 50' 18.02"	W111° 28' 38.61"	>45	E	>75	General	99	1	-		PHPR3, MESA
MWD084-04	Ballard	Dump	N42° 50' 15.61"	W111° 28' 38.53"	0-10	E	>75	General	99	1	-		BRIN2, MESA, PHPR3
MWD084-AL05	Ballard	Dump	N42° 50' 15.90"	W111° 28' 41.20"	10-30	SE	>75	Life Form	80	20	-		THIN6, MESA
MWD084-AL02	Ballard	Dump	N42° 50' 08.88"	W111° 28' 31.97"	0-10	-	>75	General	90	10	-		MESA, penstemon
MWD084-07	Ballard	Dump	N42° 50' 06.08"	W111° 28' 28.93"	>45	NE	>75	General	70	5	25		PHPR3, ARTR, geranium, penstemon
MWD084-AL04	Ballard	Dump	N42° 50' 05.42"	W111° 28' 27.42"	0-10	NE	>75	General	75	25	-		MESA, BRIN2
MWD084-09	Ballard	Dump	N42° 50' 08.63"	W111° 28' 27.43"	0-10	-	25-50	General	96	4	-		MESA, BRIN3
MWD084-10	Ballard	Dump	N42° 50' 08.74"	W111° 28' 26.06"	0-10	-	25-50	General	97	3	-		MESA, PHPR3
MWD085-01	Henry	Dump	N42° 54' 30.48"	W111° 30' 45.71"	10-30	NE	>75	General	88.5	10.4	<2	PUTR and waterleaf present but not sampled	THIN6, MESA, sainfoin
MWD085-02	Henry	Dump	N42° 54' 29.65"	W111° 30' 40.58"	>45	NE	>75	Life Form	84.2	15.8	-		BRIN2, THIN6, MESA, sainfoin
MWD085-03	Henry	Dump	N42° 54' 30.56"	W111° 30' 30.16"	0-10	-	>75	Life Form	84.2	15.8	-		BRIN2, THIN6, MESA, sainfoin
MWD085-04	Henry	Dump	N42° 54' 26.46"	W111° 30' 32.95"	0-10	-	>75	General	78.9	21.1	-		BRIN2, PASM, MESA, sainfoin
MWD085-05	Henry	Dump	N42° 54' 29.08"	W111° 30' 24.87"	0-10	-	>75	General	84.2	15.8	-		BRIN2, PASM,THIN6, MESA, TAOF
MWD085-06	Henry	Dump	N42° 54' 25.78"	W111° 30' 23.62"	0-10	SE	>75	General	50	50	-		BRIN2, MESA
MWD085-07	Henry	Dump	N42° 54' 08.20"	W111° 30' 05.29"	0-10	-	50-75	General	80.0	20.0	-	sainfoin, taraxacum, collomia	PASM, BRIN2, THIN6, MESA,
MWD085-08	Henry	Dump	N42° 54' 09.22"	W111° 30' 00.54"	10-30	S	>75	General	89.5	10.5	-		THIN6, sainfoin
MWD085-09	Henry	Dump	N42° 54' 05.93"	W111° 29' 59.76"	10-30	NE	>75	General	75	25	-		BRIN2, MESA
MWD085-10	Henry	Dump	N42° 54' 03.89"	W111° 29' 51.19"	0-10	-	>75	General	75	25	-		BRIN2, MESA
MWD086-01	Henry	Dump	N42° 53' 07.35"	W111° 28' 50.07"	10-30	NW	>75	General	65	35	-		BRIN2, MESA
MWD086-02	Henry	Dump	N42° 52' 09.16"	W111° 27' 44.41"	0-10	NW	>75	General	95	5	-		BRIN2, MESA
MWD086-03	Henry	Dump	N42° 52' 17.46"	W111° 27' 31.46"	10-30	NW	>75	General	85	15	-		BRIN2, MESA
MWD086-04	Henry	Dump	N42° 52' 22.04"	W111° 28' 02.45"	10-30	NE	>75	General	75	25	-		BRIN2, MESA
MWD086-05	Henry	Dump	N42° 52' 31.90"	W111° 27' 57.15"	10-30	SSW	>75	General	80	20	-		BRIN2, MESA
MWD086-06	Henry	Dump	N42° 52' 39.60"	W111° 28' 01.44"	0-10	-	>75	General	95	5	-		BRIN2, MESA
MWD086-07	Henry	Dump	N42° 52' 50.14"	W111° 28' 15.40"	10-30	SW	>75	Life Form	98	2	-		BRIN2, MESA
MWD086-08	Henry	Dump	N42° 53' 02.20"	W111° 28' 30.24"	10-30	SW	>75	General	70	30	-		BRIN2, MESA
MWD086-09	Henry	Dump	N42° 53' 05.83"	W111° 28' 29.40"	0-10	S	>75	General	70	30	-		BRIN2, MESA
MWD086-10	Henry	Dump	N42° 53' 18.87"	W111° 28' 56.23"	10-30	NE	>75	General	85	15	-		BRIN2, MESA

TABLE 2-2

VEGETATION SAMPLING FIELD INFORMATION AND SAMPLING LOCATIONS

									Distribution (%)[b]				
Station	**Mine**	**Station Type**	**Latitude**	**Longitude**	**Slope (°)**	**Aspect**	**Ground Cover (%)[a]**	**Sample Type**	**Grasses**	**Forbs**	**Woody**	**Notes**	**Vegetation Present**
MWD087-01	Henry	Dump	N42° 52' 52.53"	W111° 28' 46.10"	0-10	SE	>75	General	-	-	-		BRIN2, MESA, BRTE, SIAL, TAOF
MWD087-02	Henry	Dump	N42° 52' 45.61"	W111° 28' 39.89"	0-10	SE	>75	General	87.9	11.0	1.1		BRIN2, MESA
MWD087-03	Henry	Dump	N42° 52' 42.33"	W111° 28' 43.92"	-	-	NR	General	88.9	11.1	-	Agoseris	BRIN2, DAGL, MESA
MWD087-04	Henry	Dump	N42° 52' 39.80"	W111° 28' 29.99"	10-30	ESE	NR	General	72.9	26.0	1.0	Serviceberry present, not sampled	BRIN2, fescue, THIN5, LECI4
MWD087-05	Henry	Dump	N42° 52' 38.15"	W111° 28' 28.08"	10-30	SSW	NR	General	89.5	10.5	-		PASM, LECI4, MESA
MWD087-06	Henry	Dump	N42° 52' 32.97"	W111° 28' 19.95"	0-10	N	>75	Life Form	61.1	38.9	-		PASM, BRIN2, MESA, LEPE, TAOF, TRDU, POSE
MWD087-07	Henry	Dump	N42° 52' 30.36"	W111° 28' 24.77"	0-10	NW	>75	General	62.5	36.5	<1		THIN6, MESA, TAOF
MWD087-08	Henry	Dump	N42° 52' 26.61"	W111° 28' 18.66"	30-40	N	>75	General	89.5	10.5	-		THIN6, MESA
MWD087-09	Henry	Dump	N42° 52' 24.38"	W111° 28' 28.27"	10-30	SE	NA	General	94.7	5.3	-		BRIN2, MESA, THIN6
MWD087-10	Henry	Dump	N42° 52' 21.10"	W111° 28' 30.33"	0-10	NW	NA	General	84.2	15.8	-		BRIN2, MESA
MWD088-01	Henry	Dump	N42° 53' 44.98"	W111° 29' 09.11"	30-40	NE	<25	General	75	25	-		BRIN2, MESA
MWD088-02	Henry	Dump	N42° 53' 46.01"	W111° 29' 05.47"	-	-	NR	Life Form	50	50	-		BRIN2, MESA, THIN6
MWD088-03	Henry	Dump	N42° 53' 44.17"	W111° 28' 54.85"	0-10	SE	25-50	General	90.9	9.1	-		BRIN2, MESA
MWD088-04	Henry	Dump	N42° 53' 43.86"	W111° 29' 13.06"	0-10	NE	<25	General	80	20	-		BRIN2, MESA
MWD088-AL01	Henry	Dump	N42° 53' 36.94"	W111° 29' 15.84"	0-10	NE	>75	General	90	10	-		BRIN2, MESA
MWD088-06	Henry	Dump	N42° 53' 37.75"	W111° 28' 54.21"	0-10	NW	25-50	General	90.9	6.1	3.0		BRIN2, MESA
MWD088-07	Henry	Dump	N42° 53' 33.05"	W111° 29' 05.58"	0-10	NW	25-50	General	33.3	66.7	-		BRIN2, MESA
MWD088-08	Henry	Dump	N42° 53' 42.00"	W111° 29' 21.04"	0-10	flat	25-50	General	78.9	21.1	-		BRIN2, MESA
MWD088-09	Henry	Dump	N42° 53' 28.15"	W111° 29' 04.50"	30-40	SW	50-75	Life Form	50	50	-	field notes say 80% thistle	BRIN2, MESA
MWD088-10	Henry	Dump	N42° 53' 26.65"	W111° 28' 54.37"	30-40	N	25-50	General	90	10	-		BRIN2, MESA
MWD090-01	Henry	Dump	N42° 52' 01.68"	W111° 27' 37.11"	0-10	E	>75	General	95	5	-		BRIN2, MESA
MWD090-02	Henry	Dump	N42° 52' 01.02"	W111° 27' 24.67"	0-10	SW	>75	Life Form	80	20	-		BRIN2, MESA
MWD090-03	Henry	Dump	N42° 51' 54.86"	W111° 27' 21.16"	10-30	NW	50-75	General	29.4	70.6	-		BRIN2, MESA
MWD090-04	Henry	Dump	N42° 51' 53.54"	W111° 27' 26.87"	0-10	SE	50-75	Life Form	95	5	-		BRIN2, MESA
MWD090-05	Henry	Dump	N42° 51' 54.67"	W111° 27' 10.99"	10-30	NE	>75	General	98	2	-		BRIN2, MESA
MWD090-06	Henry	Dump	N42° 51' 55.93"	W111° 27' 10.35"	10-30	E	>75	General	95	5	-		BRIN2, MESA
MWD090-07	Henry	Dump	N42° 51' 56.13"	W111° 27' 06.83"	>45	NE	>75	General	98	-	2		BRIN2, ARTR
MWD090-08	Henry	Dump	N42° 51' 47.70"	W111° 27' 05.38"	10-30	N	>75	General	98	2	-		BRIN2, MESA
MWD090-09	Henry	Dump	N42° 51' 44.95"	W111° 27' 00.52"	0-10	N	>75	General	98	2	-		BRIN2, MESA
MWD090-10	Henry	Dump	N42° 51' 43.29"	W111° 26' 56.52"	10-30	E	>75	General	98	2	-		BRIN2, MESA
MWD091N-01	Enoch Valley	Dump	N42° 53' 47.00"	W111° 25' 52.34"	0-10	S	>75	General	50	50	-		BRIN2, LECI4, MESA, yarrow
MWD091N-02	Enoch Valley	Dump	N42° 53' 45.45"	W111° 25' 53.98"	10-30	SW	50-75	General	50	50	-		BRIN2, MESA, LECI4, PASM,PHPR3, PSSP6
MWD091N-03	Enoch Valley	Dump	N42° 53' 42.02"	W111° 25' 39.79"	-	-	NR	General	85	15	-		PSSP6, DAGL, THIN6, PASM,BRMA4, MESA
MWD091N-04	Enoch Valley	Dump	N42° 53' 39.21"	W111° 25' 45.17"	-	-	NR	Life Form	90	10	-		MESA, DAGL, BRIN2, LECI4
MWD091N-05	Enoch Valley	Dump	N42° 53' 36.19"	W111° 25' 17.40"	10-30	SE	>75	General	85	15	-		DAGL, MESA, PSSP6
MWD091N-06	Enoch Valley	Dump	N42° 53' 34.48"	W111° 25' 29.13"	10-30	SW	NR	Life Form	75	25	-		DAGL, BRIN2, BRMA4, LECI4
MWD091N-07	Enoch Valley	Dump	N42° 53' 31.63"	W111° 25' 43.54"	>45	W	>75	Life Form	60	40	-		MESA, DAGL, PASM, TRDU, STAL
MWD091N-08	Enoch Valley	Dump	N42° 53' 30.28"	W111° 25' 36.49"	-	-	NR	General	50	50	-		DAGL, BRIN2, MESA, POPR
MWD091N-09	Enoch Valley	Dump	N42° 53' 30.72"	W111° 25' 21.36"	10-30	SE	>75	General	85	15	-		MESA, BRIN2, PSSP6, flax
MWD091N-10	Enoch Valley	Dump	N42° 53' 31.72"	W111° 25' 13.69"	10-30	SE	NR	General	60	40	-		PASM, PSSP6, MESA
MWD091S-01	Enoch Valley	Dump	N42° 53' 07.96"	W111° 24' 45.04"	10-30	SE	50-75	General	97	3	-		DAGL, MESA, POPR
MWD091S-02	Enoch Valley	Dump	N42° 53' 00.91"	W111° 24' 38.99"	0-10	SE	25-50	General	100	-	-		DAGL, yarrow
MWD091S-03	Enoch Valley	Dump	N42° 52' 59.54"	W111° 24' 30.69"	10-30	SW	50-75	Life Form	85	15	-	MESA present but unsampled	DAGL, BRIN2, POPR, flax, penstemon
MWD091S-04	Enoch Valley	Dump	N42° 52' 55.63"	W111° 24' 28.05"	10-30	SE	<25	General	98	2	-		DAGL, MESA
MWD091S-05	Enoch Valley	Dump	N42° 52' 49.93"	W111° 24' 26.50"	10-30	SE	<25	General	98	2	-		DAGL, POPR, penstemon
MWD091S-06	Enoch Valley	Dump	N42° 52' 41.24"	W111° 24' 15.17"	0-10	SE	<25	General	99	1	-		DAGL
MWD091S-07	Enoch Valley	Dump	N42° 52' 39.55"	W111° 24' 09.29"	10-30	N	25-50	Life Form	98	2	-		DAGL, MESA
MWD091S-08	Enoch Valley	Dump	N42° 52' 33.25"	W111° 24' 10.83"	30-40	SE	25-50	General	97	3	-		DAGL, POPR, MESA, POBU
MWD091S-09	Enoch Valley	Dump	N42° 52' 30.44"	W111° 24' 01.84"	0-10	S	25-50	General	98	2	-		
MWD091S-10	Enoch Valley	Dump	N42° 52' 21.13"	W111° 23' 49.65"	10-30	NW	<25	Life Form	98	2	-		
MWD092-01	Enoch Valley	Dump	N42° 52' 48.45"	W111° 24' 29.08"	0-10	SE	<25	General	-	100	-		DAGL, MESA, yarrow
MWD092-02	Enoch Valley	Dump	N42° 52' 21.24"	W111° 24' 22.74"	10-30	SW	>75	General	90	10	-	PUTR in plot, but unsampled	DAGL, THIN6, BRIN2, LUAR, MESA
MWD092-03	Enoch Valley	Dump	N42° 52' 22.45"	W111° 24' 18.09"	0-10	SE	>75	General	80.8	15.2	4.0		DAGL, LECI4, MESA, POPR
MWD092-04	Enoch Valley	Dump	N42° 52' 23.48"	W111° 24' 09.81"	-	-	NR	Life Form	90	10	-		DAGL, THIN6, BRIN2, MESA, fescue
MWD092-05	Enoch Valley	Dump	N42° 52' 16.27"	W111° 24' 02.03"	10-30	NW	>75	General	85	12	3	AMAL shrubs present, not sampled	DAGL, THIN6, PASM, LUAR
MWD092-06	Enoch Valley	Dump	N42° 52' 12.04"	W111° 23' 51.13"	0-10	SW	50-75	General	90	10	-		DAGL, LECI4, MESA, flax
MWD092-07	Enoch Valley	Dump	N42° 52' 09.07"	W111° 23' 42.51"	-	-	50-75	General	77.8	11.1	11.1		DAGL, PASM, MESA, sainfoin, fescue
MWD092-08	Enoch Valley	Dump	N42° 52' 08.32"	W111° 23' 37.63"	10-30	E	50-75	General	90	10	-		DAGL, PASM
MWD092-09	Enoch Valley	Dump	N42° 51' 54.74"	W111° 23' 41.79"	0-10	SE	50-75	General	85	10	5		LECI4, DAGL, BRIN2, LUAR, ACLA, penstemon, flax
MWD092-10	Enoch Valley	Dump	N42° 51' 53.98"	W111° 23' 42.15"	0-10	NW	>75	Life Form	40	25	35	onion, wyethia, flax, lithosperma, collomia, nettle all present	POPR, PHPR3, Carex, larkspur, geranium, ARTR
MWD093-01	Ballard	Dump	N42° 49' 47.61"	W111° 29' 22.67"	>45	W	<25	General	99	-	1		BRIN2, scorpion weed
MWD093-02	Ballard	Dump	N42° 49' 50.79"	W111° 29' 12.94"	0-10	SE	25-50	Life Form	80	20	-		BRIN2, MESA, POBU
MWD093-03	Ballard	Dump	N42° 49' 49.06"	W111° 29' 08.48"	0-10	-	50-70	General	80	20	-		BRIN2, MESA
MWD093-04	Ballard	Dump	N42° 49' 50.75"	W111° 29' 05.82"	>45	W	<25	General	99	1	-		BRIN2, PHPR3
MWD093-05	Ballard	Dump	N42° 49' 49.73"	W111° 29' 03.74"	0-10	E	50-70	General	95	5	-		BRIN2, PHPR3, MESA
MWD093-06	Ballard	Dump	N42° 49' 41.97"	W111° 29' 18.66"	>45	NE	NR	General	77.3	4.5	18.2		BRIN2, fescue, penstemon, scorpion weed
MWD093-07	Ballard	Dump	N42° 49' 44.59"	W111° 29' 10.40"	0-10	-	25-50	General	75	25	-		BRIN2, MESA, fescue
MWD093-08	Ballard	Dump	N42° 49' 46.52"	W111° 29' 03.36"	0-10	NE	50-75	General	90	10	-		BRIN2, MESA, PHPR3
MWD093-AL01	Ballard	Dump	N42° 49' 37.02"	W111° 29' 10.57"	30-40	E	>75	General	60	40	-		BRIN2, MESA
MWD093-10	Ballard	Dump	N42° 49' 37.37"	W111° 29' 02.66"	0-10	N	25-50	General	95	5	-		BRIN2, POPR
MHR001-01	Ballard	Historic Haul Road	N42° 49' 05.81"	W111° 29' 33.77"	0-10	W	>75	General	95	5	-		BRIN2, BRTE, THIN6, thistle
MHR001-02	Ballard	Historic Haul Road	N42° 49' 05.71"	W111° 29' 31.09"	-	-	50-75	General	80	20	-		BRIN6, LECI4, THIN6

TABLE 2-2

VEGETATION SAMPLING FIELD INFORMATION AND SAMPLING LOCATIONS

									Distribution (%)[b]				
Station	**Mine**	**Station Type**	**Latitude**	**Longitude**	**Slope (°)**	**Aspect**	**Ground Cover (%)[a]**	**Sample Type**	**Grasses**	**Forbs**	**Woody**	**Notes**	**Vegetation Present**
MHR001-03	Ballard	Historic Haul Road	N42° 49' 18.78"	W111° 28' 53.95"	0-10	SW	50-75	General	80	20	-		BRIN2, THIN6, mullen
MHR001-04	Ballard	Historic Haul Road	N42° 49' 14.64"	W111° 28' 49.98"	0-10	SW	>75	Life Form	60	30	10		ARTR, PUTR, THIN6, BRIN2, fescue, geranium
MHR001-05	Ballard	Historic Haul Road	N42° 49' 15.64"	W111° 28' 47.60"	0-10	SW	>75	General	55	15	30		ARTR, POTR, PUTR, SYAL, MESA, BRIN2
MHR001-06	Ballard	Historic Haul Road	N42° 49' 30.83"	W111° 28' 23.67"	0-10	N	>75	General	75	25	-		BRIN2, MESA, THIN6
MHR001-07	Ballard	Historic Haul Road	N42° 49' 40.54"	W111° 28' 24.71"	0-10	N	50-70	General	75	25	-		LECI4, MESA,BRIN2, THIN6, scorpion weed, yarrow
MHR001-08	Ballard	Historic Haul Road	N42° 49' 49.81"	W111° 28' 20.10"	0-10	N	NR	General	80	10	10		THIN6, BRIN2, fescue, lupine
MHR001-09	Ballard	Historic Haul Road	N42° 49' 51.76"	W111° 28' 19.88"	0-10	N	NR	General	90	10	-		DAGL, fescue, MESA
MHR001-10	Ballard	Historic Haul Road	N42° 50' 03.32"	W111° 28' 23.26"	-	NR	50-70	General	83.3	16.7	-		THIN6, BRIN2, MESA
MHR002-01	Henry	Historic Haul Road	N42° 52' 14.95"	W111° 27' 47.03"	0-10	S	50-70	General	42.9	57.1	-		BRIN2, MESA
MHR002-02	Henry	Historic Haul Road	N42° 52' 17.46"	W111° 27' 49.54"	0-10	S	50-70	General	42.9	57.1	-		BRIN2, THIN6, MESA
MHR002-03	Henry	Historic Haul Road	N42° 52' 24.00"	W111° 27' 53.42"	30-40	NE	25-50	General	95	5	-		BRIN2, MESA
MHR002-04	Henry	Historic Haul Road	N42° 52' 38.35"	W111° 28' 07.04"	0-10	NE	25-50	Life Form	98	2	-		THIN6, MESA
MHR002-05	Henry	Historic Haul Road	N42° 52' 39.68"	W111° 28' 08.73"	10-30	NE	50-70	General	95	5	-		
MHR002-06	Henry	Historic Haul Road	N42° 52' 54.78"	W111° 28' 25.25"	0-10	N	25-50	General	100	-	-		
MHR002-07	Henry	Historic Haul Road	N42° 53' 15.54"	W111° 28' 45.47"	30-40	SW	50-70	General	85	15	-		
MHR002-08	Henry	Historic Haul Road	N42° 53' 53.75"	W111° 29' 18.83"	10-30	SW	>75	General	75	25	-		BRIN2, MESA
MHR002-09	Henry	Historic Haul Road	N42° 53' 57.06"	W111° 29' 21.75"	10-30	SW	50-75	General	65	35	-		BRIN2, MESA
MHR002-10	Henry	Historic Haul Road	N42° 54' 04.94"	W111° 29' 33.40"	30-40	N	>75	Life Form	90	10	-		MESA
MBB001-01	Ballard	Background	N42° 50' 44.03"	W111° 28' 57.97"	0-10	NE	>75	General	15	15	70		AMAL, POTR, SYAL
MBB001-02	Ballard	Background	N42° 50' 40.98"	W111° 29' 01.39"	0-10	NE	>75	General	15	10	75		POTR, AMAL, poa, Carex, lupine, geranium
MBB001-03	Ballard	Background	N42° 50' 40.12"	W111° 29' 03.48"	10-30	N	>75	General	40	10	50		Poa, Shortawn, GEVI2, SYAL
MBB001-04	Ballard	Background	N42° 50' 39.86"	W111° 29' 00.03"	10-30	N	>75	General	20	10	70		Poa, LUAL5, GEV12, POTR, SYAL, AMAL
MBB001-05	Ballard	Background	N42° 50' 36.24"	W111° 28' 52.91"	10-30	NE	>75	Life Form	60	20	20	LUAL5, GEVI2, POTR5, SYOR2, AMAL2	BRIN2, THIN6, GRVI2, lupine
MBB001-06	Ballard	Background	N42° 50' 33.95"	W111° 28' 56.87"	10-30	NE	>75	General	50	25	25	GEVI2, POTR, AMAL2, SYOR2, PRVI, ROWO	BRIN2, PRVI
MBB001-07	Ballard	Background	N42° 50' 32.31"	W111° 28' 52.53"	10-30	NE	>75	General	50	20	30	SYOR2, AMAL2, POTR5, GEVI2, LUAL5	LUAL5, GEVI2, SYOR2
MBB001-08	Ballard	Background	N42° 50' 32.35"	W111° 28' 50.07"	30-40	NE	NR	Life Form	25	25	50	POTR2, SOYR2, AMAL2, GEVI2, GRASS	GEVI2
MBB001-09	Ballard	Background	N42° 50' 31.28"	W111° 28' 48.07"	0-10	NW	>75	General	25	25	50	AMAL2, POYR5, SYOR2, GEVI2, LUAL5, VETH	GEVI2, LUAL5, VETH, AMAL2
MBB001-10	Ballard	Background	N42° 50' 28.11"	W111° 28' 53.98"	30-40	E	>75	Life Form	30	30	40	POYR5, SYOR2, AMAL2, ROWO, LUAL5, WYAM, URDI, BRIN2, THIN6	BRIN2, THIN6, POTR
MBH002-01	Henry	Background	N42° 54' 24.73"	W111° 30' 03.02"	0-10	NW	>75	General	50	-	50		ARTR
MBH002-02	Henry	Background	N42° 54' 22.84"	W111° 29' 59.62"	10-30	SW	>75	General	50	-	50		ARTR
MBH002-03	Henry	Background	N42° 54' 23.25"	W111° 29' 57.23"	10-30	SW	>75	General	50	-	50		ARTR, AMAL
MBH002-04	Henry	Background	N42° 54' 22.55"	W111° 29' 55.26"	10-30	E	>75	General	50	-	50		
MBH002-05	Henry	Background	N42° 50' 36.24"	W111° 28' 52.91"	>45	W	>75	Life Form	11.1	44.4	44.4		PUTR, THIN6, ARTR, SYAL, fescue
MBH002-06	Henry	Background	N42° 54' 18.95"	W111° 30' 01.88"	30-40	SW	>75	General	8.8	3.5	87.7		PASM, THIN6, SYAL, penstemon, yarrow
MBH002-07	Henry	Background	N42° 54' 16.84"	W111° 29' 59.27"	-	-	NR	General	2.2	1.1	96.8		PUTR, ARTR, PASM, SYAL
MBH002-08	Henry	Background	N42° 54' 19.57"	W111° 29' 52.93"	-	-	NR	Life Form	42.1	26.3	31.6		SYAL, ARTR, THIN6, CHNA, flax, phlox, collomia, ACLA
MBH002-09	Henry	Background	N42° 54' 19.67"	W111° 29' 48.28"	30-40	NE	>75	General	-	-	-		THIN6, PUTR, yarrow, penstemon
MBH002-10	Henry	Background	N42° 54' 12.21"	W111° 29' 46.79"	-	-	NR	Life Form	40	36	24		PUTR, ARTR, THIN6, AMAL, CHNA, SYAL, fescue
MBE001-01	Enoch Valley	Background	N42° 53' 23.56"	W111° 25' 35.55"	-	-	NR	Life Form	5	10	85		
MBE001-AL02	Enoch Valley	Background	N42° 53' 14.53"	W111° 25' 07.74"	-	-	NR	General	20	40	40	fescue, Carex, wyethia, geranium, waterleaf, LUAR	BRIN2, PUTR, ARTR, SYAL
MBE001-03	Enoch Valley	Background	N42° 53' 22.95"	W111° 25' 30.52"	-	-	NR	General	25	25	50		
MBE001-04	Enoch Valley	Background	N42° 53' 20.69"	W111° 25' 20.17"	0-10	NW	>75	General	10	10	80	wild strawberry, aspen, chockecherry, SYAL, mule's ears	mule's ear, CHNA, SYAL
MBE001-05	Enoch Valley	Background	N42° 53' 23.06"	W111° 25' 25.93"	-	-	NR	General	25	25	50	CHNA, POTR, BRMA4, larkspur	BRMA4
MBE001-06	Enoch Valley	Background	N42° 53' 20.66"	W111° 25' 24.33"	0-10	S	>75	General	42.5	42.5	15	CHNA, POTR, SYAL, BRIN2, geranium, yarrow	BRIN2
MBE001-07	Enoch Valley	Background	N42° 53' 15.94"	W111° 25' 18.47"	10-30	W	>75	Life Form	90	6	4		BRIN2, LECI4, DAGL, ARTR, penstemon, flax
MBE001-08	Enoch Valley	Background	N42° 53' 12.83"	W111° 25' 07.95"	10-30	S	>75	Genral	15	5	80	ARTR, PUTR, SYAL, flax, mule ears	flax, SYAL
MBE001-09	Enoch Valley	Background	N42° 53' 14.87"	W111° 25' 14.29"	0-10	SW	>75	Life Form	5	60	35		POTR, AMAL, ARTR, poa, wyethia
MBE001-10	Enoch Valley	Background	N42° 53' 17.49"	W111° 25' 22.02"	0-10	SW	>75	General	10	85	5	Mule's ear, some sagebrush and snowberry	SYAL, Mule's ears
MMP035-01	Ballard	Backfilled Pit	N42° 50' 02.16"	W111° 29' 29.11"	0-10	W	>75	General	50	5	45		BRIN2, MESA, PUTR, AMAL, CAAR
MMP035-Al01	Ballard	Backfilled Pit	N42° 49' 55.10"	W111° 29' 24.70"	-	NE	NR	General	90	10	-		BRIN2, THIN6, MESA, Phacelia
MMP035-03	Ballard	Backfilled Pit	N42° 49' 59.00"	W111° 29' 28.92"	0-10	N	>75	General	65	5	30		BRIN2, THIN6, AGCR, MESA, CAAR, Phacelia
MMP035-04	Ballard	Backfilled Pit	N42° 49' 57.50"	W111° 29' 23.30"	0-10	E	>75	General	95	5	-		BRIN2, MESA, Phacelia
MMP035-05	Ballard	Backfilled Pit	N42° 49' 56.86"	W111° 29' 26.31"	0-10	NE	>75	General	90	10	-		BRIN2, THIN6, MESA
MMP035-06	Ballard	Backfilled Pit	N42° 49' 56.35"	W111° 29' 27.04"	0-10	NW	25-50	Life Form	90	10	-		BRIN2, THIN6, MESA, Phacelia
MMP035-07	Ballard	Backfilled Pit	N42° 49' 54.91"	W111° 29' 25.99"	0-10	SE	>75	General	95	5	-		BRIN2, THIN6, Poa, TAOF, MESA, TRDU, MEOF
MMP035-08	Ballard	Backfilled Pit	N42° 49' 54.07"	W111° 29' 25.56"	0-10	W	>75	General	90	8	2		BRIN2, PASM, AGCR, MESA, Poa, LEPE, ERUM, AMAL
MMP035-09	Ballard	Backfilled Pit	N42° 49' 53.12"	W111° 29' 25.46"	0-10	SE	50-75	General	96	3	1		PASM, BRIN2, AGCR, TAOF, Phacelia
MMP035-10	Ballard	Backfilled Pit	N42° 49' 50.35"	W111° 29' 28.16"	0-10	SW	>75	General	90	10	-		BRIN2, PASM, THIN6, MESA, Phacelia
MMP036-AL01	Ballard	Backfilled Pit	N42° 49' 41.19"	W111° 28' 53.98"	0-10	SE	NR	General	98	2	-		BRIN2, MESA, scorpion weed
MMP036-02	Ballard	Backfilled Pit	N42° 49' 42.93"	W111° 28' 55.77"	0-10	S	<25	General	95	5	-		BRIN2, MESA
MMP036-03	Ballard	Backfilled Pit	N42° 49' 39.79"	W111° 28' 55.30"	10-30	SW	<25	General	99	1	-		BRIN2
MMP036-04	Ballard	Backfilled Pit	N42° 49' 33.31"	W111° 28' 54.25"	30-40	E	<25	Life Form	95	5	-		BRIN2, MESA, scorpion weed
MMP036-05	Ballard	Backfilled Pit	N42° 49' 37.56"	W111° 28' 52.50"	0-10	NE	<25	General	99	1	-		BRIN2, MESA, scorpion weed
MMP036-06	Ballard	Backfilled Pit	N42° 49' 32.85"	W111° 28' 54.56"	>45	E	25-50	General	97	3	-		BRIN2
MMP036-07	Ballard	Backfilled Pit	N42° 49' 37.05"	W111° 28' 45.78"	0-10	NW	<25	General	99	1	-		BRIN2, MESA, scorpion weed, yarrow
MMP036-08	Ballard	Backfilled Pit	N42° 49' 36.64"	W111° 28' 43.73"	0-10	W	<25	General	-	-	-		BRIN2, scorpion weed
MMP036-09	Ballard	Backfilled Pit	N42° 49' 27.69"	W111° 28' 52.36"	0-10	SE	>75	General	95	5	-		PHPR3, MESA, fescue
MMP036-10	Ballard	Backfilled Pit	N42° 49' 27.29"	W111° 28' 51.20"	0-10	NE	<25	General	97	3	-		PHPR3, MESA, fescue
MBS001-01	Ballard	Ballard Shop	N42° 49' 35.40"	W111° 29' 30.50"	-	-	-	General	-	-	-		BRIN2, MESA
MBS001-02	Ballard	Ballard Shop	N42° 49' 33.70"	W111° 29' 28.60"	-	-	-	General	-	-	-		PASM
MBS001-03	Ballard	Ballard Shop	N42° 49' 32.30"	W111° 29' 30.60"	-	-	-	General	-	-	-		THIN6
MBS001-04	Ballard	Ballard Shop	N42° 49' 32.70"	W111° 29' 31.70"	-	-	-	General	-	-	-		ELEL5

TABLE 2-2

VEGETATION SAMPLING FIELD INFORMATION AND SAMPLING LOCATIONS

									Distribution (%)[b]				
Station	**Mine**	**Station Type**	**Latitude**	**Longitude**	**Slope (°)**	**Aspect**	**Ground Cover (%)[a]**	**Sample Type**	**Grasses**	**Forbs**	**Woody**	**Notes**	**Vegetation Present**
MBS001-05	Ballard	Ballard Shop	N42° 49' 27.10"	W111° 29' 35.00"	-	-	-	General	-	-	-		
MAR001-01	Enoch Valley	Active Haul Road	N42° 52' 49.90"	W111° 24' 48.00"	30-40	SE	<25	General	99	1	-	MESA, present but not sampled	PHPR3, PASM
MAR001-02	Enoch Valley	Active Haul Road	N42° 52' 41.00"	W111° 24' 30.90"	>45	S	<25	General	-	-	-	In 10 plots, no vegetation was sampled.	None
MAR001-03	Enoch Valley	Active Haul Road	N42° 52' 38.70"	W111° 24' 25.10"	>45	N-S	<25	General	-	-	-	Little to no vegetation	None
MAR001-04	Enoch Valley	Active Haul Road	N42° 52' 35.40"	W111° 24' 02.90"	>45	N	<25	General	-	-	-	No sample.	
MAR001-05	Enoch Valley	Active Haul Road	N42° 52' 35.30"	W111° 23' 57.00"	-	-	<25	General	100	-	-		
MTA001-01	Enoch Valley	Tipple	N42° 52' 49.20"	W111° 25' 06.70"	10-30	S	50-75	General	65	30	5	Sagebrush present, not sampled.	BRIN2, fescue
MTA001-02	Enoch Valley	Tipple	N42° 52' 48.90"	W111° 25' 01.00"	>45	N	50-75	General	90	7	3		DAGL, PEST2, fescue, GEVI2
MTA001-03	Enoch Valley	Tipple	N42° 52' 50.80"	W111° 24' 57.80"	>45	W	50-75	General	85	15	-		DAGL, PASM, MESA
MTA001-04	Enoch Valley	Tipple	N42° 53' 03.70"	W111° 25' 04.80"	0-10	E	25-50	General	90	10	-		DAGL, MESA, PEST2
MTA001-05	Enoch Valley	Tipple	N42° 53' 08.60"	W111° 25' 05.00"	10-30	S	NR	General	96	2	2	Sagebrush and bitterbrush present but not in sample	BRIN2, PEST2

Notes:

[a]Ground Cover (%) – is the percentage of vegetation observed at each sample location (e.g., if the ground (vegetation) cover percentage is 60% then the remaining area (40%) is soil and/or rock).

[b]Distribution (%) – indicates the percentage of each vegetation type (i.e., grasses, forbs, and/or woody vegetation) that was observed at each location.

NR - Not recorded

Grasses		
AGCR	*Agropyron cristatum*	crested wheatgrass
BRIN2	*Bromus inermis*	smooth brome
BRMA4	*Bromus marginatus*	mountain brome
BRTE	*Bromus tectorum*	cheatgrass
CAREX	*Carex sp.*	sedge
DAGL	*Dactylis glomerata*	orchardgrass
LECI4	*Elymus cinereus*	Great Basin wildrye
ELEL5	*Elymus elymoides*	bottlebrush, squirreltail
PASM	*Pascopyrum smithii*	western wheatgrass
PHPR3	*Phleum pratense*	Timothy
POBU	*Poa bulbosa*	bulbous bluegrass
POPR	*Poa pratensis*	Kentucky bluegrass
POSE	*Poa secunda*	Sandberg bluegrass
PSSP6	*Pseudoroegneria spicata*	bluebunch wheatgrass
THIN6	*Thinopyrum intermedium*	intermediate wheatgrass

Forbs		
ERUM	*Eriogonum umbellatum*	sulfur buckwheat
GEVI2	*Geranium viscosissimum*	sticky geranium
LUAL5	*Lupinus ×alpestris*	Great Basin lupine
MESA	*Medicago sativa*	alfalfa
MEOF	*Melilotus officinalis*	yellow sweetclover
PEST2	*Penstemon strictus*	Rocky Mountain penstemon
PHHA	*Phacelia hastata*	silverleaf phacelia
TAOF	*Taraxacum officinale*	dandelion
TRDU	*Tragopogon dubius*	yellow salsify
URDI	*Urtica dioica*	stinging nettle
VETH	*Verbascum thapsus*	common mullein
VINU2	*Viola nuttallii*	Nuttall's violet
WYAM	*Wyethia amplexicaulis*	mules ears

Woody		
AMAL2	*Amelanchier alnifolia*	serviceberry
POTR5	*Populus tremuloides*	quaking aspen
PRVI	*Prunus virginiana*	chokecherry
ROWO	*Rosa woodsii*	Wood's rose
SYOR2	*Symphoricarpos oreophilus*	mountain snowberry

TABLE 2-3 SELENIUM ACCUMULATOR PLANTS (National Research Council, 1983)		
Group 1—Primary Selenium Accumulators. Those plants that normally accumulate Se at very high levels, often several thousand mg/kg dw, including species of:		
Family	Genus	Common Names
Compositae	*Haplopappus*	bristleweed, goldenweed
	Machaeranthera	aster
Cruciferae	*Stanleya*	stanleya, princesplume
Leguminosae	*Astragalus*	locoweed, milk-vetch, poison-vetch, rattle-pod
Group 2—Secondary Selenium Absorbers. Those plants that rarely concentrate selenium to more than a few hundred mg/kg dw, including species of:		
Family	Genus	Common Names
Chenopodiaceae	*Atriplex*	orache, greasewood, shadscale, saltbush, silverscale
Compositae	*Aster*	aster, michaelmas-daisy
	Grindelia	gumweed, gumplant, resinweed, grindelia
	Gutierrezia	matchbrush, matchweed, snakeweed
	Machaeranthera	aster
Loasaceae	*Mentzelia*	blazing-star, metzelia
Scrophulariaceae	*Castilleja*	
Group 3—Normal Plants. Those plants not in either of the above two groups.		

TABLE 2-4
SOIL SAMPLING FIELD INFORMATION

		Cover Type (%)						Rock Content (%)											
Station	Date Sampled	Topsoil	Brown Shale	Cherty Shale	Black Shale	Limestone	Other	Cobble & Boulder	Gravel	Lithologies	Plasticity	Toughness	Consistency	Carbonate Content	Moisture	Organic Content	Color	USCS Soil Type
MWD080-01	7/8/2009	80	10	-	-	10		20	80	Shales, Dinwoody	Low	Low	-	Hard	Dry	High	Brown	GC/GM
MWD080-02	6/23/2009	75	0	10	5	10		30	70	Shale, Limestone, Chert	Low	Low	-	Moderate	Dry	Medium	Black	GC/GM
MWD080-03	6/23/2009	75	5	10	5	5		10	90		Non-Plastic	Low	-	Weak	Dry	Medium	Brown	GC/GM
MWD080-04	7/8/2009	80	-	-	-	10	10% Mixed Waste Rock	20	80		Low	Medium	-	Hard	Dry	High	Brown	GC/GM
MWD080-05	6/23/2009	90	-	-	-	-	10% Mixed Waste Rock	20	60	Dinwoody and other	Low	Low	-	Weak	Moist	High	Black	CL/ML with some gravel
MWD080-06	6/23/2009	70	-	-	10	-	20% Ore	25	75	Mixed Waste Rock	Non-Plastic	Low	-	Hard	Dry-Moist	Medium	Black to Brown	NA
MWD080-07	6/23/2009	95	-	-	-	-	5% Mixed Waste Rock	10	30	Sod	Non-Plastic	Medium	-	Weak	Dry-Moist	High	Black	OL/OH with some gravel
MWD080-08	7/8/2009	60	-	-	-	-	40% Mixed Waste Rock	20	80		Low	Low	-	Moderate	Dry	High	Dark Brown	OL/OH with some gravel
MWD080-09	7/8/2009	60	-	-	-	-	40% Mixed Waste Rock	10	90		Low	Low	-	Moderate	Dry	High	Dark Brown	OL/OH with some gravel
MWD080-10	7/8/2009	90	-	-	-	-	10% Mixed Waste Rock	30	70		Low	Low	-	Moderate	Dry	High	Dark Brown	OL/OH with some gravel
MWD081-01	6/17/2009	-	100	-	-	-		1	50		Non-Plastic	-	Soft	None	Moist	High	Orange Brown	SC
MWD081-02	6/17/2009	-	-	10	90	-		-	-		Non-Plastic	Low	Firm	None	Dry	Low	Dark Brown	SC
MWD081-03	6/17/2009	1	-	-	99	-		15	85		Non-Plastic	-	Firm	None	Dry	Low	Dark Brown/Black	GC
MWD081-04	6/17/2009	-	90	5	4	-	1% Ore	2	40		Low	-	Soft	None	Moist	Medium	Medium Brown	GC
MWD081-05	6/18/2009	-	30	-	70	-		-	-		Low	Low	Soft	None	Wet	Low	Black and Medium Brown	SC
MWD081-06	6/18/2009	-	-	-	100	-		-	-		Non-Plastic	-	-	None	Wet	Low	Black	GC
MWD081-07	6/23/2009	-	30	-	60	5	5% Ore	-	-		Non-Plastic	Low	Soft	Moderate	Moist	Medium	Black	SM
MWD081-08	6/18/2009	-	5	-	95	-		-	-		Non-Plastic	Medium	Firm	None	Moist	Low	Black	GC
MWD081-09	6/18/2009	-	90	-	10	-		1	40		Non-Plastic	Medium	Firm	None	Wet	Low	Dark Brown	GC
MWD081-10	6/18/2009	-	50	-	48	2		1	40		Low	Low	Firm	None	Wet	Low	Dark Brown	GC
MWD082-01	7/8/2009	80	5	5	5	5		-	-		Low	Low	-	None	Dry	Medium	Dark Brown	GC/GM
MWD082-02	7/8/2009	75	10	5	-	10		-	-		Low	Low	-	Moderate	Dry	Medium	Brown	GC/GM
MWD082-03	6/23/2009	100	-	-	-	-		-	-		Non-Plastic to Low	Low	-	None	Dry	Medium	Brown	CL/ML or CH/MH
MWD082-04	6/23/2009	80	5	10	5	-		-	-		Non-Plastic	Low	-	Moderate	Dry	High	Brown	OL/OH with some GC/GM
MWD082-05	6/23/2009	70	10	10	10	-		-	75		Low	Low	-	Weak	Dry	Medium	Brown	GC/GM
MWD082-06	6/22/2009	80	5	5	5	-	5% Other	-	-		Non-Plastic	Low	-	Weak	Moist	High		OL/OH with some GC/GM
MWD082-07	7/8/2009	70	10	-	20	-		-	-		Low	Low	-	Weak	Dry	Low	Light Brown	GC/GM
MWD082-08	6/23/2009	-	-	-	100	-		-	95	Ore	Non-Plastic	Low	-	Hard	Dry	Medium	Black	CH/MH with Dinnwoody Gravel
MWD082-09	6/22/2009	20	10	-	-	-	70% Organic	-	-		Non-Plastic	Low	-	Moderate	Moist	High	Black	OL/OH
MWD082-10	6/22/2009	80	5	10	5	-		-	-		Medium	Low	-	None	Moist	Medium	Dark Brown	GC/GM
MWD083-01	6/21/2009	-	-	80	20	-		-	-		Low	Medium	-	None	Moist	Low	Medium Brown	GC
MWD083-02	6/21/2009	-	-	-	90	-	10% Other	-	25		Low	Medium	-	None	Moist	Low	Medium Brown	GC
MWD083-03	6/21/2009	-	-	10	5	-	Dinwoody	-	20		Medium	Medium	-	None	Moist	Medium	Medium Brown	GC
MWD083-04	6/21/2009	-	10	30	60	-		-	50		Medium	Medium	Firm	None	Moist	Medium	Medium Brown	GC
MWD083-05	6/21/2009	-	20	10	60	-	10% Dinwoody	-	-		Low	Low	Soft	None	Moist	Low	Medium Brown	GC
MWD083-06	6/18/2009	-	-	-	-	-		-	60		Non-Plastic	Medium	Firm	None	Wet	Low	Medium Brown	SC
MWD083-07	6/18/2009	-	-	95	5	-		-	95		Non-Plastic	Low	Soft	None	Wet	Low	Medium Brown	SM
MWD083-08	6/23/2009	85	10	-	5	-		-	1		Low	Medium	Very Soft	None	Moist	Low	Dark Brown	Ml
MWD083-09	6/18/2009	-	20	80	-	-		2	30		Non-Plastic	Low	Soft	None	Moist	Medium	Dark Brown	GM
MWD083-AL01	6/23/2009	80	10	10	-	-		2	5		Low	Medium	Firm	None	Moist	Low	Medium Brown with Black Shale	GM
MWD084-01	6/20/2009	-	-	-	60	10	30% Sandstone	-	20		Non-Plastic	Low	Soft	Moderate	Moist	High	Dark Brown with Yellow Brown Sandstone	Black Shale, Sandstone, LM and OM
MWD084-02	6/20/2009	-	-	-	-	3	97% Sandstone	-	15		Non-Plastic	Low	Very Soft	Moderate	Dry	Medium	Meduim Brown with Yellow Brown	Sandstone, OM, and Limestone Gravel
MWD084-03	6/20/2009	-	10	-	85	1	4% Sandstone	-	30		Low	Medium	Soft	Weak	Moist	Medium	Black	GC
MWD084-04	6/20/2009	-	-	-	70	-	Organic Material	-	40		Non-Plastic	Low	Soft	None	Moist	High	Black	OL
MWD084-05	7/10/2009	90	10	-	-	-		-	-		Medium	Medium	-	Weak	Moist	High	Light Brown	GC/GM
MWD084-06	6/20/2009	-	10	-	50	1	Sandstone, Dinwoody and Ore present	-	30		Low	Medium	Hard	None	Moist	Low	Black with Brown	GC
MWD084-07	6/20/2009	-	-	-	-	-	Dinwoody, Clay and Top Soil	-	5	Dinwoody	Medium	Medium	Firm	None	Moist	Medium	Dark Brown	CL
MWD084-08 (AL04)	6/23/2009	-	90	-	10	-		-	1		Medium	Medium	Firm	Moderate	Moist	Medium	Dark Brown to Black	SC
MWD084-09	6/20/2009	-	-	-	70	-	30% Other	-	40		Non-Plastic	Low	Soft	None	Dry	High	Black	OL
MWD084-10	6/20/2009	-	-	-	70	-	30% Organic Material	-	30	Black Shale	Non-Plastic	Low	Soft	None	Dry	High	Black	OH
MWD085-01	6/17/2009	90	5	-	-	5		20	80		Low	Low	-	Weak	Moist	High	Brown	GC/GM
MWD085-02	6/17/2009	95	-	-	-	-	5% Mixed Waste Rock	-	-	Little gravel or Large Lithics	Medium	Low	-	Weak	Moist to Wet	High		GC/GM
MWD085-03	6/16/2009	80	5	5	5	-	5% Mixed Waste Rock	30	70	Very little limestone	Low	Low	-	None	Moist	High	Dark Brown	GC/GM
MWD085-04	6/16/2009	80	5	5	5	5		50	50	Mixed Waste Rock	Low	Low	-	Moderate	Moist	High	Dark Brown	GC/GM and GW
MWD085-05	6/16/2009	-	-	-	-	-		-	20		Medium	Medium	-	Wet	Wet	High	Dark Brown and Brown	GC
MWD085-06	6/23/2009	80	-	15	5	-		-	-		Medium	Medium	-	Weak	Dry to Moist	High	Dark Brown and Brown	GC/GM
MWD085-07	6/17/2009	90	-	-	-	-	10% Mixed Waste Rock	10	-		Medium	Low	-	None	Wet	Medium	Light Brown	GC/GM
MWD085-08	6/17/2009	90	2	2	2	4		7	-		Medium	Medium	-	Moderate	Wet	High	Brown	GC/GM
MWD085-09	6/17/2009	75	5	5	5	10		1	85		Low	Low	-	Weak	Wet	High	Dark Brown	GC/GM
MWD085-10	6/17/2009	80	5	5	5	-	5% Mixed Waste Rock	3	80	Brown Shale, Black Shale boulders	Low	Low	-	None	Moist	High	Brown	GC/GM
MWD086-01	6/16/2009	90	5	5	-	-		1	85		Non-Plastic	Low	-	None	Dry	High	Brown	GC/GM
MWD086-02	6/15/2009	-	100	-	-	-		-	80		High	-	Soft	None	Moist	Low	Medium Brown	CL
MWD086-03	6/15/2009	-	100	-	-	-		2	80		Low	-	Soft	None	Dry	Medium	Dark Brown	GC
MWD086-04	6/15/2009	-	100	-	-	-		1	75		Medium	-	Soft	None	Moist	Medium	Dark Brown	GC
MWD086-05	6/15/2009	95	5	5	-	-		-	5		Low	Low	-	-	Mosit	Medium	Brown	GC/GM
MWD086-06	6/15/2009		100		-	-		3	85		-	-	-	-	-	-	-	-
MWD086-07	6/17/2009	90	-	5	-	-		-	75		Low	Low		None	Moist	High	Brown	GC/GM
MWD086-08	6/15/2009	-	100	-	-	-		2	85		Low	-	Soft	None	Dry	Medium	Dark Brown	SC
MWD086-09	6/16/2009	100	-	-	-	-		-	60		Low	Low	-	None	Moist	Medium	Brown	OL/OH
MWD086-10	6/16/2009	95	-	5	-	-		-	-		Medium	Low	-	None	Moist	High	Brown	GC/GM
MWD087-01	6/15/2009	75	-	-	20	-	5% Brown Sandy Clay	-	10		Low	Low	-	None	Moist	High	Brown with Black	GC/GM
MWD087-02	6/15/2009	80	-	-	15	-	5% Brown Sandy Clay	-	20	Dinwoody and Black Shale		Low	-	None	Moist	High	Black to Tan	GC/GM
MWD087-03	6/15/2009	20	20	-	60	-		-	5		Low	Low	-	Weak	Moist	Medium	Black with Tan	GC/GM
MWD087-04	6/15/2009	75	-	-	20	-	5% Mixed Waste Rock	-	3	Black Shale	Medium	Low	-		Moist	Medium	Brown	GC/GM
MWD087-05	6/16/2009	75	10	-	5	-	10% Mixed Waste Rock	3	-	Mixed Waste Rock	Non-Plastic	Low	-	None	Moist	Medium	Dark Brown	GC/GM
MWD087-06	6/16/2009	80	5	5	5	5	5% Sandstone	-	30		Medium	Low	-	Weak to Moderate	Moist	High	Dark Brown	GC/GM
MWD087-07	6/16/2009	75	5	10	5	-	5% Mixed Waste Rock	1	5		Low	Low	-	None	Mosit	High	Dark Brown	GC/GM
MWD087-08	6/16/2009	80	5	-	5	10		3	5	Limestone	Low	Low	-	Hard	Moist	High	Dark Brown	GC/GM
MWD087-09	6/16/2009	90	-	-	5	5		1	5		Low	Medium	-	Moderate	Moist	High		GC/GM
MWD087-10	6/16/2009	80	5	-	5		10% Mixed Waste Rock	-	-		Low	Medium	-	None	Moist	High	Brown	GC/GM
MWD088-01	6/15/2009	3	95	-	1	1		-	3		Low	-	Very Soft	-	Moist	Medium	Dark Brown	GC
MWD088-02	6/23/2009	80	-	5	15	-		5	75	Black Shale and Limestone Boulders	Medium	Medium		Moderate	Moist	High	Dark Brown to Black	GC/GM
MWD088-03	6/15/2009	8	90	-	1	1		-	-		Medium	-	Firm	-	Moist	Medium	Medium Brown	GC
MWD088-04	6/16/2009	5	95	-	-	-		-	90		Non-Plastic	Low	Soft	None	Mosit	Low	Medium Brown	GC
MWD088-AL01	6/16/2009	80	-	10	-	-	10% Claystone	-	-		Medium	Low		None	Moist	Medium	Dark Brown to Black	GC
MWD088-06	6/15/2009	4	95	-	1	-		-	-		Low	-	Soft	-	Moist	Medium	Dark Brown	GC
MWD088-07	6/16/2009	5	85	-	1	1		-	75		Low	Low	Soft	None	Moist	Low		GC
MWD088-08	6/16/2009	4	95	-	-	1		-	80		Non-Plastic	Low	Soft	None	Moist	Low	Medium Brown	GC
MWD088-09	6/23/2009	80	-	10	-	10		-	90		Medium	Medium	-	Moderate	Dry	Medium	Dark Brown	GC/GM
MWD088-10	6/16/2009	9	90	-	-	1		-	85		Low	Low	Soft	None	Moist	Low	Medium Brown	GC
MWD090-01	6/16/2009	90	10	-	-	-		5	85	Limestone and Brown Shale Boulders	Medium	Medium	-	Weak	Mosit	Medium	Brown with Black and Dark Brown	GC/GM
MWD090-02	6/17/2009	90	5	5	-	-		1	80		Low	Low	-	Weak	Moist	High	Brown	GC/GM
MWD090-03	6/16/2009	90	-	-	5	5		5	80	Chert/Limestone, Black to Brown Shale	Low	Low	-	Weak-Moderate	Moist	High	Black to Dark Brown to Brown	GC/GM
MWD090-04	6/17/2009	80	5	5	5	5		3	85		Low	Low	-	Weak	Moist	High	Brown	GC/GM
MWD090-05	6/16/2009	85	-	10	-	-	5% Shale	2	70		Non-Plastic	Low	-	None	Dry	High		GC/GM

TABLE 2-4

SOIL SAMPLING FIELD INFORMATION

		Cover Type (%)						Rock Content (%)											
Station	Date Sampled	Topsoil	Brown Shale	Cherty Shale	Black Shale	Limestone	Other	Cobble & Boulder	Gravel	Lithologies	Plasticity	Toughness	Consistency	Carbonate Content	Moisture	Organic Content	Color	USCS Soil Type
MWD090-06	6/16/2009	80	10	5	5	-		7	-	Limestone Boulders	Non-Plastic	Low	-	Weak	Dry	High	Dark Brown	GC/GM
MWD090-07	6/16/2009	85	5	5	-	5		5	65		Non-Plastic	Low	-	Weak	Dry	High	Brown	GC/GM
MWD090-08	6/16/2009	95	-	5	-			2	60		Non-Plastic	Low	-	Weak	Dry	-	Dark Brown to Black, Light Brown at Surface.	GC/GM
MWD090-09	6/16/2009	90	1	1	5	3		1	75		Non-Plastic	Low	-	Weak	Dry	High	Dark Brown with Black	GC/GM
MWD090-10	6/16/2009	90	1	1	5	3		1	75		Non-Plastic	Low	-	Weak	Dry	High	Dark Brown with Black	GC/GM
MWD091N-01	6/22/2009	90	-	-	-	-	10% Mixed Waste Rock	-	-		Medium	Medium	-	None	Moist	High	Dark Brown	CL/ML
MWD091N-02	6/22/2009	85	5	5	5	-		-	-		Medium	Medium	-	None	Moist	Medium	Dark Brown	GC/GM with Gravel
MWD091N-03	6/20/2009	40	30	-	30	-		-	-	Shale	Low	Medium	-	Moderate	-	Medium	Dark Brown	GC/GM
MWD091N-04	6/22/2009	70	-	-	30	-		-	-		Medium	Medium	-	None	Moist	High	Dark Brown	GC/GM
MWD091N-05	6/20/2009	50	20	20	-	-	10% Mixed Waste Rock	5	85		Medium	Low	-	Weak	Dry	High	Brown to Light Brown	GC/GM
MWD091N-06	6/20/2009	60	30	-	10	-		-	-	Shale	Low	Medium	-	Hard	Dry	High	Dark Brown	GC/GM
MWD091N-07	6/22/2009	90	5	-	-	5		10	50	Mixed Waste Rock	Medium	Low	-	Moderate	Moist	High	Black	GC/GM
MWD091N-08	6/22/2009	30	-	-	40	-	30% Organics	-	-		Non-Plastic	Low	-	Moderate	Moist	High	Black	OL/OH with Black Shale
MWD091N-09	6/20/2009	75	-	-	20	-	5% Sandstone	-	-		Low	Low	-	Weak	Mosit	Medium	Black	-
MWD091N-10	6/20/2009	80	5	5	5	-	5% Sandstone	-	80		Medium	Medium		Weak	Moist	High	Dark Brown	GC/GM
MWD091S-01	6/19/2009	98	1	-	-	1		-	2		Medium	Low	Very Soft	None	Moist	Medium	Medium Brown	SC
MWD091S-02	6/19/2009	-	40	60	-	-		-	40		Low	Medium	Firm	None	Moist	Low	Medium Brown	GC
MWD091S-03	6/21/2009	80	5	5	5	-	5% Sandstone	-	-		Medium	Medium	-	Weak	Moist	Medium	Dark Brown	GC/GM
MWD091S-04	6/19/2009	-	78	20	2	-		-	-		Medium	Low	Firm	None	Moist	Low	Medium Brown	GC
MWD091S-05	6/19/2009	95	-	-	-	3	2% Sandstone	-	-		Medium	Low	Firm	-	Moist	Medium	Light Brown	-
MWD091S-06	6/19/2009	-	70	-	30	-		-	20		Medium	Low	Firm	None	Moist	Low	Dark Brown	GC
MWD091S-07	6/19/2009	-	-	-	-	-		-	-		High	Low	Firm	None	Moist	Medium	Light Brown	CL
MWD091S-08	6/19/2009	98	-	-	2	-		-	10		Low	Low	Firm	None	Moist	Low	Medium Brown	GC
MWD091S-09	6/19/2009	-	-	-	90	-	10% Other	-	30		Medium	Medium	Firm	None	Moist	Low	Dark Brown	GC
MWD091S-10	6/19/2009	-	-	20	-	-	80% Disturbed Native Ground	-	-		Medium	Medium	Firm	None	Moist	Medium	Dark Brown	GC
MWD092-01	6/19/2009	-	-	100	-	-		-	60		Low	Low	Soft	None	Moist	Low	Dark Brown	GC
MWD092-02	6/21/2009	80	5	10	5	-		20	60	Mixed Waste Rock, Some Large Boulders	Medium	Medium to Hard	-	Weak	Moist to Wet	Medium	Brown	GC/GM
MWD092-03	6/19/2009	30	-	-	-	-	50% Mixed Waste Rock, 20% Mixed Clays	5	30	Mixed Waste Rock	High	Medium	-	None	Wet to Saturated	Medium	Light Brown to Dark Brown with Black	CL/ML
MWD092-04	6/20/2009	80	20	-	-	-		5	50	Mixed Waste Rock	High	Medium	-	None	Wet	Medium to High	Brown	CH/CM
MWD092-05	6/21/2009	70	10	5	-	-	15% Quartzite and Sandstone	10	80	Mixed Waste Rock	Medium	Low	-	None	Moist to Wet	Medium	Brown	GC/GM
MWD092-06	6/19/2009	50	30	20	-	-		20	80	Chert and Shale, Travertine	Medium	Medium	-	None	Moist to Saturated	Medium	Brown	GC/GM
MWD092-07	6/19/2009	-	75	-	-	-	25% Clays	20	80	Mixed Waste Rock	High	Low	-	-	Wet	Low	Light Brown	SW with Gravel
MWD092-08	6/19/2009	-	20	30	50	-		20	80	Mixed Waste Rock	Low	Medium	-	None	Moist	High	Dark Brown	GC/GM
MWD092-09	6/20/2009	80	5	5	5	-	5% Other	15	85	Dinwoody/Mixed Waste Rock	Low	Low	-	None to Weak	Moist	Medium	Brown	GC/GM
MWD092-10	6/19/2009	85	10	-	-	-	5% Mixed Waste Rock	5	95	Mixed Waste Rock	Medium	Medium	-	None	Moist	Medium	Brown	CL/ML with Gravel
MWD093-01	6/21/2009	-	-	10	90	-		-	-		Low	Medim	Firm	None	Moist	Low	Black	GC
MWD093-02	6/21/2009	-	75	5	20	-	Ore Present	-	30		Low	Low	Firm	None	Moist	Low	Dark Brown with Black	GC
MWD093-03	6/21/2009	-	-	70	20	1	4% Ore	-	-		Low	Low	Firm	Weak	Mosit	Low	Dark Brown	GC
MWD093-04	6/21/2009	-	98	-	2			-	10		Low	Low	Very Soft	None	Moist	Medium		CL
MWD093-05	6/21/2009	-	95	-	-	5		-	20		Low	Low	Soft	Weak	Moist	Medium	Dark Brown	GC
MWD093-06	6/21/2009	30	-	60	10	-		-	-		Low	Low	Very Soft	None	Dry	Medium	Very Dark Brown	GC
MWD093-07	6/21/2009	-	5	70	15	10		-	-		Low	Medim	Firm	Moderate	Dry	Low	Dark Brown	GC
MWD093-08	6/21/2009	-	95	-	3	1	Ore Present	-	20		Low	Low	Soft	Weak	Moist	Medium	Dark Brown	GC
MWD093-AL01	6/23/2009	-	30	60	10	-	Ore Present	2	10		Low	Medim	Hard	None	Moist	Low	Dark Brown with Black	GM
MWD093-10	6/21/2009	-	-	100	-	-		-	90		Low	Low	Soft	None	Moist	High	Black Rock, Dark Brown Ore	GW
MHR001-01	7/9/2009	80	-	-	-	15	5% Other	-	-		Low	Low	-	Moderate	Dry	High	Brown	GC/GM
MHR001-02	7/8/2009	70	20	10	-	-		-	-		Low	Low	-	Weak	Dry	Low	Brown	GC/GM
MHR001-03	7/8/2009	40	20	20	20	-		-	-		Low	Low	-	Weak	Dry	Low	Brown	GC/GM
MHR001-04	7/9/2009	80	-	-	-	15	5% Other	-	-		Low	Low	-	Moderate	Dry	High	Brown	GC/GM
MHR001-05	7/8/2009	80	10	-	-	10		-	-		Low	Hard	-	Hard	Dry	Medium	Black	GC/GM
MHR001-06	7/8/2009	50	20	10	-	20		-	-		Low	Low	-	Hard	Dry	Medium	Brown	GC/GM
MHR001-07	7/8/2009	70	10	10	10	-		2	-		Low	Low	-	None	Dry	Dry	Medium	GC/GM
MHR001-08	7/8/2009	70	10	10	10	-		-	-		Low	Low	-	Weak	Dry	Medium	Brown	GC/GM
MHR001-09	7/8/2009	100	-	-	-	-		-	-		Low	Low	-	Weak	Dry	Medium	Brown	GC/GM
MHR001-10	7/8/2009	40	10	20	-	20	10% Sandstone	-	-		Low	Low	-	Hard	Dry	Low	Black	GC/GM
MHR002-01	6/18/2009	70	-	-	-	-	30% Other	-	-		Low	Low	-	Moderate	Moist	High	Dark Brown	GC/GM
MHR002-02	6/18/2009	70	5	10	5	10		30	70	Mixed Waste Rock	Non-Plastic	Low	-	Moderate	Moist	High	Dark Brown	GC/GM
MHR002-03	6/19/2009	70	10	-	10	10		-	-		Medium	Medium	-	Moderate	Moist	Medium	Dark Brown	GC/GM
MHR002-04	6/19/2009	50	-	10	-	30	10% Sandstone	-	-		Low	Hard	-	Hard	Moist	Medium	Black and Dark Brown	GC/GM
MHR002-05	6/18/2009	-	-	30	-	10	10% Sandstone, 50% Clay to Sand	3	96	Mixed Waste Rock	Medium	Medium	-	Moderate to Hard	Moist	Medium	Dark Brown	GC/GM
MHR002-06	6/18/2009	-	-	-	-	70	30% Clay to Sand	2	95		Medium	Medium	-	Hard	Moist	Medium	Gray Brown	GC/GM
MHR002-07	6/18/2009	-	-	-	-	40	60% Clay to Sand	5	95	Limestone and Shale	Medium	Medium	-	Weak	Moist	Medium	Dark Brown to Black	GC/GM
MHR002-08	6/18/2009	50	-	-	-	30	20% Mixed Waste Rock	2	80	Limestone and Shale	Medium	Medium	-	Moderate	Moist	High	Dark Brown to Black	-
MHR002-09	6/18/2009	95	-	-	-	-	5% Other	3	75		Medium	Low	-	None	Moist	High	Dark Brown to Black	GC/GM
MHR002-10	6/18/2009	70	10	-	10	10		10	85		Medium	Medium	-	Moderate	Wet	High	Dark Brown	Gc/GM
MBB001-01	7/10/2009	100	-	-	-	-		-	-		Medium	Medium	-	Medium	Moist	Medium	Dark Brown	CL/ML
MBB001-02	7/10/2009	100	-	-	-	-		-	-		Medium	Medium	-	None	Moist	Medium	Brown	CL/ML
MBB001-03	7/10/2009	100	-	-	-	-		-	-		Medium	Medium	-	None	Moist	Medium	Brown	CL/ML
MBB001-04	7/10/2009	100	-	-	-	-		-	-		Medium	Medium	-	None	Moist	Medium	Dark Brown	CL/ML
MBB001-05	7/9/2009	100	-	-	-	-		-	-		Medium	Medium	-	None	Moist	Medium	Dark Brown	CH/CM
MBB001-06	7/10/2009	100	-	-	-	-		-	-		High	Medium	-	None	Moist	High	Brown	CL/ML
MBB001-07	7/10/2009	100	-	-	-	-		-	-		High	Medium	-	None	Moist	Medium	Brown	CL/ML
MBB001-08	7/9/2009	100	-	-	-	-		-	-		Medium	Medium	-	None	Moist	Medium	Dark Brown, Tan	CH/CM
MBB001-09	7/9/2009	95	-	-	-	-	5% Mixed Waste Rock	-	-		Medium	Low	-	None	Moist	High	Dark Brown	CH/CM
MBB001-10	7/10/2009	98	2	-	-	-		-	-		High	Medium	-	None	Moist	High	Brown	CL/ML
MBH002-01	6/18/2009	100	-	-	-	-			5		Medium	Medium	-	None	Moist	High	Brown	CL/ML
MBH002-02	6/18/2009	100	-	-	-	-		1	65		Low	Low	-	Weak	Moist	High	Brown	-
MBH002-03	6/18/2009	90	5	-	5	-		1	65		-	-	-	-	-	-	-	-
MBH002-04	6/18/2009	100	-	-	-	-		2	65	Limestone/chert	Medium	Medium	-	Weak	Moist	High	Brown	SC/SM
MBH002-05	6/18/2009	75	5	5	5	10		20	80	Dinwoody	Medium	Low	-	Moderate	Moist	High	Brown	GC/GM
MBH002-06	6/17/2009	90	-	-	-	10		15	65	Limestone/Wells	-	-	-	-	-	-		-
MBH002-07	6/16/2009	95	-	-	-	5			3		Medium	-	Very soft	None	Moist	Medium	Medium brown	CL
MBH002-08	6/18/2009	90	5	-	-	5		30	70		Medium	Low	-	Hard	Wet	Medium	Light Brown	GC/GM
MBH002-09	6/16/2009	95	-	-	-	5					Medium	Low	Very soft	None	Moist	Medium	Medium Brown	CL
MBH002-10	6/18/2009	90	7	-	-	3					Medium	Low	-	Weak	Moist	Medium	Light Brown	GC/GM
MBE001-01	6/22/2009	95	-	-	-	-	5% Dinwoody/Thanes	5	10	Dinwoody/thanes few boulders	Low	Low	-	None	Moist	High	Black	CL/ML
MBE001-AL02	6/22/2009	90	-	10	-	-		3	10	Chert/ Dinwoody	Medium	Medium	-	None	Moist	Medium	Brown	CL/ML with Gravel
MBE001-03	6/21/2009	100	-	-	-	-					Medium	Low	-	None	Moist	High	Black	CL/ML
MBE001-04	6/21/2009	100	-	-	-	-					Medium	Medium	-	None	Moist	High	Black	CL/ML
MBE001-05	6/21/2009	100	-	-	-	-					Low	Low	-	None	Moist	High	Black	CL/ML
MBE001-06	6/21/2009	100	-	-	-	-					Medium	Low	-	None	Moist	High	Black/ Dark Brown	CL/ML
MBE001-07	6/21/2009	90	5	-	5	-		3	30		Medium	Low	-	Moderate	Moist to Wet	High	Dark Brown	GC/GM
MBE001-08	6/21/2009	95	5	-	-	-					Medium	Medium	-	None	Moist	High	Black	CL/ML
MBE001-09	6/21/2009	90	10	-	-	-		0	5	Dinwoody	High	Medium	-	None	Moist	Medium	Light Brown	CH/MH with Dinnwoody Gravel
MBE001-10	6/21/2009	99	1	-	-	-					Medium	Medium	-	None	Moist	High	Black	CL/ML

TABLE 2-4
SOIL SAMPLING FIELD INFORMATION

		Cover Type (%)						Rock Content (%)											
Station	**Date Sampled**	**Topsoil**	**Brown Shale**	**Cherty Shale**	**Black Shale**	**Limestone**	**Other**	**Cobble & Boulder**	**Gravel**	**Lithologies**	**Plasticity**	**Toughness**	**Consistency**	**Carbonate Content**	**Moisture**	**Organic Content**	**Color**	**USCS Soil Type**
MMP035-01	7/8/2009	80	15	-	-	5		20	80		Low	Low	-	Hard	Dry	Medium	Brown	GC/GM
MMP035-AL01	7/9/2009	70	5	-	5	20		20	80		Low	Low	-	Weak	Dry	Low	Dark Brown	GC/GM
MMP035-03	7/8/2009	80	15	-	-	5		10	90		Low	Low	-	Hard	Dry	High	Brown	GC/GM
MMP035-04	7/9/2009	50	10	5	10	25		60	40		Low	Low	-	Moderate	Dry	High	Dark Brown	GC/GM
MMP035-05	7/9/2009	10	20	5	5	60		60	40		Low	Low	-	Hard	Dry	High	Dark Brown	GC/GM
MMP035-06	7/9/2009	50	10	10	5	25		40	60	Mixed waste rock	Low	Low	-	Hard	Dry	Medium		GC/GM
MMP035-07	7/9/2009	80	5	5	5	5		30	70		Low	Low	-	Moderate	Dry	High	Dark Brown	GC/GM
MMP035-08	7/9/2009	-	10	10	35	-	45% Other	30	70		Low	Low	-	Weak	Dry	Medium	Brown	GC/GM
MMP035-09	7/9/2009	-	10	15	30	-	45% Other	35	65		Low	Low	-	Weak	Dry	Medium	Brown	GC/GM
MMP035-10	7/8/2009	60	20	10	-	10		40	60	Dinwoody, shale with some limestone	Low	Low	-	Hard	Dry	Medium	Brown	GC/GM
MMP036-AL01	6/23/2009	-	40	-	10		50% Dinwoody				Non-plastic	Low	Soft	Soft	Moist	Medium	Medium Brown	ML
MMP036-02	6/23/2009	-	-	-	-	40	60% Sandstone		2	Wells	Non-plastic	Low	Very soft	Hard	Moist	Low	Light Brown	SM
MMP036-03	6/22/2009	-	20	-	80	-	Ore Present		30		Non-plastic	Low	Very soft	None	Wet	Low	Dark Brown	ML
MMP036-04	6/22/2009	-	-	-	90	-	10% Other, Ore Present		1		Non-plastic	Low	Very soft	None	Moist	Low	Dark Brown	ML
MMP036-05	6/22/2009	-	20	-	80	-	Ore Present				Non-plastic	Low	Soft	None	Moist	Low	Black	ML
MMP036-06	6/22/2009	-	-	20	80	-	Ore Present		3		Non-plastic	Low	Soft	None	Moist	Low	Dark Brown to Black	ML
MMP036-07	6/22/2009	-	10	80	10	-			40		Low	Medium	Soft	None	Wet	Low	Medium Brown	GC
MMP036-08	6/22/2009	-	-	90	10	-			40		Non-plastic	Low	Soft	None	Moist	Low	Black	GM
MMP036-09	6/22/2009	-	-	38	60	-	2% Ore		25		Non-plastic	Low	Very soft	None	Moist	Low	Dark Brown to Black	ML
MMP036-10	6/22/2009	-	-	70	30	-	Ore Present		80		Non-plastic	Low	Firm	None	Moist	Low	Dark Brown to Black	GM
MBS001-01	7/9/2009	10	5	-	5	80		0	90		Non-plastic	Low	-	Hard	Dry	Low	Gray Brown	GW
MBS001-02	7/9/2009	70	-	20	-	10					Non-plastic	Low	-	Moderate	Dry	Low	Light Brown	NA
MBS001-03	7/9/2009	60	-	-	-	40					Non-plastic	Low	-	Hard	Dry	Medium	Dark Brown	GC/GM
MBS001-04	7/9/2009	70	5	-	5	20					Low	Low	-	Hard	Dry	Low	Brown	GW
MBS001-05	7/9/2009	50	-	-	-	40	10% other				Non-plastic	Low	-	Hard	Dry	Low	Dark Brown	GC/GM
MAR001-01	6/20/2009	50	-	30	-	20			100		Low	Low	-	Moderate	Dry	Low	Dark Brown	GC/GM
MAR001-02	6/20/2009	70	-	20	-	10					Non-plastic to Low	Low	-	Moderate	Dry	Low	Dark Brown	GC/GM
MAR001-03	6/20/2009	50	-	30	-	20					Low	Low	-	Weak to Moderate	Moist	Medium	Dark Brown	GC/GM
MAR001-04	6/20/2009	50	-	30	-	20				Limestone and chert	Low	Low	-	Weak to Moderate	Saturated	Low	Dark Brown	GC/GM
MAR001-05	6/20/2009	50	-	30	-	20			100	Limestone and chert, shale	Low	Low	-	Weak to Moderate	Saturated	Low	Dark Brown	GC/GM
MTA001-01	6/19/2009	50	-	10	-	30	10% Sandstone				Low	Low	-	Hard	Moist	High	Black, Dark brown	GC/GM
MTA001-02	6/19/2009	80	20	-	-	-				Dinwoody	Medium	Low	-	Weak	Moist-Wet	Medium	Light to Dark Brown	GC/GM
MTA001-03	6/19/2009	50	-	5	20	25					Low	Low	-	Hard	Mosit	High	Dark Brown, Black	GC/GM
MTA001-04	6/19/2009	30	10	10	10	30	10% Mixed Waste Rock				Medium	Low	-	Moderate	Wet to Saturated	Low	Black	GC/GM
MTA001-05	6/19/2009	95	5	-	-	-					High	Hard	-	None-Weak	Moist-Wet	Medium	Brown	CL/ML with Gravel

Notes:

USCS	Unified Soil Classification System
GW	Well-Graded Gravels
GP	Poorly-Graded Gravels
GM	Gravel and Silt Mixtures
GC	Gravel and Clay Mixtures
SW	Well-Graded Sands
SP	Poorly-Graded Sands
SM	Sand and Silt Mixture
SC	Sand and Clay Mixture
CL	Non-Plastic and Low Plasticity Clays
ML	Non-Plastic and Low Plasticity Silts
OL	Non-Plastic and Low Plasticity Organic Silts
CH	High Plasticity Clays
MH	High Plasticity Silts
OH	High Plasticity Organic Silts

TABLE 2-5
CULTURALLY SIGNIFICANT PLANT SPECIES SAMPLED

Common Name	Scientific Name	Symbol	Ballard	Henry	Enoch Valley
big sagebrush	*Artemisia tridentata*	ARTR	S, L	S, L	S, L
chokecherry	*Prunus virginiana*	PRVI	S, L, F		
onion	Allium[1]				F, S
quaking Aspen	*Populus tremuloides*	POTR5	S, L	S, L	S, L
Rocky Mountain Juniper	*Juniperus scopulorum*	JUSC2	S, L	S, L	S, L
white sagebrush	*Artemisia ludoviciana*	ARLU	W	W	W

Notes:
1. Scientific name was not determined
Plant parts: S = stem; L = leaf; F = fruit; W = whole

TABLE 2-6
SOIL AND VEGETATION ANALYTES AND ANALYTICAL METHODS

Antimony	EPA 6020A	Mercury	EPA 6010B
Arsenic	EPA 6020A	Molybdenum	EPA 6010B
Boron	EPA 6010B	Nickel	EPA 6020A
Cadmium	EPA 6020A	Selenium	EPA 6020A
Chromium	EPA 6020A	Silver	EPA 6020A
Chromium (VI)[1]	EPA 7196A	Thallium	EPA 6020A
Cobalt	EPA 6020A	Uranium	EPA 6020A
Copper	EPA 6020A	Vanadium	EPA 6010B
Manganese	EPA 6020A	Zinc	EPA 6010B

Notes:
1. Cr (VI) was analyzed for in soil samples only. Total chromium will be used to evaluate hexavalent chromium in vegetation tissue samples.

TABLE 2-7

Results of Low-Level Laboratory Control Samples Associated with Vegetation Samples
(Page 1 of 6)

Laboratory Identification	Analytical Method	Analyte	Result	MDL	RL	Units	Lab Flag	Amount Spiked	Percent Recovery
Low-Level LCS Results Associated with the Spring 2009 Vegetation Sampling Event									
L09070210-48CS	SW6020A	Arsenic	0.246	0.075	0.3	mg/kg	J	0.188	131
	SW6020A	Cadmium	0.06	0.025	0.1	mg/kg	J	0.0625	96
	SW6020A	Chromium	0.417	0.1	0.4	mg/kg		0.25	167 [a]
	SW6020A	Cobalt	0.292	0.125	0.5	mg/kg	J	0.313	93
	SW6020A	Copper	0.388	0.15	0.6	mg/kg	J	0.375	103
	SW6020A	Nickel	0.494	0.2	0.8	mg/kg	J	0.5	99
	SW6020A	Selenium	0.521	0.1	0.2	mg/kg		0.25	208 [a]
	SW6020A	Silver	0.119	0.05	0.2	mg/kg	J	0.125	95
	SW6020A	Thallium	0.0235	0.01	0.02	mg/kg		0.025	94
	SW6020A	Uranium	0.22	0.1	0.4	mg/kg	J	0.25	88
	SW6020A	Vanadium	0.322	0.125	0.5	mg/kg	J	0.313	103
	SW6010B	Antimony	2.47	0.5	1	mg/kg		2.5	99
	SW6010B	Boron	12.1	2.5	5	mg/kg		12.5	97
	SW6010B	Manganese	1.11	0.1	0.5	mg/kg		0.5	222 [a]
	SW6010B	Molybdenum	7.49	1.5	3	mg/kg		7.5	100
	SW6010B	Zinc	2.97	0.5	1	mg/kg		2.5	119
	SW7471A	Mercury	0.0471	0.01	0.25	mg/kg	J	0.050	94
L09070210-49CS	SW6020A	Arsenic	0.299	0.075	0.3	mg/kg	J	0.188	159 [a]
	SW6020A	Cadmium	0.0531	0.025	0.1	mg/kg	J	0.0625	85
	SW6020A	Chromium	0.427	0.1	0.4	mg/kg		0.25	171 [a]
	SW6020A	Cobalt	0.293	0.125	0.5	mg/kg	J	0.313	94
	SW6020A	Copper	0.393	0.15	0.6	mg/kg	J	0.375	105
	SW6020A	Nickel	0.499	0.2	0.8	mg/kg	J	0.5	100
	SW6020A	Selenium	0.723	0.1	0.2	mg/kg		0.25	289 [a]
	SW6020A	Silver	0.12	0.05	0.2	mg/kg	J	0.125	96
	SW6020A	Thallium	0.0228	0.01	0.02	mg/kg		0.025	91
	SW6020A	Uranium	0.207	0.1	0.4	mg/kg	J	0.25	83
	SW6020A	Vanadium	0.324	0.125	0.5	mg/kg	J	0.313	104
	SW6010B	Antimony	2.59	0.5	1	mg/kg		2.5	104
	SW6010B	Boron	11.4	2.5	5	mg/kg		12.5	91
	SW6010B	Manganese	0.783	0.1	0.5	mg/kg		0.5	157 [a]
	SW6010B	Molybdenum	7.66	1.5	3	mg/kg		7.5	102
	SW6010B	Zinc	2.59	0.5	1	mg/kg		2.5	104
	SW7471A	Mercury	0.0413	0.01	0.25	mg/kg	J	0.050	83

TABLE 2-7

Results of Low-Level Laboratory Control Samples Associated with Vegetation Samples
(Page 2 of 6)

Laboratory Identification	Analytical Method	Analyte	Result	MDL	RL	Units	Lab Flag	Amount Spiked	Percent Recovery
L09070242-35CS	SW6020A	Arsenic	0.318	0.075	0.3	mg/kg		0.188	169 [a]
	SW6020A	Cadmium	0.0632	0.025	0.1	mg/kg	J	0.0625	101
	SW6020A	Chromium	0.422	0.1	0.4	mg/kg		0.25	169 [a]
	SW6020A	Cobalt	0.297	0.125	0.5	mg/kg	J	0.313	95
	SW6020A	Copper	0.495	0.15	0.6	mg/kg	J	0.375	132
	SW6020A	Nickel	2.45	0.2	0.8	mg/kg		0.5	490 [a]
	SW6020A	Selenium	0.778	0.1	0.2	mg/kg		0.25	311 [a]
	SW6020A	Silver	0.119	0.05	0.2	mg/kg	J	0.125	95
	SW6020A	Thallium	0.0228	0.01	0.02	mg/kg		0.025	91
	SW6020A	Uranium	0.326	0.125	0.5	mg/kg	J	0.25	130
	SW6020A	Vanadium	0.235	0.1	0.4	mg/kg	J	0.313	75
	SW6010B	Antimony	2.33	0.5	1	mg/kg		2.5	93
	SW6010B	Boron	11.2	2.5	5	mg/kg		12.5	90
	SW6010B	Manganese	2.61	0.1	0.5	mg/kg		0.5	522 [a]
	SW6010B	Molybdenum	7.49	1.5	3	mg/kg		7.5	100
	SW6010B	Zinc	4.69	0.5	1	mg/kg		2.5	188 [a]
	SW7471A	Mercury	0.0508	0.01	0.25	mg/kg	J	0.050	102
L09070242-36CS	SW6020A	Arsenic	0.192	0.075	0.3	mg/kg	J	0.188	102
	SW6020A	Cadmium	ND	0.025	0.1	mg/kg	U	0.0625	0 [b]
	SW6020A	Chromium	0.153	0.1	0.4	mg/kg	J	0.25	61
	SW6020A	Cobalt	ND	0.125	0.5	mg/kg	U	0.313	0 [b]
	SW6020A	Copper	ND	0.15	0.6	mg/kg	U	0.375	0 [b]
	SW6020A	Nickel	ND	0.2	0.8	mg/kg	U	0.5	0 [b]
	SW6020A	Selenium	0.873	0.1	0.2	mg/kg		0.25	349 [a]
	SW6020A	Silver	ND	0.05	0.2	mg/kg	U	0.125	0 [b]
	SW6020A	Thallium	ND	0.01	0.02	mg/kg	U	0.025	0 [b]
	SW6020A	Uranium	ND	0.1	0.4	mg/kg	U	0.25	0 [b]
	SW6020A	Vanadium	ND	0.125	0.5	mg/kg	U	0.313	0 [b]
	SW6010B	Antimony	2.27	0.5	1	mg/kg		2.5	91
	SW6010B	Boron	11.3	2.5	5	mg/kg		12.5	90
	SW6010B	Manganese	0.696	0.1	0.5	mg/kg		0.5	139
	SW6010B	Molybdenum	7.61	1.5	3	mg/kg		7.5	101
	SW6010B	Zinc	2.51	0.5	1	mg/kg		2.5	100
	SW7471A	Mercury	0.0492	0.01	0.25	mg/kg	J	0.050	98

TABLE 2-7

Results of Low-Level Laboratory Control Samples Associated with Vegetation Samples
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Laboratory Identification	Analytical Method	Analyte	Result	MDL	RL	Units	Lab Flag	Amount Spiked	Percent Recovery
L09070256-20CS	SW6020A	Arsenic	0.174	0.075	0.3	mg/kg	J	0.188	93
	SW6020A	Cadmium	0.063	0.025	0.1	mg/kg	J	0.0625	101
	SW6020A	Chromium	0.348	0.1	0.4	mg/kg	J	0.25	139
	SW6020A	Cobalt	0.296	0.125	0.5	mg/kg	J	0.313	95
	SW6020A	Copper	0.392	0.15	0.6	mg/kg	J	0.375	105
	SW6020A	Nickel	0.542	0.2	0.8	mg/kg	J	0.5	108
	SW6020A	Selenium	0.211	0.1	0.2	mg/kg		0.25	84
	SW6020A	Silver	0.12	0.05	0.2	mg/kg	J	0.125	96
	SW6020A	Thallium	0.0218	0.01	0.02	mg/kg		0.025	87
	SW6020A	Uranium	0.236	0.1	0.4	mg/kg	J	0.25	94
	SW6020A	Vanadium	0.313	0.125	0.5	mg/kg	J	0.313	100
	SW6010B	Antimony	2.27	0.5	1	mg/kg		2.5	91
	SW6010B	Boron	11.3	2.5	5	mg/kg		12.5	90
	SW6010B	Manganese	0.997	0.1	0.5	mg/kg		0.5	199 [a]
	SW6010B	Molybdenum	7.62	1.5	3	mg/kg		7.5	102
	SW6010B	Zinc	2.8	0.5	1	mg/kg		2.5	112
	SW7471A	Mercury	0.0488	0.01	0.25	mg/kg	J	0.050	98
L09070262-34CS	SW6020A	Arsenic	0.19	0.075	0.3	mg/kg	J	0.188	101
	SW6020A	Cadmium	0.0647	0.025	0.1	mg/kg	J	0.0625	104
	SW6020A	Chromium	0.38	0.1	0.4	mg/kg	J	0.25	152 [a]
	SW6020A	Cobalt	0.294	0.125	0.5	mg/kg	J	0.313	94
	SW6020A	Copper	0.525	0.15	0.6	mg/kg	J	0.375	140
	SW6020A	Nickel	0.502	0.2	0.8	mg/kg	J	0.5	100
	SW6020A	Selenium	0.295	0.1	0.2	mg/kg		0.25	118
	SW6020A	Silver	0.127	0.05	0.2	mg/kg	J	0.125	102
	SW6020A	Thallium	0.0208	0.01	0.02	mg/kg		0.025	83
	SW6020A	Uranium	0.242	0.1	0.4	mg/kg	J	0.25	97
	SW6020A	Vanadium	0.321	0.125	0.5	mg/kg	J	0.313	103
	SW6010B	Antimony	2.47	0.5	1	mg/kg		2.5	99
	SW6010B	Boron	11.8	2.5	5	mg/kg		12.5	94
	SW6010B	Manganese	0.697	0.1	0.5	mg/kg		0.5	139
	SW6010B	Molybdenum	7.33	1.5	3	mg/kg		7.5	98
	SW6010B	Zinc	2.61	0.5	1	mg/kg		2.5	104
	SW7471A	Mercury	0.0398	0.01	0.25	mg/kg	J	0.050	80
Low-Level LCS Results Associated with the Fall 2009 Vegetation Sampling Event									
L09080646-17CS	SW6020	Arsenic	0.428	0.075	0.3	mg/kg		0.188	228 [a]

TABLE 2-7

Results of Low-Level Laboratory Control Samples Associated with Vegetation Samples
(Page 4 of 6)

Laboratory Identification	Analytical Method	Analyte	Result	MDL	RL	Units	Lab Flag	Amount Spiked	Percent Recovery
	SW6020	Cadmium	0.0518	0.025	0.1	mg/kg	J	0.0625	83
	SW6020	Chromium	0.436	0.1	0.4	mg/kg		0.25	174 [a]
	SW6020	Cobalt	0.316	0.125	0.5	mg/kg	J	0.313	101
	SW6020	Copper	0.432	0.15	0.6	mg/kg	J	0.375	115
	SW6020	Nickel	0.555	0.2	0.8	mg/kg	J	0.5	111
	SW6020	Selenium	1.22	0.1	0.2	mg/kg		0.25	488 [a]
	SW6020	Silver	0.129	0.05	0.2	mg/kg	J	0.125	103
	SW6020	Thallium	0.0214	0.01	0.02	mg/kg		0.025	86
	SW6020	Uranium	0.244	0.1	0.4	mg/kg	J	0.25	98
	SW6020	Vanadium	0.352	0.125	0.5	mg/kg	J	0.313	112
	SW6010B	Antimony	2.78	0.5	1	mg/kg		2.5	111
	SW6010B	Boron	12.1	2.5	5	mg/kg		12.5	97
	SW6010B	Manganese	1.02	0.1	0.5	mg/kg		0.5	204 [a]
	SW6010B	Molybdenum	7.73	1.5	3	mg/kg		7.5	103
	SW6010B	Zinc	2.84	0.5	1	mg/kg		2.5	114
	CVAA	Mercury	0.0531	0.01	0.25	mg/kg	J	0.050	106
L09080647-34CS	SW6020	Arsenic	0.346	0.075	0.3	mg/kg		0.188	184 [a]
	SW6020	Cadmium	0.0501	0.025	0.1	mg/kg	J	0.0625	80
	SW6020	Chromium	0.434	0.1	0.4	mg/kg		0.25	174 [a]
	SW6020	Cobalt	0.306	0.125	0.5	mg/kg	J	0.313	98
	SW6020	Copper	0.501	0.15	0.6	mg/kg	J	0.375	134
	SW6020	Nickel	0.496	0.2	0.8	mg/kg	J	0.5	99
	SW6020	Selenium	0.868	0.1	0.2	mg/kg		0.25	347 [a]
	SW6020	Silver	0.121	0.05	0.2	mg/kg	J	0.125	97
	SW6020	Thallium	0.0201	0.01	0.02	mg/kg		0.025	80
	SW6020	Uranium	0.233	0.1	0.4	mg/kg	J	0.25	93
	SW6020	Vanadium	0.364	0.125	0.5	mg/kg	J	0.313	116
	SW6010B	Antimony	2.72	0.5	1	mg/kg		2.5	109
	SW6010B	Boron	12.4	2.5	5	mg/kg		12.5	99
	SW6010B	Manganese	1.03	0.1	0.5	mg/kg		0.5	206 [a]
	SW6010B	Molybdenum	7.97	1.5	3	mg/kg		7.5	106
	SW6010B	Zinc	2.81	0.5	1	mg/kg		2.5	112
	CVAA	Mercury	0.0574	0.01	0.25	mg/kg	J	0.050	115
L09080647-35CS	SW6020	Arsenic	0.323	0.075	0.3	mg/kg		0.188	172 [a]
	SW6020	Cadmium	0.0648	0.025	0.1	mg/kg	J	0.0625	104

TABLE 2-7

Results of Low-Level Laboratory Control Samples Associated with Vegetation Samples
(Page 5 of 6)

Laboratory Identification	Analytical Method	Analyte	Result	MDL	RL	Units	Lab Flag	Amount Spiked	Percent Recovery
	SW6020	Chromium	0.497	0.1	0.4	mg/kg		0.25	199 [a]
	SW6020	Cobalt	0.316	0.125	0.5	mg/kg	J	0.313	101
	SW6020	Copper	0.412	0.15	0.6	mg/kg	J	0.375	110
	SW6020	Nickel	0.551	0.2	0.8	mg/kg	J	0.5	110
	SW6020	Selenium	0.886	0.1	0.2	mg/kg		0.25	354 [a]
	SW6020	Silver	0.127	0.05	0.2	mg/kg	J	0.125	102
	SW6020	Thallium	0.0158	0.01	0.02	mg/kg	J	0.025	63
	SW6020	Uranium	0.229	0.1	0.4	mg/kg	J	0.25	92
	SW6020	Vanadium	0.361	0.125	0.5	mg/kg	J	0.313	115
	SW6010B	Antimony	2.56	0.5	1	mg/kg		2.5	102
	SW6010B	Boron	11.9	2.5	5	mg/kg		12.5	95
	SW6010B	Manganese	0.849	0.1	0.5	mg/kg		0.5	170 [a]
	SW6010B	Molybdenum	7.69	1.5	3	mg/kg		7.5	103
	SW6010B	Zinc	2.81	0.5	1	mg/kg		2.5	112
	CVAA	Mercury	0.0607	0.01	0.25	mg/kg	J	0.050	121
L09080648-42CS	SW6020	Arsenic	0.397	0.075	0.3	mg/kg		0.188	211 [a]
	SW6020	Cadmium	0.0588	0.025	0.1	mg/kg	J	0.0625	94
	SW6020	Chromium	0.48	0.1	0.4	mg/kg		0.25	192 [a]
	SW6020	Cobalt	0.309	0.125	0.5	mg/kg	J	0.313	99
	SW6020	Copper	0.437	0.15	0.6	mg/kg	J	0.375	117
	SW6020	Nickel	0.515	0.2	0.8	mg/kg	J	0.5	103
	SW6020	Selenium	1.09	0.1	0.2	mg/kg		0.25	436 [a]
	SW6020	Silver	0.122	0.05	0.2	mg/kg	J	0.125	98
	SW6020	Thallium	0.0196	0.01	0.02	mg/kg	J	0.025	78
	SW6020	Uranium	0.233	0.1	0.4	mg/kg	J	0.25	93
	SW6020	Vanadium	0.357	0.125	0.5	mg/kg	J	0.313	114
	SW6010B	Antimony	2.4	0.5	1	mg/kg		2.5	96
	SW6010B	Boron	12.1	2.5	5	mg/kg		12.5	97
	SW6010B	Manganese	1	0.1	0.5	mg/kg		0.5	200 [a]
	SW6010B	Molybdenum	7.84	1.5	3	mg/kg		7.5	105
	SW6010B	Zinc	2.66	0.5	1	mg/kg		2.5	106
	CVAA	Mercury	0.0581	0.01	0.25	mg/kg	J	0.050	116
L09080648-43CS	SW6020	Arsenic	0.305	0.075	0.3	mg/kg		0.188	162 [a]
	SW6020	Cadmium	0.0522	0.025	0.1	mg/kg	J	0.0625	84
	SW6020	Chromium	0.467	0.1	0.4	mg/kg		0.25	187 [a]

TABLE 2-7

Results of Low-Level Laboratory Control Samples Associated with Vegetation Samples
(Page 6 of 6)

Laboratory Identification	Analytical Method	Analyte	Result	MDL	RL	Units	Lab Flag	Amount Spiked	Percent Recovery
	SW6020	Cobalt	0.302	0.125	0.5	mg/kg	J	0.313	96
	SW6020	Copper	0.385	0.15	0.6	mg/kg	J	0.375	103
	SW6020	Nickel	0.498	0.2	0.8	mg/kg	J	0.5	100
	SW6020	Selenium	0.718	0.1	0.2	mg/kg		0.25	287 [a]
	SW6020	Silver	0.122	0.05	0.2	mg/kg	J	0.125	98
	SW6020	Thallium	0.0182	0.01	0.02	mg/kg	J	0.025	73
	SW6020	Uranium	0.229	0.1	0.4	mg/kg	J	0.25	92
	SW6020	Vanadium	0.349	0.125	0.5	mg/kg	J	0.313	112
	SW6010B	Antimony	2.31	0.5	1	mg/kg		2.5	92
	SW6010B	Boron	11.5	2.5	5	mg/kg		12.5	92
	SW6010B	Manganese	0.978	0.1	0.5	mg/kg		0.5	196 [a]
	SW6010B	Molybdenum	7.55	1.5	3	mg/kg		7.5	101
	SW6010B	Zinc	2.64	0.5	1	mg/kg		2.5	106
	CVAA	Mercury	0.0451	0.01	0.25	mg/kg	J	0.050	90

Note: A method detection limit (MDL) study was specified in the laboratory's SOP for validation of this method for vegetation samples. However, the MDL study could not be completed for vegetation matrix because the media contained target analytes at levels significantly greater than the sensitivity of the instrument, so the MDLs reported for the vegetation data are based on the laboratory's previously-generated MDLs established using Teflon® beads. Because the MDL study could not be completed, the A/T request analysis of a low-level LCS with each preparation batch of vegetation samples. However, the samples for laboratory sample delivery groups (SDGs) prior to SDG L09070210 were already prepared and analyzed, so the low-level LCS request could not be accommodated for those SDGs. The A/T requested the low-level LCS to be spiked at approximately two times the MDL. Sample results were not qualified based on the results of the low-level LCS.

[a] This recovery is greater than 150 percent; acceptance limits were not established for low-level LCSs.

[b] Microbac reviewed the results of this low-level LCS and determined that they were accurately reported.

J - estimated value between the MDL and RL
mg/kg - milligram per kilogram
RL - reporting limit

TABLE 2-8 TREATMENT OF PRIMARY TRIPLICATE SAMPLES		
Total Detected	**Total Non-Detect**	**Treatment**
3	0	Average three detected values
2	1	Average two detected values
1	2	Use single detected value
0	3	Use greatest MDL value

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
(Page 1 of 58)

Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
Spring 2009 Triplicate Soil Sample Results										
0906-MBB001-07-SS-1	7/10/2009	Antimony	0.347	U	0.347	0.694				
0906-MBB001-07-SS-2	7/10/2009	Antimony	0.351	U	0.351	0.703				
0906-MBB001-07-SS-3	7/10/2009	Antimony	0.529	J	0.373	0.746	na	na	na	31
0906-MBB001-07-SS-1	7/10/2009	Arsenic	3.48		0.0746	0.298				
0906-MBB001-07-SS-2	7/10/2009	Arsenic	3.42		0.0718	0.287				
0906-MBB001-07-SS-3	7/10/2009	Arsenic	3.02		0.0698	0.279	7.6	na	na	0.39
0906-MBB001-07-SS-1	7/10/2009	Boron	4.93		1.74	3.47				
0906-MBB001-07-SS-2	7/10/2009	Boron	3.01	J	1.76	3.51				
0906-MBB001-07-SS-3	7/10/2009	Boron	11.7		1.86	3.73	70	na	na	16000
0906-MBB001-07-SS-1	7/10/2009	Cadmium	2.13		0.0249	0.0994				
0906-MBB001-07-SS-2	7/10/2009	Cadmium	2.61		0.0239	0.0958				
0906-MBB001-07-SS-3	7/10/2009	Cadmium	2.15		0.0233	0.0931	12	na	na	70
0906-MBB001-07-SS-1	7/10/2009	Chromium	10.3		0.0994	0.398				
0906-MBB001-07-SS-2	7/10/2009	Chromium	13.6		0.0958	0.383				
0906-MBB001-07-SS-3	7/10/2009	Chromium	9.32		0.0931	0.372	20	na	na	120000
0906-MBB001-07-SS-1	7/10/2009	Chromium VI	0.244	U	0.244	0.489				
0906-MBB001-07-SS-2	7/10/2009	Chromium VI	0.246	U	0.246	0.492				
0906-MBB001-07-SS-3	7/10/2009	Chromium VI	0.246	U	0.246	0.493	na	na	na	na
0906-MBB001-07-SS-1	7/10/2009	Cobalt	3.39		0.124	0.497				
0906-MBB001-07-SS-2	7/10/2009	Cobalt	3.44		0.120	0.479				
0906-MBB001-07-SS-3	7/10/2009	Cobalt	3.29		0.116	0.466	2.3	na	na	23
0906-MBB001-07-SS-1	7/10/2009	Copper, total	9.41		0.149	0.596				
0906-MBB001-07-SS-2	7/10/2009	Copper, total	9.91		0.144	0.575				
0906-MBB001-07-SS-3	7/10/2009	Copper, total	8.93		0.140	0.559	5.2	na	na	3100
0906-MBB001-07-SS-1	7/10/2009	Manganese	327		0.0694	0.347				
0906-MBB001-07-SS-2	7/10/2009	Manganese	327		0.0703	0.351				
0906-MBB001-07-SS-3	7/10/2009	Manganese	356		0.0746	0.373	5.0	na	na	1800
0906-MBB001-07-SS-1	7/10/2009	Mercury	0.0235	J	0.00994	0.249				
0906-MBB001-07-SS-2	7/10/2009	Mercury	0.0256	J	0.00958	0.239				
0906-MBB001-07-SS-3	7/10/2009	Mercury	0.0183	J	0.00931	0.233	17	na	na	5.6
0906-MBB001-07-SS-1	7/10/2009	Molybdenum	1.04	U	1.04	2.08				
0906-MBB001-07-SS-2	7/10/2009	Molybdenum	1.05	U	1.05	2.11				
0906-MBB001-07-SS-3	7/10/2009	Molybdenum	1.12	U	1.12	2.24	na	na	na	390
0906-MBB001-07-SS-1	7/10/2009	Nickel	12.4		0.199	0.795				
0906-MBB001-07-SS-2	7/10/2009	Nickel	13		0.192	0.766				
0906-MBB001-07-SS-3	7/10/2009	Nickel	12.2		0.186	0.745	3.3	na	na	1500
0906-MBB001-07-SS-1	7/10/2009	Selenium	0.366		0.0994	0.199				
0906-MBB001-07-SS-2	7/10/2009	Selenium	0.417		0.0958	0.192				
0906-MBB001-07-SS-3	7/10/2009	Selenium	0.281		0.0931	0.186	19	na	na	390
0906-MBB001-07-SS-1	7/10/2009	Silver	0.0668	J	0.0497	0.199				
0906-MBB001-07-SS-2	7/10/2009	Silver	0.079	J	0.0479	0.192				
0906-MBB001-07-SS-3	7/10/2009	Silver	0.0651	J	0.0466	0.186	11	na	na	390
0906-MBB001-07-SS-1	7/10/2009	Thallium	0.129		0.00994	0.0199				
0906-MBB001-07-SS-2	7/10/2009	Thallium	0.143		0.00958	0.0192				
0906-MBB001-07-SS-3	7/10/2009	Thallium	0.121		0.00931	0.0186	8.5	na	na	5
0906-MBB001-07-SS-1	7/10/2009	Uranium	0.587		0.0994	0.398				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MBB001-07-SS-2	7/10/2009	Uranium	0.74		0.0958	0.383				
0906-MBB001-07-SS-3	7/10/2009	Uranium	0.593		0.0931	0.372	14	na	na	230
0906-MBB001-07-SS-1	7/10/2009	Vanadium	15.4	J+	0.124	0.497				
0906-MBB001-07-SS-2	7/10/2009	Vanadium	17.2		0.120	0.479				
0906-MBB001-07-SS-3	7/10/2009	Vanadium	12.9	J+	0.116	0.466	14	na	na	390
0906-MBB001-07-SS-1	7/10/2009	Zinc	110		0.347	0.694				
0906-MBB001-07-SS-2	7/10/2009	Zinc	101		0.351	0.703				
0906-MBB001-07-SS-3	7/10/2009	Zinc	113		0.373	0.746	5.8	na	na	23000
0906-MBE001-07-SS-1	6/21/2009	Antimony	0.66	J	0.336	0.672				
0906-MBE001-07-SS-2	6/21/2009	Antimony	0.431	J	0.360	0.720				
0906-MBE001-07-SS-3	6/21/2009	Antimony	0.351	U	0.351	0.703	na	na	0.229	31
0906-MBE001-07-SS-1	6/21/2009	Arsenic	7.47		0.0740	0.296				
0906-MBE001-07-SS-2	6/21/2009	Arsenic	6.99		0.0746	0.298				
0906-MBE001-07-SS-3	6/21/2009	Arsenic	8.5		0.368	1.47	10	na	na	0.39
0906-MBE001-07-SS-1	6/21/2009	Boron	11.2	J-	1.68	3.36				
0906-MBE001-07-SS-2	6/21/2009	Boron	11.4	J-	1.80	3.60				
0906-MBE001-07-SS-3	6/21/2009	Boron	32.2	J-	1.76	3.51	66	na	na	16000
0906-MBE001-07-SS-1	6/21/2009	Cadmium	9.39		0.0247	0.0986				
0906-MBE001-07-SS-2	6/21/2009	Cadmium	7.99		0.0249	0.0994				
0906-MBE001-07-SS-3	6/21/2009	Cadmium	11.6		0.123	0.491	19	na	na	70
0906-MBE001-07-SS-1	6/21/2009	Chromium	46.3		4.93	19.7				
0906-MBE001-07-SS-2	6/21/2009	Chromium	38.7		0.0994	0.398				
0906-MBE001-07-SS-3	6/21/2009	Chromium	44.1		0.491	1.96	9.1	na	na	120000
0906-MBE001-07-SS-1	6/21/2009	Chromium VI	0.5	UJ	0.500	1.00				
0906-MBE001-07-SS-2	6/21/2009	Chromium VI	0.491	UJ	0.491	0.982				
0906-MBE001-07-SS-3	6/21/2009	Chromium VI	0.496	UJ	0.496	0.992	na	na	na	na
0906-MBE001-07-SS-1	6/21/2009	Cobalt	7.69		0.123	0.493				
0906-MBE001-07-SS-2	6/21/2009	Cobalt	9		0.124	0.497				
0906-MBE001-07-SS-3	6/21/2009	Cobalt	7.97		0.614	2.46	8.4	na	na	23
0906-MBE001-07-SS-1	6/21/2009	Copper, total	29.1	J+	0.148	0.592				
0906-MBE001-07-SS-2	6/21/2009	Copper, total	27.9	J+	0.149	0.596				
0906-MBE001-07-SS-3	6/21/2009	Copper, total	34.7	J+	0.737	2.95	12	na	na	3100
0906-MBE001-07-SS-1	6/21/2009	Manganese	877		0.0672	0.336				
0906-MBE001-07-SS-2	6/21/2009	Manganese	1110		0.0720	0.360				
0906-MBE001-07-SS-3	6/21/2009	Manganese	974		0.0703	0.351	12	na	na	1800
0906-MBE001-07-SS-1	6/21/2009	Mercury	0.075	J	0.00986	0.247				
0906-MBE001-07-SS-2	6/21/2009	Mercury	0.061	J	0.00994	0.249				
0906-MBE001-07-SS-3	6/21/2009	Mercury	0.0878	J	0.00982	0.246	18	na	na	5.6
0906-MBE001-07-SS-1	6/21/2009	Molybdenum	3.46		1.01	2.01				
0906-MBE001-07-SS-2	6/21/2009	Molybdenum	2.65		1.08	2.16				
0906-MBE001-07-SS-3	6/21/2009	Molybdenum	4.24		1.05	2.11	23	na	na	390
0906-MBE001-07-SS-1	6/21/2009	Nickel	60.4		9.86	39.4				
0906-MBE001-07-SS-2	6/21/2009	Nickel	59		9.94	39.8				
0906-MBE001-07-SS-3	6/21/2009	Nickel	70.2		0.982	3.93	10	na	na	1500
0906-MBE001-07-SS-1	6/21/2009	Selenium	6.65	J	0.0986	0.197				
0906-MBE001-07-SS-2	6/21/2009	Selenium	5.38	J	0.0994	0.199				
0906-MBE001-07-SS-3	6/21/2009	Selenium	8.63	J	0.491	0.982	24	na	na	390

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MBE001-07-SS-1	6/21/2009	Silver	0.513		0.0493	0.197				
0906-MBE001-07-SS-2	6/21/2009	Silver	0.313		0.0497	0.199				
0906-MBE001-07-SS-3	6/21/2009	Silver	0.442	J	0.246	0.982	24	na	na	390
0906-MBE001-07-SS-1	6/21/2009	Thallium	0.442		0.00986	0.0197				
0906-MBE001-07-SS-2	6/21/2009	Thallium	0.446		0.00994	0.0199				
0906-MBE001-07-SS-3	6/21/2009	Thallium	0.555		0.0491	0.0982	13	na	na	5
0906-MBE001-07-SS-1	6/21/2009	Uranium	10.8		0.0986	0.394				
0906-MBE001-07-SS-2	6/21/2009	Uranium	7.81		0.0994	0.398				
0906-MBE001-07-SS-3	6/21/2009	Uranium	12		0.491	1.96	21	na	na	230
0906-MBE001-07-SS-1	6/21/2009	Vanadium	53.7		6.16	24.7				
0906-MBE001-07-SS-2	6/21/2009	Vanadium	48.8		6.21	24.9				
0906-MBE001-07-SS-3	6/21/2009	Vanadium	54.1		0.614	2.46	5.7	na	na	390
0906-MBE001-07-SS-1	6/21/2009	Zinc	230	J	0.336	0.672				
0906-MBE001-07-SS-2	6/21/2009	Zinc	213	J	0.360	0.720				
0906-MBE001-07-SS-3	6/21/2009	Zinc	281	J	0.351	0.703	15	na	na	23000
0906-MBH002-07-SS-1	6/16/2009	Antimony	0.755	U	0.755	1.51				
0906-MBH002-07-SS-2	6/16/2009	Antimony	0.368	U	0.368	0.736				
0906-MBH002-07-SS-3	6/16/2009	Antimony	0.359	U	0.359	0.718	na	na	na	31
0906-MBH002-07-SS-1	6/16/2009	Arsenic	9.47	J+	0.372	1.49				
0906-MBH002-07-SS-2	6/16/2009	Arsenic	8.37	J+	0.373	1.49				
0906-MBH002-07-SS-3	6/16/2009	Arsenic	7.95	J+	0.360	1.44	9.1	na	na	0.39
0906-MBH002-07-SS-1	6/16/2009	Boron	4.12		1.89	3.77				
0906-MBH002-07-SS-2	6/16/2009	Boron	8.57		1.84	3.68				
0906-MBH002-07-SS-3	6/16/2009	Boron	8.69		1.79	3.59	37	na	na	16000
0906-MBH002-07-SS-1	6/16/2009	Cadmium	0.818	J+	0.124	0.496				
0906-MBH002-07-SS-2	6/16/2009	Cadmium	0.983	J+	0.124	0.497				
0906-MBH002-07-SS-3	6/16/2009	Cadmium	1.08	J+	0.120	0.480	14	na	na	70
0906-MBH002-07-SS-1	6/16/2009	Chromium	22.5		0.496	1.98				
0906-MBH002-07-SS-2	6/16/2009	Chromium	23.4		0.497	1.99				
0906-MBH002-07-SS-3	6/16/2009	Chromium	19.2		0.480	1.92	10	na	na	120000
0906-MBH002-07-SS-1	6/16/2009	Chromium VI	0.479	UJ	0.479	0.959				
0906-MBH002-07-SS-2	6/16/2009	Chromium VI	0.246	UJ	0.246	0.491				
0906-MBH002-07-SS-3	6/16/2009	Chromium VI	0.498	UJ	0.498	0.995	na	na	na	na
0906-MBH002-07-SS-1	6/16/2009	Cobalt	12.1		0.620	2.48				
0906-MBH002-07-SS-2	6/16/2009	Cobalt	11.2		0.621	2.49				
0906-MBH002-07-SS-3	6/16/2009	Cobalt	11.3		0.600	2.40	4.3	na	na	23
0906-MBH002-07-SS-1	6/16/2009	Copper, total	24.9		0.744	2.98				
0906-MBH002-07-SS-2	6/16/2009	Copper, total	24.6		0.746	2.98				
0906-MBH002-07-SS-3	6/16/2009	Copper, total	23.5		0.720	2.88	3.0	na	na	3100
0906-MBH002-07-SS-1	6/16/2009	Manganese	2600	J	0.377	1.89				
0906-MBH002-07-SS-2	6/16/2009	Manganese	2600	J	0.368	1.84				
0906-MBH002-07-SS-3	6/16/2009	Manganese	2700	J	0.359	1.79	2.2	na	na	1800
0906-MBH002-07-SS-1	6/16/2009	Mercury	0.0217	J	0.00992	0.248				
0906-MBH002-07-SS-2	6/16/2009	Mercury	0.024	J	0.00994	0.249				
0906-MBH002-07-SS-3	6/16/2009	Mercury	0.0262	J	0.00960	0.240	9.4	na	na	5.6
0906-MBH002-07-SS-1	6/16/2009	Molybdenum	1.13	U	1.13	2.26				
0906-MBH002-07-SS-2	6/16/2009	Molybdenum	1.1	U	1.10	2.21				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
(Page 4 of 58)

Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MBH002-07-SS-3	6/16/2009	Molybdenum	1.08	U	1.08	2.15	na	na	na	390
0906-MBH002-07-SS-1	6/16/2009	Nickel	27.1		0.992	3.97				
0906-MBH002-07-SS-2	6/16/2009	Nickel	25.9		0.994	3.98				
0906-MBH002-07-SS-3	6/16/2009	Nickel	24.2		0.960	3.84	5.7	na	na	1500
0906-MBH002-07-SS-1	6/16/2009	Selenium	0.745	J+	0.496	0.992				
0906-MBH002-07-SS-2	6/16/2009	Selenium	0.666	J+	0.497	0.994				
0906-MBH002-07-SS-3	6/16/2009	Selenium	0.741	J+	0.480	0.960	6.2	na	na	390
0906-MBH002-07-SS-1	6/16/2009	Silver	0.248	U	0.248	0.992				
0906-MBH002-07-SS-2	6/16/2009	Silver	0.249	U	0.249	0.994				
0906-MBH002-07-SS-3	6/16/2009	Silver	0.24	U	0.240	0.960	na	na	na	390
0906-MBH002-07-SS-1	6/16/2009	Thallium	0.161		0.0496	0.0992				
0906-MBH002-07-SS-2	6/16/2009	Thallium	0.177		0.0497	0.0994				
0906-MBH002-07-SS-3	6/16/2009	Thallium	0.15		0.0480	0.0960	8.3	na	na	5
0906-MBH002-07-SS-1	6/16/2009	Uranium	0.689	J	0.496	1.98				
0906-MBH002-07-SS-2	6/16/2009	Uranium	0.564	J	0.497	1.99				
0906-MBH002-07-SS-3	6/16/2009	Uranium	0.48	U	0.480	1.92	na	na	0.125	230
0906-MBH002-07-SS-1	6/16/2009	Vanadium	27.1		0.620	2.48				
0906-MBH002-07-SS-2	6/16/2009	Vanadium	28.1		0.621	2.49				
0906-MBH002-07-SS-3	6/16/2009	Vanadium	23.7		0.600	2.40	8.8	na	na	390
0906-MBH002-07-SS-1	6/16/2009	Zinc	79.7		1.89	3.77				
0906-MBH002-07-SS-2	6/16/2009	Zinc	78.1		1.84	3.68				
0906-MBH002-07-SS-3	6/16/2009	Zinc	78.6		1.79	3.59	1.0	na	na	23000
0906-MHR001-07-SS-1	7/8/2009	Antimony	7.27		1.68	3.37				
0906-MHR001-07-SS-2	7/8/2009	Antimony	7.24		1.73	3.46				
0906-MHR001-07-SS-3	7/8/2009	Antimony	6.68		1.73	3.46	4.7	na	na	31
0906-MHR001-07-SS-1	7/8/2009	Arsenic	18.4	J	0.361	1.44				
0906-MHR001-07-SS-2	7/8/2009	Arsenic	17.9	J	0.354	1.42				
0906-MHR001-07-SS-3	7/8/2009	Arsenic	16.2	J	0.370	1.48	6.6	na	na	0.39
0906-MHR001-07-SS-1	7/8/2009	Boron	15.2	J	8.42	16.8				
0906-MHR001-07-SS-2	7/8/2009	Boron	17.6		8.64	17.3				
0906-MHR001-07-SS-3	7/8/2009	Boron	22.8		8.64	17.3	21	na	na	16000
0906-MHR001-07-SS-1	7/8/2009	Cadmium	42.6	J+	0.120	0.481				
0906-MHR001-07-SS-2	7/8/2009	Cadmium	43	J+	0.118	0.473				
0906-MHR001-07-SS-3	7/8/2009	Cadmium	45.2	J+	0.123	0.493	3.2	na	na	70
0906-MHR001-07-SS-1	7/8/2009	Chromium	321		4.81	19.2				
0906-MHR001-07-SS-2	7/8/2009	Chromium	322		4.73	18.9				
0906-MHR001-07-SS-3	7/8/2009	Chromium	224		4.93	19.7	19	na	na	120000
0906-MHR001-07-SS-1	7/8/2009	Chromium VI	0.496	U	0.496	0.992				
0906-MHR001-07-SS-2	7/8/2009	Chromium VI	0.5	U	0.500	0.999				
0906-MHR001-07-SS-3	7/8/2009	Chromium VI	0.248	U	0.248	0.497	na	na	na	na
0906-MHR001-07-SS-1	7/8/2009	Cobalt	7.16		0.601	2.40				
0906-MHR001-07-SS-2	7/8/2009	Cobalt	5.77		0.591	2.36				
0906-MHR001-07-SS-3	7/8/2009	Cobalt	6.04		0.616	2.47	12	na	na	23
0906-MHR001-07-SS-1	7/8/2009	Copper, total	74.2		0.721	2.88				
0906-MHR001-07-SS-2	7/8/2009	Copper, total	76.1		0.709	2.84				
0906-MHR001-07-SS-3	7/8/2009	Copper, total	68.5		0.740	2.96	5.4	na	na	3100
0906-MHR001-07-SS-1	7/8/2009	Manganese	252	J	0.337	1.68				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MHR001-07-SS-2	7/8/2009	Manganese	361	J	0.346	1.73				
0906-MHR001-07-SS-3	7/8/2009	Manganese	385	J	0.346	1.73	21	na	na	1800
0906-MHR001-07-SS-1	7/8/2009	Mercury	0.323	J+	0.00962	0.240				
0906-MHR001-07-SS-2	7/8/2009	Mercury	0.362	J+	0.00945	0.236				
0906-MHR001-07-SS-3	7/8/2009	Mercury	0.298	J+	0.00986	0.247	10	na	na	5.6
0906-MHR001-07-SS-1	7/8/2009	Molybdenum	14.8		5.05	10.1				
0906-MHR001-07-SS-2	7/8/2009	Molybdenum	16.7		5.19	10.4				
0906-MHR001-07-SS-3	7/8/2009	Molybdenum	17		5.19	10.4	7.4	na	na	390
0906-MHR001-07-SS-1	7/8/2009	Nickel	198		9.62	38.5				
0906-MHR001-07-SS-2	7/8/2009	Nickel	201		9.45	37.8				
0906-MHR001-07-SS-3	7/8/2009	Nickel	193		0.986	3.94	2.0	na	na	1500
0906-MHR001-07-SS-1	7/8/2009	Selenium	25.9	J	0.481	0.962				
0906-MHR001-07-SS-2	7/8/2009	Selenium	26.7	J	0.473	0.945				
0906-MHR001-07-SS-3	7/8/2009	Selenium	22	J	0.493	0.986	10	na	na	390
0906-MHR001-07-SS-1	7/8/2009	Silver	4.13		0.240	0.962				
0906-MHR001-07-SS-2	7/8/2009	Silver	4.15		0.236	0.945				
0906-MHR001-07-SS-3	7/8/2009	Silver	3.81		0.247	0.986	4.7	na	na	390
0906-MHR001-07-SS-1	7/8/2009	Thallium	1.06		0.0481	0.0962				
0906-MHR001-07-SS-2	7/8/2009	Thallium	1.02		0.0473	0.0945				
0906-MHR001-07-SS-3	7/8/2009	Thallium	1.1		0.0493	0.0986	3.8	na	na	5
0906-MHR001-07-SS-1	7/8/2009	Uranium	45.8	J+	0.481	1.92				
0906-MHR001-07-SS-2	7/8/2009	Uranium	41.9	J+	0.473	1.89				
0906-MHR001-07-SS-3	7/8/2009	Uranium	38.4	J+	0.493	1.97	8.8	na	na	230
0906-MHR001-07-SS-1	7/8/2009	Vanadium	292		6.01	24.0				
0906-MHR001-07-SS-2	7/8/2009	Vanadium	273		5.91	23.6				
0906-MHR001-07-SS-3	7/8/2009	Vanadium	234		6.16	24.7	11	na	na	390
0906-MHR001-07-SS-1	7/8/2009	Zinc	815		1.68	3.37				
0906-MHR001-07-SS-2	7/8/2009	Zinc	892		1.73	3.46				
0906-MHR001-07-SS-3	7/8/2009	Zinc	962		1.73	3.46	8.3	na	na	23000
0906-MHR002-07-SS-1	6/18/2009	Antimony	9.68		1.79	3.57				
0906-MHR002-07-SS-2	6/18/2009	Antimony	2.1		0.352	0.703				
0906-MHR002-07-SS-3	6/18/2009	Antimony	1.06		0.377	0.754	110	na	na	31
0906-MHR002-07-SS-1	6/18/2009	Arsenic	19.2		0.359	1.43				
0906-MHR002-07-SS-2	6/18/2009	Arsenic	15.4		0.353	1.41				
0906-MHR002-07-SS-3	6/18/2009	Arsenic	7.3		0.363	1.45	44	na	na	0.39
0906-MHR002-07-SS-1	6/18/2009	Boron	30.2	J-	8.93	17.9				
0906-MHR002-07-SS-2	6/18/2009	Boron	9.97	J-	1.76	3.52				
0906-MHR002-07-SS-3	6/18/2009	Boron	10.7	J-	3.77	7.54	68	na	na	16000
0906-MHR002-07-SS-1	6/18/2009	Cadmium	114		0.120	0.478				
0906-MHR002-07-SS-2	6/18/2009	Cadmium	54		0.118	0.471				
0906-MHR002-07-SS-3	6/18/2009	Cadmium	10.4		0.121	0.484	87	na	na	70
0906-MHR002-07-SS-1	6/18/2009	Chromium	627	J-	4.78	19.1				
0906-MHR002-07-SS-2	6/18/2009	Chromium	134	J-	4.71	18.8				
0906-MHR002-07-SS-3	6/18/2009	Chromium	42.6	J-	0.484	1.94	117	na	na	120000
0906-MHR002-07-SS-1	6/18/2009	Chromium VI	0.243	U	0.243	0.485				
0906-MHR002-07-SS-2	6/18/2009	Chromium VI	0.498	U	0.498	0.996				
0906-MHR002-07-SS-3	6/18/2009	Chromium VI	0.496	U	0.496	0.991	na	na	na	na

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SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MHR002-07-SS-1	6/18/2009	Cobalt	3.05		0.598	2.39				
0906-MHR002-07-SS-2	6/18/2009	Cobalt	9.37		0.589	2.35				
0906-MHR002-07-SS-3	6/18/2009	Cobalt	6.49		0.606	2.42	50	na	na	23
0906-MHR002-07-SS-1	6/18/2009	Copper, total	92		0.717	2.87				
0906-MHR002-07-SS-2	6/18/2009	Copper, total	57		0.706	2.82				
0906-MHR002-07-SS-3	6/18/2009	Copper, total	20.7		0.727	2.91	63	na	na	3100
0906-MHR002-07-SS-1	6/18/2009	Manganese	140		0.357	1.79				
0906-MHR002-07-SS-2	6/18/2009	Manganese	808		0.0703	0.352				
0906-MHR002-07-SS-3	6/18/2009	Manganese	481		0.377	1.89	70	na	na	1800
0906-MHR002-07-SS-1	6/18/2009	Mercury	0.259		0.00956	0.239				
0906-MHR002-07-SS-2	6/18/2009	Mercury	0.0726	J	0.00942	0.235				
0906-MHR002-07-SS-3	6/18/2009	Mercury	0.0516	J	0.00969	0.242	89	na	na	5.6
0906-MHR002-07-SS-1	6/18/2009	Molybdenum	9.19	J	5.36	10.7				
0906-MHR002-07-SS-2	6/18/2009	Molybdenum	3.03		1.05	2.11				
0906-MHR002-07-SS-3	6/18/2009	Molybdenum	3.05		1.13	2.26	70	na	na	390
0906-MHR002-07-SS-1	6/18/2009	Nickel	124	J-	0.956	3.82				
0906-MHR002-07-SS-2	6/18/2009	Nickel	145	J-	9.42	37.7				
0906-MHR002-07-SS-3	6/18/2009	Nickel	50.3	J-	0.969	3.88	47	na	na	1500
0906-MHR002-07-SS-1	6/18/2009	Selenium	16.6		0.478	0.956				
0906-MHR002-07-SS-2	6/18/2009	Selenium	10.5		0.471	0.942				
0906-MHR002-07-SS-3	6/18/2009	Selenium	2.94		0.484	0.969	68	na	na	390
0906-MHR002-07-SS-1	6/18/2009	Silver	4.4		0.239	0.956				
0906-MHR002-07-SS-2	6/18/2009	Silver	2.22		0.235	0.942				
0906-MHR002-07-SS-3	6/18/2009	Silver	0.634	J	0.242	0.969	78	na	na	390
0906-MHR002-07-SS-1	6/18/2009	Thallium	3.64		0.0478	0.0956				
0906-MHR002-07-SS-2	6/18/2009	Thallium	2.48		0.0471	0.0942				
0906-MHR002-07-SS-3	6/18/2009	Thallium	0.531		0.0484	0.0969	71	na	na	5
0906-MHR002-07-SS-1	6/18/2009	Uranium	151		0.478	1.91				
0906-MHR002-07-SS-2	6/18/2009	Uranium	59.5		0.471	1.88				
0906-MHR002-07-SS-3	6/18/2009	Uranium	12.7		0.484	1.94	95	na	na	230
0906-MHR002-07-SS-1	6/18/2009	Vanadium	1370		5.98	23.9				
0906-MHR002-07-SS-2	6/18/2009	Vanadium	240		5.89	23.5				
0906-MHR002-07-SS-3	6/18/2009	Vanadium	58.6		0.606	2.42	128	na	na	390
0906-MHR002-07-SS-1	6/18/2009	Zinc	910	J	1.79	3.57				
0906-MHR002-07-SS-2	6/18/2009	Zinc	422	J	0.352	0.703				
0906-MHR002-07-SS-3	6/18/2009	Zinc	216	J	0.377	0.754	69	na	na	23000
0906-MMP035-07-SS-1	7/9/2009	Antimony	9.43	J+	1.78	3.56				
0906-MMP035-07-SS-2	7/9/2009	Antimony	9.23	J+	1.92	3.84				
0906-MMP035-07-SS-3	7/9/2009	Antimony	7.84	J+	1.90	3.80	10	na	na	31
0906-MMP035-07-SS-1	7/9/2009	Arsenic	30.7		0.367	1.47				
0906-MMP035-07-SS-2	7/9/2009	Arsenic	31.1		0.371	1.49				
0906-MMP035-07-SS-3	7/9/2009	Arsenic	27.4		0.358	1.43	6.8	na	na	0.39
0906-MMP035-07-SS-1	7/9/2009	Boron	12.7	J-	8.90	17.8				
0906-MMP035-07-SS-2	7/9/2009	Boron	15.7	J-	9.61	19.2				
0906-MMP035-07-SS-3	7/9/2009	Boron	18.6	J-	9.49	19.0	19	na	na	16000
0906-MMP035-07-SS-1	7/9/2009	Cadmium	25.8		0.122	0.489				
0906-MMP035-07-SS-2	7/9/2009	Cadmium	24.4		0.124	0.495				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MMP035-07-SS-3	7/9/2009	Cadmium	26.2		0.119	0.477	3.7	na	na	70
0906-MMP035-07-SS-1	7/9/2009	Chromium	310		4.89	19.6				
0906-MMP035-07-SS-2	7/9/2009	Chromium	365		4.95	19.8				
0906-MMP035-07-SS-3	7/9/2009	Chromium	325		4.77	19.1	8.5	na	na	120000
0906-MMP035-07-SS-1	7/9/2009	Chromium VI	0.244	U	0.244	0.488				
0906-MMP035-07-SS-2	7/9/2009	Chromium VI	0.242	U	0.242	0.484				
0906-MMP035-07-SS-3	7/9/2009	Chromium VI	0.0974	U	0.0974	0.195	na	na	na	na
0906-MMP035-07-SS-1	7/9/2009	Cobalt	6.9		0.612	2.45				
0906-MMP035-07-SS-2	7/9/2009	Cobalt	6.13		0.619	2.48				
0906-MMP035-07-SS-3	7/9/2009	Cobalt	7.06		0.596	2.39	7.4	na	na	23
0906-MMP035-07-SS-1	7/9/2009	Copper, total	101		0.734	2.94				
0906-MMP035-07-SS-2	7/9/2009	Copper, total	91.6		0.743	2.97				
0906-MMP035-07-SS-3	7/9/2009	Copper, total	98.4		0.716	2.86	5.0	na	na	3100
0906-MMP035-07-SS-1	7/9/2009	Manganese	212		0.356	1.78				
0906-MMP035-07-SS-2	7/9/2009	Manganese	244		0.384	1.92				
0906-MMP035-07-SS-3	7/9/2009	Manganese	290		0.380	1.90	16	na	na	1800
0906-MMP035-07-SS-1	7/9/2009	Mercury	0.394		0.00978	0.245				
0906-MMP035-07-SS-2	7/9/2009	Mercury	0.375		0.00990	0.248				
0906-MMP035-07-SS-3	7/9/2009	Mercury	0.338		0.00954	0.239	7.7	na	na	5.6
0906-MMP035-07-SS-1	7/9/2009	Molybdenum	28.8		5.34	10.7				
0906-MMP035-07-SS-2	7/9/2009	Molybdenum	27.1		5.76	11.5				
0906-MMP035-07-SS-3	7/9/2009	Molybdenum	23.8		5.69	11.4	10	na	na	390
0906-MMP035-07-SS-1	7/9/2009	Nickel	323	J-	9.78	39.1				
0906-MMP035-07-SS-2	7/9/2009	Nickel	309	J-	9.90	39.6				
0906-MMP035-07-SS-3	7/9/2009	Nickel	276	J-	9.54	38.2	8.0	na	na	1500
0906-MMP035-07-SS-1	7/9/2009	Selenium	152	J-	0.489	0.978				
0906-MMP035-07-SS-2	7/9/2009	Selenium	109	J-	0.495	0.990				
0906-MMP035-07-SS-3	7/9/2009	Selenium	130	J-	0.477	0.954	16	na	na	390
0906-MMP035-07-SS-1	7/9/2009	Silver	5.29		0.245	0.978				
0906-MMP035-07-SS-2	7/9/2009	Silver	6.05		0.248	0.990				
0906-MMP035-07-SS-3	7/9/2009	Silver	6.53		0.239	0.954	10	na	na	390
0906-MMP035-07-SS-1	7/9/2009	Thallium	0.763		0.0489	0.0978				
0906-MMP035-07-SS-2	7/9/2009	Thallium	0.846		0.0495	0.0990				
0906-MMP035-07-SS-3	7/9/2009	Thallium	0.971		0.0477	0.0954	12	na	na	5
0906-MMP035-07-SS-1	7/9/2009	Uranium	31.5		0.489	1.96				
0906-MMP035-07-SS-2	7/9/2009	Uranium	29.3		0.495	1.98				
0906-MMP035-07-SS-3	7/9/2009	Uranium	31.3		0.477	1.91	4.0	na	na	230
0906-MMP035-07-SS-1	7/9/2009	Vanadium	189	J+	0.612	2.45				
0906-MMP035-07-SS-2	7/9/2009	Vanadium	218	J+	6.19	24.8				
0906-MMP035-07-SS-3	7/9/2009	Vanadium	222	J+	5.96	23.9	8.6	na	na	390
0906-MMP035-07-SS-1	7/9/2009	Zinc	1310		1.78	3.56				
0906-MMP035-07-SS-2	7/9/2009	Zinc	1290		1.92	3.84				
0906-MMP035-07-SS-3	7/9/2009	Zinc	1040		1.90	3.80	12	na	na	23000
0906-MMP036-07-SS-1	6/22/2009	Antimony	2.79	J	1.75	3.50				
0906-MMP036-07-SS-2	6/22/2009	Antimony	1.23		0.364	0.728				
0906-MMP036-07-SS-3	6/22/2009	Antimony	1.85		0.373	0.746	40	na	na	31
0906-MMP036-07-SS-1	6/22/2009	Arsenic	21.7		0.371	1.49				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MMP036-07-SS-2	6/22/2009	Arsenic	19.3		0.0735	0.294				
0906-MMP036-07-SS-3	6/22/2009	Arsenic	16.2		0.0724	0.290	14	na	na	0.39
0906-MMP036-07-SS-1	6/22/2009	Boron	60.9		8.75	17.5				
0906-MMP036-07-SS-2	6/22/2009	Boron	10.5		1.82	3.64				
0906-MMP036-07-SS-3	6/22/2009	Boron	18.5		1.86	3.73	90	na	na	16000
0906-MMP036-07-SS-1	6/22/2009	Cadmium	82.9		0.124	0.495				
0906-MMP036-07-SS-2	6/22/2009	Cadmium	22.9		0.0245	0.0980				
0906-MMP036-07-SS-3	6/22/2009	Cadmium	30.7		0.0241	0.0965	72	na	na	70
0906-MMP036-07-SS-1	6/22/2009	Chromium	188		0.495	1.98				
0906-MMP036-07-SS-2	6/22/2009	Chromium	117		0.980	3.92				
0906-MMP036-07-SS-3	6/22/2009	Chromium	154		0.965	3.86	23	na	na	120000
0906-MMP036-07-SS-1	6/22/2009	Chromium VI	0.497	UJ	0.497	0.994				
0906-MMP036-07-SS-2	6/22/2009	Chromium VI	0.494	UJ	0.494	0.988				
0906-MMP036-07-SS-3	6/22/2009	Chromium VI	0.498	UJ	0.498	0.996	na	na	na	na
0906-MMP036-07-SS-1	6/22/2009	Cobalt	6.37		0.619	2.48				
0906-MMP036-07-SS-2	6/22/2009	Cobalt	5.06		0.123	0.490				
0906-MMP036-07-SS-3	6/22/2009	Cobalt	9.54		0.121	0.483	33	na	na	23
0906-MMP036-07-SS-1	6/22/2009	Copper, total	70.6		0.743	2.97				
0906-MMP036-07-SS-2	6/22/2009	Copper, total	58.6		1.47	5.88				
0906-MMP036-07-SS-3	6/22/2009	Copper, total	63.1		1.45	5.79	9.5	na	na	3100
0906-MMP036-07-SS-1	6/22/2009	Manganese	392		0.350	1.75				
0906-MMP036-07-SS-2	6/22/2009	Manganese	162		0.0728	0.364				
0906-MMP036-07-SS-3	6/22/2009	Manganese	227		0.0746	0.373	46	na	na	1800
0906-MMP036-07-SS-1	6/22/2009	Mercury	0.248	J	0.00990	0.248				
0906-MMP036-07-SS-2	6/22/2009	Mercury	0.245	J	0.00980	0.245				
0906-MMP036-07-SS-3	6/22/2009	Mercury	0.276	J	0.00965	0.241	6.7	na	na	5.6
0906-MMP036-07-SS-1	6/22/2009	Molybdenum	19.1		5.25	10.5				
0906-MMP036-07-SS-2	6/22/2009	Molybdenum	11.9		1.09	2.18				
0906-MMP036-07-SS-3	6/22/2009	Molybdenum	14.3		1.12	2.24	24	na	na	390
0906-MMP036-07-SS-1	6/22/2009	Nickel	174		0.990	3.96				
0906-MMP036-07-SS-2	6/22/2009	Nickel	139		1.96	7.84				
0906-MMP036-07-SS-3	6/22/2009	Nickel	176		1.93	7.72	13	na	na	1500
0906-MMP036-07-SS-1	6/22/2009	Selenium	13.3	J	0.495	0.990				
0906-MMP036-07-SS-2	6/22/2009	Selenium	21	J	0.0980	0.196				
0906-MMP036-07-SS-3	6/22/2009	Selenium	10.6	J	0.0965	0.193	36	na	na	390
0906-MMP036-07-SS-1	6/22/2009	Silver	4.54		0.248	0.990				
0906-MMP036-07-SS-2	6/22/2009	Silver	1.47		0.0490	0.196				
0906-MMP036-07-SS-3	6/22/2009	Silver	2.03		0.0483	0.193	61	na	na	390
0906-MMP036-07-SS-1	6/22/2009	Thallium	0.807		0.0495	0.0990				
0906-MMP036-07-SS-2	6/22/2009	Thallium	1.34		0.00980	0.0196				
0906-MMP036-07-SS-3	6/22/2009	Thallium	1		0.00965	0.0193	26	na	na	5
0906-MMP036-07-SS-1	6/22/2009	Uranium	36.6		0.495	1.98				
0906-MMP036-07-SS-2	6/22/2009	Uranium	20.8		0.0980	0.392				
0906-MMP036-07-SS-3	6/22/2009	Uranium	31.6		0.0965	0.386	27	na	na	230
0906-MMP036-07-SS-1	6/22/2009	Vanadium	160		0.619	2.48				
0906-MMP036-07-SS-2	6/22/2009	Vanadium	127		1.23	4.90				
0906-MMP036-07-SS-3	6/22/2009	Vanadium	161		1.21	4.83	13	na	na	390

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MMP036-07-SS-1	6/22/2009	Zinc	806		1.75	3.50				
0906-MMP036-07-SS-2	6/22/2009	Zinc	569		0.364	0.728				
0906-MMP036-07-SS-3	6/22/2009	Zinc	615		0.373	0.746	19	na	na	23000
0906-MWD080-07-SS-1	6/23/2009	Antimony	5.26		1.88	3.77				
0906-MWD080-07-SS-2	6/23/2009	Antimony	4.07		1.89	3.78				
0906-MWD080-07-SS-3	6/23/2009	Antimony	6.07		1.89	3.79	20	na	na	31
0906-MWD080-07-SS-1	6/23/2009	Arsenic	27.6		0.361	1.45				
0906-MWD080-07-SS-2	6/23/2009	Arsenic	22.2		0.365	1.46				
0906-MWD080-07-SS-3	6/23/2009	Arsenic	25.2		0.371	1.48	11	na	na	0.39
0906-MWD080-07-SS-1	6/23/2009	Boron	15.6	J+	9.42	18.8				
0906-MWD080-07-SS-2	6/23/2009	Boron	17.4	J+	9.44	18.9				
0906-MWD080-07-SS-3	6/23/2009	Boron	15.1	J+	9.47	18.9	7.5	na	na	16000
0906-MWD080-07-SS-1	6/23/2009	Cadmium	36.1	J+	0.120	0.482				
0906-MWD080-07-SS-2	6/23/2009	Cadmium	26.6	J+	0.122	0.487				
0906-MWD080-07-SS-3	6/23/2009	Cadmium	28	J+	0.124	0.494	17	na	na	70
0906-MWD080-07-SS-1	6/23/2009	Chromium	303		4.82	19.3				
0906-MWD080-07-SS-2	6/23/2009	Chromium	219		4.87	19.5				
0906-MWD080-07-SS-3	6/23/2009	Chromium	258		4.94	19.8	16	na	na	120000
0906-MWD080-07-SS-1	6/23/2009	Chromium VI	0.495	U	0.495	0.990				
0906-MWD080-07-SS-2	6/23/2009	Chromium VI	0.248	U	0.248	0.496				
0906-MWD080-07-SS-3	6/23/2009	Chromium VI	0.495	U	0.495	0.990	na	na	na	na
0906-MWD080-07-SS-1	6/23/2009	Cobalt	7.51		0.602	2.41				
0906-MWD080-07-SS-2	6/23/2009	Cobalt	7.09		0.609	2.44				
0906-MWD080-07-SS-3	6/23/2009	Cobalt	7.12		0.618	2.47	3.2	na	na	23
0906-MWD080-07-SS-1	6/23/2009	Copper, total	125		0.723	2.89				
0906-MWD080-07-SS-2	6/23/2009	Copper, total	86.1		0.731	2.92				
0906-MWD080-07-SS-3	6/23/2009	Copper, total	99.9		0.741	2.96	19	na	na	3100
0906-MWD080-07-SS-1	6/23/2009	Manganese	245	J	0.377	1.88				
0906-MWD080-07-SS-2	6/23/2009	Manganese	296	J	0.378	1.89				
0906-MWD080-07-SS-3	6/23/2009	Manganese	314	J	0.379	1.89	13	na	na	1800
0906-MWD080-07-SS-1	6/23/2009	Mercury	0.483		0.00963	0.241				
0906-MWD080-07-SS-2	6/23/2009	Mercury	0.342		0.00975	0.244				
0906-MWD080-07-SS-3	6/23/2009	Mercury	0.364		0.00988	0.247	19	na	na	5.6
0906-MWD080-07-SS-1	6/23/2009	Molybdenum	23		5.65	11.3				
0906-MWD080-07-SS-2	6/23/2009	Molybdenum	20.7		5.66	11.3				
0906-MWD080-07-SS-3	6/23/2009	Molybdenum	23.6		5.68	11.4	6.8	na	na	390
0906-MWD080-07-SS-1	6/23/2009	Nickel	243		9.63	38.5				
0906-MWD080-07-SS-2	6/23/2009	Nickel	210		9.75	39.0				
0906-MWD080-07-SS-3	6/23/2009	Nickel	231		9.88	39.5	7.3	na	na	1500
0906-MWD080-07-SS-1	6/23/2009	Selenium	115		0.482	0.963				
0906-MWD080-07-SS-2	6/23/2009	Selenium	70.2		0.487	0.975				
0906-MWD080-07-SS-3	6/23/2009	Selenium	70.6		0.494	0.988	30	na	na	390
0906-MWD080-07-SS-1	6/23/2009	Silver	5.58	J-	0.241	0.963				
0906-MWD080-07-SS-2	6/23/2009	Silver	3.56	J-	0.244	0.975				
0906-MWD080-07-SS-3	6/23/2009	Silver	4.56	J-	0.247	0.988	22	na	na	390
0906-MWD080-07-SS-1	6/23/2009	Thallium	1.31		0.0482	0.0963				
0906-MWD080-07-SS-2	6/23/2009	Thallium	1.12		0.0487	0.0975				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MWD080-07-SS-3	6/23/2009	Thallium	1.16		0.0494	0.0988	8.4	na	na	5
0906-MWD080-07-SS-1	6/23/2009	Uranium	31.7	J-	0.482	1.93				
0906-MWD080-07-SS-2	6/23/2009	Uranium	25.4	J-	0.487	1.95				
0906-MWD080-07-SS-3	6/23/2009	Uranium	31.5	J-	0.494	1.98	12	na	na	230
0906-MWD080-07-SS-1	6/23/2009	Vanadium	173		6.02	24.1				
0906-MWD080-07-SS-2	6/23/2009	Vanadium	145		0.609	2.44				
0906-MWD080-07-SS-3	6/23/2009	Vanadium	155		0.618	2.47	9.0	na	na	390
0906-MWD080-07-SS-1	6/23/2009	Zinc	1010		1.88	3.77				
0906-MWD080-07-SS-2	6/23/2009	Zinc	919		1.89	3.78				
0906-MWD080-07-SS-3	6/23/2009	Zinc	950		1.89	3.79	4.8	na	na	23000
0906-MWD081-AL03-SS-1	6/23/2009	Antimony	5.24		1.71	3.42				
0906-MWD081-AL03-SS-2	6/23/2009	Antimony	4.58		1.88	3.76				
0906-MWD081-AL03-SS-3	6/23/2009	Antimony	4.37		1.72	3.45	10	na	na	31
0906-MWD081-AL03-SS-1	6/23/2009	Arsenic	19.7		0.368	1.47				
0906-MWD081-AL03-SS-2	6/23/2009	Arsenic	24.6		0.371	1.49				
0906-MWD081-AL03-SS-3	6/23/2009	Arsenic	21.3		0.371	1.48	11	na	na	0.39
0906-MWD081-AL03-SS-1	6/23/2009	Boron	25.7		8.55	17.1				
0906-MWD081-AL03-SS-2	6/23/2009	Boron	20		9.39	18.8				
0906-MWD081-AL03-SS-3	6/23/2009	Boron	22.3		8.62	17.2	13	na	na	16000
0906-MWD081-AL03-SS-1	6/23/2009	Cadmium	72.3	J+	0.123	0.491				
0906-MWD081-AL03-SS-2	6/23/2009	Cadmium	84.6	J+	0.124	0.495				
0906-MWD081-AL03-SS-3	6/23/2009	Cadmium	71.4	J+	0.124	0.494	10	na	na	70
0906-MWD081-AL03-SS-1	6/23/2009	Chromium	433		4.91	19.6				
0906-MWD081-AL03-SS-2	6/23/2009	Chromium	346		4.95	19.8				
0906-MWD081-AL03-SS-3	6/23/2009	Chromium	439		4.94	19.8	13	na	na	120000
0906-MWD081-AL03-SS-1	6/23/2009	Chromium VI	0.492	U	0.492	0.984				
0906-MWD081-AL03-SS-2	6/23/2009	Chromium VI	0.497	U	0.497	0.993				
0906-MWD081-AL03-SS-3	6/23/2009	Chromium VI	0.486	UJ	0.486	0.973	na	na	na	na
0906-MWD081-AL03-SS-1	6/23/2009	Cobalt	4.57		0.614	2.46				
0906-MWD081-AL03-SS-2	6/23/2009	Cobalt	5.78		0.619	2.48				
0906-MWD081-AL03-SS-3	6/23/2009	Cobalt	4.17		0.618	2.47	17	na	na	23
0906-MWD081-AL03-SS-1	6/23/2009	Copper, total	81.7		0.737	2.95				
0906-MWD081-AL03-SS-2	6/23/2009	Copper, total	97.3		0.743	2.97				
0906-MWD081-AL03-SS-3	6/23/2009	Copper, total	80.7		0.741	2.96	11	na	na	3100
0906-MWD081-AL03-SS-1	6/23/2009	Manganese	112		0.342	1.71				
0906-MWD081-AL03-SS-2	6/23/2009	Manganese	113		0.376	1.88				
0906-MWD081-AL03-SS-3	6/23/2009	Manganese	122		0.345	1.72	4.8	na	na	1800
0906-MWD081-AL03-SS-1	6/23/2009	Mercury	0.344		0.00982	0.246				
0906-MWD081-AL03-SS-2	6/23/2009	Mercury	0.358		0.00990	0.248				
0906-MWD081-AL03-SS-3	6/23/2009	Mercury	0.37		0.00988	0.247	3.6	na	na	5.6
0906-MWD081-AL03-SS-1	6/23/2009	Molybdenum	24.2		5.13	10.3				
0906-MWD081-AL03-SS-2	6/23/2009	Molybdenum	29.1		5.63	11.3				
0906-MWD081-AL03-SS-3	6/23/2009	Molybdenum	28		5.17	10.3	9.5	na	na	390
0906-MWD081-AL03-SS-1	6/23/2009	Nickel	177		9.82	39.3				
0906-MWD081-AL03-SS-2	6/23/2009	Nickel	167		9.90	39.6				
0906-MWD081-AL03-SS-3	6/23/2009	Nickel	188		9.88	39.5	5.9	na	na	1500
0906-MWD081-AL03-SS-1	6/23/2009	Selenium	35.7		0.491	0.982				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MWD081-AL03-SS-2	6/23/2009	Selenium	41.2		0.495	0.990				
0906-MWD081-AL03-SS-3	6/23/2009	Selenium	37.6		0.494	0.988	7.3	na	na	390
0906-MWD081-AL03-SS-1	6/23/2009	Silver	4.89	J-	0.246	0.982				
0906-MWD081-AL03-SS-2	6/23/2009	Silver	8.83	J-	0.248	0.990				
0906-MWD081-AL03-SS-3	6/23/2009	Silver	8.37	J-	0.247	0.988	29	na	na	390
0906-MWD081-AL03-SS-1	6/23/2009	Thallium	1.83		0.0491	0.0982				
0906-MWD081-AL03-SS-2	6/23/2009	Thallium	2.11		0.0495	0.0990				
0906-MWD081-AL03-SS-3	6/23/2009	Thallium	1.96		0.0494	0.0988	7.1	na	na	5
0906-MWD081-AL03-SS-1	6/23/2009	Uranium	72.3	J-	0.491	1.96				
0906-MWD081-AL03-SS-2	6/23/2009	Uranium	82	J-	0.495	1.98				
0906-MWD081-AL03-SS-3	6/23/2009	Uranium	70.6	J-	0.494	1.98	8.2	na	na	230
0906-MWD081-AL03-SS-1	6/23/2009	Vanadium	632		6.14	24.6				
0906-MWD081-AL03-SS-2	6/23/2009	Vanadium	555		6.19	24.8				
0906-MWD081-AL03-SS-3	6/23/2009	Vanadium	691		6.18	24.7	11	na	na	390
0906-MWD081-AL03-SS-1	6/23/2009	Zinc	1140		1.71	3.42				
0906-MWD081-AL03-SS-2	6/23/2009	Zinc	1260		1.88	3.76				
0906-MWD081-AL03-SS-3	6/23/2009	Zinc	1250		1.72	3.45	5.5	na	na	23000
0906-MWD082-07-SS-1	7/8/2009	Antimony	1.7		0.384	0.768				
0906-MWD082-07-SS-2	7/8/2009	Antimony	0.59	J	0.372	0.744				
0906-MWD082-07-SS-3	7/8/2009	Antimony	0.925		0.364	0.729	53	na	na	31
0906-MWD082-07-SS-1	7/8/2009	Arsenic	8.36	J	0.0741	0.296				
0906-MWD082-07-SS-2	7/8/2009	Arsenic	8.42	J	0.0743	0.297				
0906-MWD082-07-SS-3	7/8/2009	Arsenic	8.49	J	0.0692	0.277	0.8	na	na	0.39
0906-MWD082-07-SS-1	7/8/2009	Boron	2.98	J	1.92	3.84				
0906-MWD082-07-SS-2	7/8/2009	Boron	1.86	U	1.86	3.72				
0906-MWD082-07-SS-3	7/8/2009	Boron	1.82	U	1.82	3.64	na	na	na	16000
0906-MWD082-07-SS-1	7/8/2009	Cadmium	7.54	J+	0.0247	0.0988				
0906-MWD082-07-SS-2	7/8/2009	Cadmium	3.86	J+	0.0248	0.0990				
0906-MWD082-07-SS-3	7/8/2009	Cadmium	3.59	J+	0.0231	0.0923	44	na	na	70
0906-MWD082-07-SS-1	7/8/2009	Chromium	69.5		0.988	3.95				
0906-MWD082-07-SS-2	7/8/2009	Chromium	62.9		0.990	3.96				
0906-MWD082-07-SS-3	7/8/2009	Chromium	46.2		0.923	3.69	20	na	na	120000
0906-MWD082-07-SS-1	7/8/2009	Chromium VI	0.483	U	0.483	0.966				
0906-MWD082-07-SS-2	7/8/2009	Chromium VI	0.499	U	0.499	0.998				
0906-MWD082-07-SS-3	7/8/2009	Chromium VI	0.498	U	0.498	0.997	na	na	na	na
0906-MWD082-07-SS-1	7/8/2009	Cobalt	6.69		0.124	0.494				
0906-MWD082-07-SS-2	7/8/2009	Cobalt	8.07		0.124	0.495				
0906-MWD082-07-SS-3	7/8/2009	Cobalt	7.06		0.115	0.461	10	na	na	23
0906-MWD082-07-SS-1	7/8/2009	Copper, total	30.4		0.148	0.593				
0906-MWD082-07-SS-2	7/8/2009	Copper, total	30.3		0.149	0.594				
0906-MWD082-07-SS-3	7/8/2009	Copper, total	27.4		0.138	0.554	5.8	na	na	3100
0906-MWD082-07-SS-1	7/8/2009	Manganese	286	J	0.0768	0.384				
0906-MWD082-07-SS-2	7/8/2009	Manganese	273	J	0.0744	0.372				
0906-MWD082-07-SS-3	7/8/2009	Manganese	270	J	0.0729	0.364	3.1	na	na	1800
0906-MWD082-07-SS-1	7/8/2009	Mercury	0.117	J+	0.00988	0.247				
0906-MWD082-07-SS-2	7/8/2009	Mercury	0.11	J+	0.00990	0.248				
0906-MWD082-07-SS-3	7/8/2009	Mercury	0.0941	J+	0.00923	0.231	11	na	na	5.6

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MWD082-07-SS-1	7/8/2009	Molybdenum	7.01		1.15	2.30				
0906-MWD082-07-SS-2	7/8/2009	Molybdenum	4.89		1.12	2.23				
0906-MWD082-07-SS-3	7/8/2009	Molybdenum	8.43		1.09	2.19	26	na	na	390
0906-MWD082-07-SS-1	7/8/2009	Nickel	119		1.98	7.91				
0906-MWD082-07-SS-2	7/8/2009	Nickel	129		1.98	7.92				
0906-MWD082-07-SS-3	7/8/2009	Nickel	117		1.85	7.38	5.3	na	na	1500
0906-MWD082-07-SS-1	7/8/2009	Selenium	6.94	J	0.0988	0.198				
0906-MWD082-07-SS-2	7/8/2009	Selenium	5.48	J	0.0990	0.198				
0906-MWD082-07-SS-3	7/8/2009	Selenium	4.99	J	0.0923	0.185	17	na	na	390
0906-MWD082-07-SS-1	7/8/2009	Silver	0.619		0.0494	0.198				
0906-MWD082-07-SS-2	7/8/2009	Silver	0.277		0.0495	0.198				
0906-MWD082-07-SS-3	7/8/2009	Silver	0.279		0.0461	0.185	50	na	na	390
0906-MWD082-07-SS-1	7/8/2009	Thallium	0.431		0.00988	0.0198				
0906-MWD082-07-SS-2	7/8/2009	Thallium	0.353		0.00990	0.0198				
0906-MWD082-07-SS-3	7/8/2009	Thallium	0.302		0.00923	0.0185	18	na	na	5
0906-MWD082-07-SS-1	7/8/2009	Uranium	10.8	J+	0.0988	0.395				
0906-MWD082-07-SS-2	7/8/2009	Uranium	7.17	J+	0.0990	0.396				
0906-MWD082-07-SS-3	7/8/2009	Uranium	7.3	J+	0.0923	0.369	24	na	na	230
0906-MWD082-07-SS-1	7/8/2009	Vanadium	44.2		1.24	4.94				
0906-MWD082-07-SS-2	7/8/2009	Vanadium	29.4		0.124	0.495				
0906-MWD082-07-SS-3	7/8/2009	Vanadium	28.1		0.115	0.461	26	na	na	390
0906-MWD082-07-SS-1	7/8/2009	Zinc	444		0.384	0.768				
0906-MWD082-07-SS-2	7/8/2009	Zinc	350		0.372	0.744				
0906-MWD082-07-SS-3	7/8/2009	Zinc	388		0.364	0.729	12	na	na	23000
0906-MWD083-07-SS-1	6/18/2009	Antimony	1.24		0.377	0.754				
0906-MWD083-07-SS-2	6/18/2009	Antimony	1.74		0.368	0.735				
0906-MWD083-07-SS-3	6/18/2009	Antimony	1.71		0.375	0.750	18	na	na	31
0906-MWD083-07-SS-1	6/18/2009	Arsenic	10.7		0.359	1.43				
0906-MWD083-07-SS-2	6/18/2009	Arsenic	10.8		0.368	1.47				
0906-MWD083-07-SS-3	6/18/2009	Arsenic	9.71		0.353	1.41	5.8	na	na	0.39
0906-MWD083-07-SS-1	6/18/2009	Boron	11.2		1.89	3.77				
0906-MWD083-07-SS-2	6/18/2009	Boron	18.8		9.19	18.4				
0906-MWD083-07-SS-3	6/18/2009	Boron	26.3		9.37	18.7	40	na	na	16000
0906-MWD083-07-SS-1	6/18/2009	Cadmium	7.59	J+	0.120	0.478				
0906-MWD083-07-SS-2	6/18/2009	Cadmium	12.9	J+	0.123	0.491				
0906-MWD083-07-SS-3	6/18/2009	Cadmium	7.28	J+	0.118	0.471	34	na	na	70
0906-MWD083-07-SS-1	6/18/2009	Chromium	44.7		0.478	1.91				
0906-MWD083-07-SS-2	6/18/2009	Chromium	90.7		0.491	1.96				
0906-MWD083-07-SS-3	6/18/2009	Chromium	75.8		0.471	1.88	33	na	na	120000
0906-MWD083-07-SS-1	6/18/2009	Chromium VI	0.247	U	0.247	0.493				
0906-MWD083-07-SS-2	6/18/2009	Chromium VI	0.496	U	0.496	0.991				
0906-MWD083-07-SS-3	6/18/2009	Chromium VI	0.496	U	0.496	0.992	na	na	na	na
0906-MWD083-07-SS-1	6/18/2009	Cobalt	4.05	J-	0.598	2.39				
0906-MWD083-07-SS-2	6/18/2009	Cobalt	7.07	J-	0.614	2.46				
0906-MWD083-07-SS-3	6/18/2009	Cobalt	6.6	J-	0.589	2.35	28	na	na	23
0906-MWD083-07-SS-1	6/18/2009	Copper, total	50.7		0.717	2.87				
0906-MWD083-07-SS-2	6/18/2009	Copper, total	47.4		0.737	2.95				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MWD083-07-SS-3	6/18/2009	Copper, total	42		0.706	2.82	9.4	na	na	3100
0906-MWD083-07-SS-1	6/18/2009	Manganese	95.2		0.0754	0.377				
0906-MWD083-07-SS-2	6/18/2009	Manganese	212		0.368	1.84				
0906-MWD083-07-SS-3	6/18/2009	Manganese	192		0.375	1.87	38	na	na	1800
0906-MWD083-07-SS-1	6/18/2009	Mercury	0.131	J-	0.00956	0.239				
0906-MWD083-07-SS-2	6/18/2009	Mercury	0.129	J-	0.00982	0.246				
0906-MWD083-07-SS-3	6/18/2009	Mercury	0.114	J-	0.00942	0.235	7.5	na	na	5.6
0906-MWD083-07-SS-1	6/18/2009	Molybdenum	9.2		1.13	2.26				
0906-MWD083-07-SS-2	6/18/2009	Molybdenum	8.76		1.10	2.21				
0906-MWD083-07-SS-3	6/18/2009	Molybdenum	7.13		1.12	2.25	13	na	na	390
0906-MWD083-07-SS-1	6/18/2009	Nickel	116		0.956	3.82				
0906-MWD083-07-SS-2	6/18/2009	Nickel	117		0.982	3.93				
0906-MWD083-07-SS-3	6/18/2009	Nickel	102		0.942	3.77	7.5	na	na	1500
0906-MWD083-07-SS-1	6/18/2009	Selenium	10.6	J	0.478	0.956				
0906-MWD083-07-SS-2	6/18/2009	Selenium	13.9	J	0.491	0.982				
0906-MWD083-07-SS-3	6/18/2009	Selenium	9.71	J	0.471	0.942	19	na	na	390
0906-MWD083-07-SS-1	6/18/2009	Silver	0.541	J	0.239	0.956				
0906-MWD083-07-SS-2	6/18/2009	Silver	1.1		0.246	0.982				
0906-MWD083-07-SS-3	6/18/2009	Silver	0.71	J	0.235	0.942	37	na	na	390
0906-MWD083-07-SS-1	6/18/2009	Thallium	0.342		0.0478	0.0956				
0906-MWD083-07-SS-2	6/18/2009	Thallium	0.582		0.0491	0.0982				
0906-MWD083-07-SS-3	6/18/2009	Thallium	0.486		0.0471	0.0942	26	na	na	5
0906-MWD083-07-SS-1	6/18/2009	Uranium	11.9	J+	0.478	1.91				
0906-MWD083-07-SS-2	6/18/2009	Uranium	22	J+	0.491	1.96				
0906-MWD083-07-SS-3	6/18/2009	Uranium	20.2	J+	0.471	1.88	30	na	na	230
0906-MWD083-07-SS-1	6/18/2009	Vanadium	45.1		0.598	2.39				
0906-MWD083-07-SS-2	6/18/2009	Vanadium	73.2		0.614	2.46				
0906-MWD083-07-SS-3	6/18/2009	Vanadium	58.9		0.589	2.35	24	na	na	390
0906-MWD083-07-SS-1	6/18/2009	Zinc	424	J	0.377	0.754				
0906-MWD083-07-SS-2	6/18/2009	Zinc	430	J	1.84	3.68				
0906-MWD083-07-SS-3	6/18/2009	Zinc	378	J	1.87	3.75	6.9	na	na	23000
0906-MWD084-07-SS-1	6/20/2009	Antimony	0.431	J	0.354	0.708				
0906-MWD084-07-SS-2	6/20/2009	Antimony	0.363	U	0.363	0.725				
0906-MWD084-07-SS-3	6/20/2009	Antimony	0.871		0.358	0.715	na	na	0.4	31
0906-MWD084-07-SS-1	6/20/2009	Arsenic	6.56		0.0749	0.299				
0906-MWD084-07-SS-2	6/20/2009	Arsenic	7.58		0.0749	0.299				
0906-MWD084-07-SS-3	6/20/2009	Arsenic	8.32		0.0692	0.277	12	na	na	0.39
0906-MWD084-07-SS-1	6/20/2009	Boron	14.1		1.77	3.54				
0906-MWD084-07-SS-2	6/20/2009	Boron	13.5		1.81	3.63				
0906-MWD084-07-SS-3	6/20/2009	Boron	14.3		1.79	3.58	3.0	na	na	16000
0906-MWD084-07-SS-1	6/20/2009	Cadmium	4.77		0.0250	0.0998				
0906-MWD084-07-SS-2	6/20/2009	Cadmium	7.09		0.0250	0.0998				
0906-MWD084-07-SS-3	6/20/2009	Cadmium	6.76		0.0231	0.0923	20	na	na	70
0906-MWD084-07-SS-1	6/20/2009	Chromium	32.6		0.0998	0.399				
0906-MWD084-07-SS-2	6/20/2009	Chromium	54.3		4.99	20.0				
0906-MWD084-07-SS-3	6/20/2009	Chromium	42		0.923	3.69	25	na	na	120000
0906-MWD084-07-SS-1	6/20/2009	Chromium VI	0.249	U	0.249	0.498				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MWD084-07-SS-2	6/20/2009	Chromium VI	0.496	U	0.496	0.992				
0906-MWD084-07-SS-3	6/20/2009	Chromium VI	0.492	U	0.492	0.984	na	na	na	na
0906-MWD084-07-SS-1	6/20/2009	Cobalt	10.2		0.125	0.499				
0906-MWD084-07-SS-2	6/20/2009	Cobalt	13.6		0.125	0.499				
0906-MWD084-07-SS-3	6/20/2009	Cobalt	9.8		0.115	0.461	19	na	na	23
0906-MWD084-07-SS-1	6/20/2009	Copper, total	27		0.150	0.599				
0906-MWD084-07-SS-2	6/20/2009	Copper, total	33.6	J+	0.150	0.599				
0906-MWD084-07-SS-3	6/20/2009	Copper, total	32.6		0.138	0.554	11	na	na	3100
0906-MWD084-07-SS-1	6/20/2009	Manganese	2430		0.0708	0.354				
0906-MWD084-07-SS-2	6/20/2009	Manganese	2640		0.0725	0.363				
0906-MWD084-07-SS-3	6/20/2009	Manganese	1870		0.0715	0.358	17	na	na	1800
0906-MWD084-07-SS-1	6/20/2009	Mercury	0.0421	J	0.00998	0.250				
0906-MWD084-07-SS-2	6/20/2009	Mercury	0.0653	J	0.00998	0.250				
0906-MWD084-07-SS-3	6/20/2009	Mercury	0.0822	J	0.00923	0.231	32	na	na	5.6
0906-MWD084-07-SS-1	6/20/2009	Molybdenum	2.68		1.06	2.12				
0906-MWD084-07-SS-2	6/20/2009	Molybdenum	2.12	J	1.09	2.18				
0906-MWD084-07-SS-3	6/20/2009	Molybdenum	5.95		1.07	2.15	58	na	na	390
0906-MWD084-07-SS-1	6/20/2009	Nickel	48.7		2.00	7.98				
0906-MWD084-07-SS-2	6/20/2009	Nickel	68.2		9.98	39.9				
0906-MWD084-07-SS-3	6/20/2009	Nickel	72		1.85	7.38	20	na	na	1500
0906-MWD084-07-SS-1	6/20/2009	Selenium	3.38		0.0998	0.200				
0906-MWD084-07-SS-2	6/20/2009	Selenium	4.58	J	0.0998	0.200				
0906-MWD084-07-SS-3	6/20/2009	Selenium	5.35		0.0923	0.185	22	na	na	390
0906-MWD084-07-SS-1	6/20/2009	Silver	0.617		0.0499	0.200				
0906-MWD084-07-SS-2	6/20/2009	Silver	0.922		0.0499	0.200				
0906-MWD084-07-SS-3	6/20/2009	Silver	1.13		0.0461	0.185	29	na	na	390
0906-MWD084-07-SS-1	6/20/2009	Thallium	0.244		0.00998	0.0200				
0906-MWD084-07-SS-2	6/20/2009	Thallium	0.3		0.00998	0.0200				
0906-MWD084-07-SS-3	6/20/2009	Thallium	0.366		0.00923	0.0185	20	na	na	5
0906-MWD084-07-SS-1	6/20/2009	Uranium	5.14		0.0998	0.399				
0906-MWD084-07-SS-2	6/20/2009	Uranium	6.76	J+	0.0998	0.399				
0906-MWD084-07-SS-3	6/20/2009	Uranium	12.5		0.0923	0.369	48	na	na	230
0906-MWD084-07-SS-1	6/20/2009	Vanadium	34.1		0.125	0.499				
0906-MWD084-07-SS-2	6/20/2009	Vanadium	56.4		6.24	25.0				
0906-MWD084-07-SS-3	6/20/2009	Vanadium	39.2		1.15	4.61	27	na	na	390
0906-MWD084-07-SS-1	6/20/2009	Zinc	171		0.354	0.708				
0906-MWD084-07-SS-2	6/20/2009	Zinc	216	J	0.363	0.725				
0906-MWD084-07-SS-3	6/20/2009	Zinc	283		0.358	0.715	25	na	na	23000
0906-MWD085-07-SS-1	6/17/2009	Antimony	0.377	U	0.377	0.755				
0906-MWD085-07-SS-2	6/17/2009	Antimony	0.359	U	0.359	0.718				
0906-MWD085-07-SS-3	6/17/2009	Antimony	1.18		0.375	0.751	na	na	na	31
0906-MWD085-07-SS-1	6/17/2009	Arsenic	3.84		0.0737	0.295				
0906-MWD085-07-SS-2	6/17/2009	Arsenic	3.93		0.0723	0.289				
0906-MWD085-07-SS-3	6/17/2009	Arsenic	6.91		0.0724	0.290	36	na	na	0.39
0906-MWD085-07-SS-1	6/17/2009	Boron	8.43	J+	1.89	3.77				
0906-MWD085-07-SS-2	6/17/2009	Boron	7.99	J+	1.80	3.59				
0906-MWD085-07-SS-3	6/17/2009	Boron	11.3	J+	1.88	3.75	19	na	na	16000

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MWD085-07-SS-1	6/17/2009	Cadmium	3.85		0.0246	0.0982				
0906-MWD085-07-SS-2	6/17/2009	Cadmium	3.9		0.0241	0.0963				
0906-MWD085-07-SS-3	6/17/2009	Cadmium	19.7		0.0241	0.0965	100	na	na	70
0906-MWD085-07-SS-1	6/17/2009	Chromium	21.7	J+	0.0982	0.393				
0906-MWD085-07-SS-2	6/17/2009	Chromium	20.5	J+	0.0963	0.385				
0906-MWD085-07-SS-3	6/17/2009	Chromium	51.5	J+	1.93	7.72	56	na	na	120000
0906-MWD085-07-SS-1	6/17/2009	Chromium VI	0.249	U	0.249	0.499				
0906-MWD085-07-SS-2	6/17/2009	Chromium VI	0.249	U	0.249	0.499				
0906-MWD085-07-SS-3	6/17/2009	Chromium VI	0.498	U	0.498	0.995	na	na	na	na
0906-MWD085-07-SS-1	6/17/2009	Cobalt	6.82		0.123	0.491				
0906-MWD085-07-SS-2	6/17/2009	Cobalt	7.01		0.120	0.482				
0906-MWD085-07-SS-3	6/17/2009	Cobalt	7.01		0.121	0.483	1.6	na	na	23
0906-MWD085-07-SS-1	6/17/2009	Copper, total	14.9		0.147	0.589				
0906-MWD085-07-SS-2	6/17/2009	Copper, total	14.1		0.145	0.578				
0906-MWD085-07-SS-3	6/17/2009	Copper, total	27.8		0.145	0.579	41	na	na	3100
0906-MWD085-07-SS-1	6/17/2009	Manganese	613		0.0755	0.377				
0906-MWD085-07-SS-2	6/17/2009	Manganese	683		0.0718	0.359				
0906-MWD085-07-SS-3	6/17/2009	Manganese	655		0.0751	0.375	5.4	na	na	1800
0906-MWD085-07-SS-1	6/17/2009	Mercury	0.0251	J	0.00982	0.246				
0906-MWD085-07-SS-2	6/17/2009	Mercury	0.0158	J	0.00963	0.241				
0906-MWD085-07-SS-3	6/17/2009	Mercury	0.0599	J	0.00965	0.241	69	na	na	5.6
0906-MWD085-07-SS-1	6/17/2009	Molybdenum	1.19	J	1.13	2.26				
0906-MWD085-07-SS-2	6/17/2009	Molybdenum	1.11	J	1.08	2.16				
0906-MWD085-07-SS-3	6/17/2009	Molybdenum	3.31		1.13	2.25	67	na	na	390
0906-MWD085-07-SS-1	6/17/2009	Nickel	24.3		0.196	0.786				
0906-MWD085-07-SS-2	6/17/2009	Nickel	23.1		0.193	0.771				
0906-MWD085-07-SS-3	6/17/2009	Nickel	54		3.86	15.4	52	na	na	1500
0906-MWD085-07-SS-1	6/17/2009	Selenium	1.48	J	0.0982	0.196				
0906-MWD085-07-SS-2	6/17/2009	Selenium	1.14	J	0.0963	0.193				
0906-MWD085-07-SS-3	6/17/2009	Selenium	8.55	J	0.0965	0.193	112	na	na	390
0906-MWD085-07-SS-1	6/17/2009	Silver	0.255		0.0491	0.196				
0906-MWD085-07-SS-2	6/17/2009	Silver	0.261		0.0482	0.193				
0906-MWD085-07-SS-3	6/17/2009	Silver	1.18		0.0483	0.193	94	na	na	390
0906-MWD085-07-SS-1	6/17/2009	Thallium	0.297		0.00982	0.0196				
0906-MWD085-07-SS-2	6/17/2009	Thallium	0.317		0.00963	0.0193				
0906-MWD085-07-SS-3	6/17/2009	Thallium	0.799		0.00965	0.0193	60	na	na	5
0906-MWD085-07-SS-1	6/17/2009	Uranium	3.42		0.0982	0.393				
0906-MWD085-07-SS-2	6/17/2009	Uranium	3.46		0.0963	0.385				
0906-MWD085-07-SS-3	6/17/2009	Uranium	18.7		0.0965	0.386	103	na	na	230
0906-MWD085-07-SS-1	6/17/2009	Vanadium	23.6	J+	0.123	0.491				
0906-MWD085-07-SS-2	6/17/2009	Vanadium	24.5	J+	0.120	0.482				
0906-MWD085-07-SS-3	6/17/2009	Vanadium	104	J+	2.41	9.65	91	na	na	390
0906-MWD085-07-SS-1	6/17/2009	Zinc	156		0.377	0.755				
0906-MWD085-07-SS-2	6/17/2009	Zinc	99.7		0.359	0.718				
0906-MWD085-07-SS-3	6/17/2009	Zinc	271		0.375	0.751	50	na	na	23000
0906-MWD086-07-SS-1	6/17/2009	Antimony	1.96	J	1.86	3.73				
0906-MWD086-07-SS-2	6/17/2009	Antimony	1.12		0.376	0.752				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MWD086-07-SS-3	6/17/2009	Antimony	0.998		0.334	0.669	39	na	na	31
0906-MWD086-07-SS-1	6/17/2009	Arsenic	12.3		0.0723	0.289				
0906-MWD086-07-SS-2	6/17/2009	Arsenic	13.8		0.0714	0.286				
0906-MWD086-07-SS-3	6/17/2009	Arsenic	12.3		0.0746	0.298	6.8	na	na	0.39
0906-MWD086-07-SS-1	6/17/2009	Boron	26.6		9.32	18.6				
0906-MWD086-07-SS-2	6/17/2009	Boron	2.42	J	1.88	3.76				
0906-MWD086-07-SS-3	6/17/2009	Boron	1.78	J	1.67	3.34	138	na	na	16000
0906-MWD086-07-SS-1	6/17/2009	Cadmium	7.58		0.0241	0.0963				
0906-MWD086-07-SS-2	6/17/2009	Cadmium	5.34		0.0238	0.0952				
0906-MWD086-07-SS-3	6/17/2009	Cadmium	5.52		0.0249	0.0994	20	na	na	70
0906-MWD086-07-SS-1	6/17/2009	Chromium	166	J	0.963	3.85				
0906-MWD086-07-SS-2	6/17/2009	Chromium	91	J	0.952	3.81				
0906-MWD086-07-SS-3	6/17/2009	Chromium	90.3	J	0.994	3.98	38	na	na	120000
0906-MWD086-07-SS-1	6/17/2009	Chromium VI	0.499	U	0.499	0.998				
0906-MWD086-07-SS-2	6/17/2009	Chromium VI	0.491	U	0.491	0.981				
0906-MWD086-07-SS-3	6/17/2009	Chromium VI	0.25	U	0.250	0.500	na	na	na	na
0906-MWD086-07-SS-1	6/17/2009	Cobalt	5.7		0.120	0.482				
0906-MWD086-07-SS-2	6/17/2009	Cobalt	5.91		0.119	0.476				
0906-MWD086-07-SS-3	6/17/2009	Cobalt	6.51		0.124	0.497	7.0	na	na	23
0906-MWD086-07-SS-1	6/17/2009	Copper, total	69.4		1.45	5.78				
0906-MWD086-07-SS-2	6/17/2009	Copper, total	66.4		1.43	5.71				
0906-MWD086-07-SS-3	6/17/2009	Copper, total	66.5		1.49	5.96	2.5	na	na	3100
0906-MWD086-07-SS-1	6/17/2009	Manganese	428		0.373	1.86				
0906-MWD086-07-SS-2	6/17/2009	Manganese	398		0.376	1.88				
0906-MWD086-07-SS-3	6/17/2009	Manganese	396		0.334	1.67	4.4	na	na	1800
0906-MWD086-07-SS-1	6/17/2009	Mercury	0.207	J	0.00963	0.241				
0906-MWD086-07-SS-2	6/17/2009	Mercury	0.191	J	0.00952	0.238				
0906-MWD086-07-SS-3	6/17/2009	Mercury	0.2	J	0.00994	0.249	4.0	na	na	5.6
0906-MWD086-07-SS-1	6/17/2009	Molybdenum	7.9	J-	5.59	11.2				
0906-MWD086-07-SS-2	6/17/2009	Molybdenum	5.71	J-	1.13	2.26				
0906-MWD086-07-SS-3	6/17/2009	Molybdenum	5.95	J-	1.00	2.01	18	na	na	390
0906-MWD086-07-SS-1	6/17/2009	Nickel	135		1.93	7.71				
0906-MWD086-07-SS-2	6/17/2009	Nickel	121		1.90	7.62				
0906-MWD086-07-SS-3	6/17/2009	Nickel	133		1.99	7.95	5.8	na	na	1500
0906-MWD086-07-SS-1	6/17/2009	Selenium	11.3		0.0963	0.193				
0906-MWD086-07-SS-2	6/17/2009	Selenium	9.43		0.0952	0.190				
0906-MWD086-07-SS-3	6/17/2009	Selenium	9.77		0.0994	0.199	10	na	na	390
0906-MWD086-07-SS-1	6/17/2009	Silver	0.769		0.0482	0.193				
0906-MWD086-07-SS-2	6/17/2009	Silver	0.504		0.0476	0.190				
0906-MWD086-07-SS-3	6/17/2009	Silver	0.538		0.0497	0.199	24	na	na	390
0906-MWD086-07-SS-1	6/17/2009	Thallium	0.648		0.00963	0.0193				
0906-MWD086-07-SS-2	6/17/2009	Thallium	0.539		0.00952	0.0190				
0906-MWD086-07-SS-3	6/17/2009	Thallium	0.559		0.00994	0.0199	10	na	na	5
0906-MWD086-07-SS-1	6/17/2009	Uranium	17		0.0963	0.385				
0906-MWD086-07-SS-2	6/17/2009	Uranium	14.9		0.0952	0.381				
0906-MWD086-07-SS-3	6/17/2009	Uranium	16.2		0.0994	0.398	6.6	na	na	230
0906-MWD086-07-SS-1	6/17/2009	Vanadium	75.4		1.20	4.82				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MWD086-07-SS-2	6/17/2009	Vanadium	57.9		1.19	4.76				
0906-MWD086-07-SS-3	6/17/2009	Vanadium	57.8		1.24	4.97	16	na	na	390
0906-MWD086-07-SS-1	6/17/2009	Zinc	461	J	1.86	3.73				
0906-MWD086-07-SS-2	6/17/2009	Zinc	372	J	1.88	3.76				
0906-MWD086-07-SS-3	6/17/2009	Zinc	375	J	1.67	3.34	13	na	na	23000
0906-MWD087-07-SS-1	6/16/2009	Antimony	4.93		1.81	3.62				
0906-MWD087-07-SS-2	6/16/2009	Antimony	4.08		1.83	3.67				
0906-MWD087-07-SS-3	6/16/2009	Antimony	4.92		1.80	3.61	11	na	na	31
0906-MWD087-07-SS-1	6/16/2009	Arsenic	29.6		0.363	1.45				
0906-MWD087-07-SS-2	6/16/2009	Arsenic	30.8		0.375	1.50				
0906-MWD087-07-SS-3	6/16/2009	Arsenic	30.4		0.362	1.45	2.0	na	na	0.39
0906-MWD087-07-SS-1	6/16/2009	Boron	17.7	J	9.04	18.1				
0906-MWD087-07-SS-2	6/16/2009	Boron	9.16	U	9.16	18.3				
0906-MWD087-07-SS-3	6/16/2009	Boron	16.5	J	9.02	18.0	na	na	1.20	16000
0906-MWD087-07-SS-1	6/16/2009	Cadmium	39.1	J+	0.121	0.484				
0906-MWD087-07-SS-2	6/16/2009	Cadmium	41.3	J+	0.125	0.500				
0906-MWD087-07-SS-3	6/16/2009	Cadmium	36.8	J+	0.121	0.483	5.8	na	na	70
0906-MWD087-07-SS-1	6/16/2009	Chromium	255		4.84	19.3				
0906-MWD087-07-SS-2	6/16/2009	Chromium	202		5.00	20.0				
0906-MWD087-07-SS-3	6/16/2009	Chromium	187		4.83	19.3	17	na	na	120000
0906-MWD087-07-SS-1	6/16/2009	Chromium VI	0.498	U	0.498	0.995				
0906-MWD087-07-SS-2	6/16/2009	Chromium VI	0.25	U	0.250	0.500				
0906-MWD087-07-SS-3	6/16/2009	Chromium VI	0.491	U	0.491	0.982	na	na	na	na
0906-MWD087-07-SS-1	6/16/2009	Cobalt	7		0.604	2.42				
0906-MWD087-07-SS-2	6/16/2009	Cobalt	9.65		0.625	2.50				
0906-MWD087-07-SS-3	6/16/2009	Cobalt	10.4		0.603	2.41	20	na	na	23
0906-MWD087-07-SS-1	6/16/2009	Copper, total	124		0.725	2.90				
0906-MWD087-07-SS-2	6/16/2009	Copper, total	139		0.750	3.00				
0906-MWD087-07-SS-3	6/16/2009	Copper, total	126		0.724	2.90	6.3	na	na	3100
0906-MWD087-07-SS-1	6/16/2009	Manganese	313		0.362	1.81				
0906-MWD087-07-SS-2	6/16/2009	Manganese	376		0.367	1.83				
0906-MWD087-07-SS-3	6/16/2009	Manganese	350		0.361	1.80	9.1	na	na	1800
0906-MWD087-07-SS-1	6/16/2009	Mercury	0.378		0.00967	0.242				
0906-MWD087-07-SS-2	6/16/2009	Mercury	0.371		0.0100	0.250				
0906-MWD087-07-SS-3	6/16/2009	Mercury	0.344		0.00965	0.241	4.9	na	na	5.6
0906-MWD087-07-SS-1	6/16/2009	Molybdenum	24		5.42	10.8				
0906-MWD087-07-SS-2	6/16/2009	Molybdenum	25.7		5.50	11.0				
0906-MWD087-07-SS-3	6/16/2009	Molybdenum	24.8		5.41	10.8	3.4	na	na	390
0906-MWD087-07-SS-1	6/16/2009	Nickel	257		9.67	38.7				
0906-MWD087-07-SS-2	6/16/2009	Nickel	246		10.0	40.0				
0906-MWD087-07-SS-3	6/16/2009	Nickel	239		9.65	38.6	3.7	na	na	1500
0906-MWD087-07-SS-1	6/16/2009	Selenium	37.2	J+	0.484	0.967				
0906-MWD087-07-SS-2	6/16/2009	Selenium	36.1	J+	0.500	1.00				
0906-MWD087-07-SS-3	6/16/2009	Selenium	30.6	J+	0.483	0.965	10	na	na	390
0906-MWD087-07-SS-1	6/16/2009	Silver	3.16		0.242	0.967				
0906-MWD087-07-SS-2	6/16/2009	Silver	3.57		0.250	1.00				
0906-MWD087-07-SS-3	6/16/2009	Silver	3.37		0.241	0.965	6.1	na	na	390

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MWD087-07-SS-1	6/16/2009	Thallium	1.3		0.0484	0.0967				
0906-MWD087-07-SS-2	6/16/2009	Thallium	1.46		0.0500	0.100				
0906-MWD087-07-SS-3	6/16/2009	Thallium	1.34		0.0483	0.0965	6.1	na	na	5
0906-MWD087-07-SS-1	6/16/2009	Uranium	35.8	J+	0.484	1.93				
0906-MWD087-07-SS-2	6/16/2009	Uranium	36.9	J+	0.500	2.00				
0906-MWD087-07-SS-3	6/16/2009	Uranium	33.5	J+	0.483	1.93	4.9	na	na	230
0906-MWD087-07-SS-1	6/16/2009	Vanadium	284		6.04	24.2				
0906-MWD087-07-SS-2	6/16/2009	Vanadium	214		6.25	25.0				
0906-MWD087-07-SS-3	6/16/2009	Vanadium	212		6.03	24.1	17	na	na	390
0906-MWD087-07-SS-1	6/16/2009	Zinc	1350		1.81	3.62				
0906-MWD087-07-SS-2	6/16/2009	Zinc	1340		1.83	3.67				
0906-MWD087-07-SS-3	6/16/2009	Zinc	1300		1.80	3.61	2.0	na	na	23000
0906-MWD088-01-SS-1	6/15/2009	Antimony	5.27		1.92	3.83				
0906-MWD088-01-SS-2	6/15/2009	Antimony	4.13		1.74	3.49				
0906-MWD088-01-SS-3	6/15/2009	Antimony	4		1.84	3.67	16	na	na	31
0906-MWD088-01-SS-1	6/15/2009	Arsenic	27.7		0.375	1.50				
0906-MWD088-01-SS-2	6/15/2009	Arsenic	25.2		0.372	1.49				
0906-MWD088-01-SS-3	6/15/2009	Arsenic	25.6		0.375	1.50	5.1	na	na	0.39
0906-MWD088-01-SS-1	6/15/2009	Boron	9.96	J	9.58	19.2				
0906-MWD088-01-SS-2	6/15/2009	Boron	8.72	U	8.72	17.4				
0906-MWD088-01-SS-3	6/15/2009	Boron	13.5	J	9.18	18.4	na	na	3.54	16000
0906-MWD088-01-SS-1	6/15/2009	Cadmium	23.7		0.125	0.500				
0906-MWD088-01-SS-2	6/15/2009	Cadmium	25.7		0.124	0.496				
0906-MWD088-01-SS-3	6/15/2009	Cadmium	24.1		0.125	0.500	4.3	na	na	70
0906-MWD088-01-SS-1	6/15/2009	Chromium	284	J+	5.00	20.0				
0906-MWD088-01-SS-2	6/15/2009	Chromium	385	J+	4.96	19.8				
0906-MWD088-01-SS-3	6/15/2009	Chromium	304	J+	5.00	20.0	16	na	na	120000
0906-MWD088-01-SS-1	6/15/2009	Chromium VI	0.499	U	0.499	0.997				
0906-MWD088-01-SS-2	6/15/2009	Chromium VI	0.999	U	0.999	2.00				
0906-MWD088-01-SS-3	6/15/2009	Chromium VI	0.991	U	0.991	1.98	na	na	na	na
0906-MWD088-01-SS-1	6/15/2009	Cobalt	6.33		0.625	2.50				
0906-MWD088-01-SS-2	6/15/2009	Cobalt	6.7		0.620	2.48				
0906-MWD088-01-SS-3	6/15/2009	Cobalt	7.63		0.625	2.50	10	na	na	23
0906-MWD088-01-SS-1	6/15/2009	Copper, total	124		0.750	3.00				
0906-MWD088-01-SS-2	6/15/2009	Copper, total	125		0.744	2.98				
0906-MWD088-01-SS-3	6/15/2009	Copper, total	127		0.750	3.00	1.2	na	na	3100
0906-MWD088-01-SS-1	6/15/2009	Manganese	198		0.383	1.92				
0906-MWD088-01-SS-2	6/15/2009	Manganese	203		0.349	1.74				
0906-MWD088-01-SS-3	6/15/2009	Manganese	213		0.367	1.84	3.7	na	na	1800
0906-MWD088-01-SS-1	6/15/2009	Mercury	0.418		0.00797	0.199				
0906-MWD088-01-SS-2	6/15/2009	Mercury	0.447		0.00798	0.200				
0906-MWD088-01-SS-3	6/15/2009	Mercury	0.437		0.00787	0.197	3.4	na	na	5.6
0906-MWD088-01-SS-1	6/15/2009	Molybdenum	22.7		5.75	11.5				
0906-MWD088-01-SS-2	6/15/2009	Molybdenum	22		5.23	10.5				
0906-MWD088-01-SS-3	6/15/2009	Molybdenum	26		5.51	11.0	9.1	na	na	390
0906-MWD088-01-SS-1	6/15/2009	Nickel	239	J-	10.0	40.0				
0906-MWD088-01-SS-2	6/15/2009	Nickel	230	J-	9.92	39.7				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MWD088-01-SS-3	6/15/2009	Nickel	252	J-	10.0	40.0	4.6	na	na	1500
0906-MWD088-01-SS-1	6/15/2009	Selenium	39.1		0.500	1.00				
0906-MWD088-01-SS-2	6/15/2009	Selenium	26.6		0.496	0.992				
0906-MWD088-01-SS-3	6/15/2009	Selenium	32.7		0.500	1.00	19	na	na	390
0906-MWD088-01-SS-1	6/15/2009	Silver	3.3		0.250	1.00				
0906-MWD088-01-SS-2	6/15/2009	Silver	3.74		0.248	0.992				
0906-MWD088-01-SS-3	6/15/2009	Silver	3.73		0.250	1.00	7.0	na	na	390
0906-MWD088-01-SS-1	6/15/2009	Thallium	0.902		0.0500	0.100				
0906-MWD088-01-SS-2	6/15/2009	Thallium	1.02		0.0496	0.0992				
0906-MWD088-01-SS-3	6/15/2009	Thallium	0.869		0.0500	0.100	8.5	na	na	5
0906-MWD088-01-SS-1	6/15/2009	Uranium	32		0.500	2.00				
0906-MWD088-01-SS-2	6/15/2009	Uranium	35.5		0.496	1.98				
0906-MWD088-01-SS-3	6/15/2009	Uranium	35.8		0.500	2.00	6.1	na	na	230
0906-MWD088-01-SS-1	6/15/2009	Vanadium	155	J+	0.625	2.50				
0906-MWD088-01-SS-2	6/15/2009	Vanadium	154	J+	0.620	2.48				
0906-MWD088-01-SS-3	6/15/2009	Vanadium	136	J+	0.625	2.50	7.2	na	na	390
0906-MWD088-01-SS-1	6/15/2009	Zinc	934		1.92	3.83				
0906-MWD088-01-SS-2	6/15/2009	Zinc	887		1.74	3.49				
0906-MWD088-01-SS-3	6/15/2009	Zinc	965		1.84	3.67	4.2	na	na	23000
0906-MWD090-07-SS1	6/16/2009	Antimony	4.96		1.67	3.35				
0906-MWD090-07-SS2	6/16/2009	Antimony	5.12		1.87	3.75				
0906-MWD090-07-SS3	6/16/2009	Antimony	5.22		1.86	3.72	2.6	na	na	31
0906-MWD090-07-SS1	6/16/2009	Arsenic	24.1		0.365	1.46				
0906-MWD090-07-SS2	6/16/2009	Arsenic	21.5		0.364	1.46				
0906-MWD090-07-SS3	6/16/2009	Arsenic	25.6	J+	0.354	1.42	8.7	na	na	0.39
0906-MWD090-07-SS1	6/16/2009	Boron	8.37	U	8.37	16.7				
0906-MWD090-07-SS2	6/16/2009	Boron	9.36	U	9.36	18.7				
0906-MWD090-07-SS3	6/16/2009	Boron	13.9	J	9.30	18.6	na	na	na	16000
0906-MWD090-07-SS1	6/16/2009	Cadmium	28.8	J+	0.122	0.487				
0906-MWD090-07-SS2	6/16/2009	Cadmium	27	J+	0.121	0.485				
0906-MWD090-07-SS3	6/16/2009	Cadmium	30.9	J+	0.118	0.472	6.8	na	na	70
0906-MWD090-07-SS1	6/16/2009	Chromium	235		4.87	19.5				
0906-MWD090-07-SS2	6/16/2009	Chromium	223		4.85	19.4				
0906-MWD090-07-SS3	6/16/2009	Chromium	392		4.72	18.9	33	na	na	120000
0906-MWD090-07-SS1	6/16/2009	Chromium VI	0.5	U	0.500	0.999				
0906-MWD090-07-SS2	6/16/2009	Chromium VI	0.491	U	0.491	0.981				
0906-MWD090-07-SS3	6/16/2009	Chromium VI	0.247	UJ	0.247	0.493	na	na	na	na
0906-MWD090-07-SS1	6/16/2009	Cobalt	11.3		0.609	2.44				
0906-MWD090-07-SS2	6/16/2009	Cobalt	6.85		0.607	2.43				
0906-MWD090-07-SS3	6/16/2009	Cobalt	5.56		0.590	2.36	38	na	na	23
0906-MWD090-07-SS1	6/16/2009	Copper, total	110		0.731	2.92				
0906-MWD090-07-SS2	6/16/2009	Copper, total	111		0.728	2.91				
0906-MWD090-07-SS3	6/16/2009	Copper, total	113		0.708	2.83	1.4	na	na	3100
0906-MWD090-07-SS1	6/16/2009	Manganese	318		0.335	1.67				
0906-MWD090-07-SS2	6/16/2009	Manganese	283		0.375	1.87				
0906-MWD090-07-SS3	6/16/2009	Manganese	292	J	0.372	1.86	6.1	na	na	1800
0906-MWD090-07-SS1	6/16/2009	Mercury	0.381		0.00975	0.244				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MWD090-07-SS2	6/16/2009	Mercury	0.349		0.00971	0.243				
0906-MWD090-07-SS3	6/16/2009	Mercury	0.374		0.00943	0.236	4.6	na	na	5.6
0906-MWD090-07-SS1	6/16/2009	Molybdenum	19.3		5.02	10.0				
0906-MWD090-07-SS2	6/16/2009	Molybdenum	16.9		5.62	11.2				
0906-MWD090-07-SS3	6/16/2009	Molybdenum	19.4		5.58	11.2	7.6	na	na	390
0906-MWD090-07-SS1	6/16/2009	Nickel	196		9.75	39.0				
0906-MWD090-07-SS2	6/16/2009	Nickel	162		9.71	38.8				
0906-MWD090-07-SS3	6/16/2009	Nickel	266		9.43	37.7	25	na	na	1500
0906-MWD090-07-SS1	6/16/2009	Selenium	29.2	J+	0.487	0.975				
0906-MWD090-07-SS2	6/16/2009	Selenium	28.5	J+	0.485	0.971				
0906-MWD090-07-SS3	6/16/2009	Selenium	35.2	J+	0.472	0.943	12	na	na	390
0906-MWD090-07-SS1	6/16/2009	Silver	3.46		0.244	0.975				
0906-MWD090-07-SS2	6/16/2009	Silver	3.29		0.243	0.971				
0906-MWD090-07-SS3	6/16/2009	Silver	3.53		0.236	0.943	3.6	na	na	390
0906-MWD090-07-SS1	6/16/2009	Thallium	1.41		0.0487	0.0975				
0906-MWD090-07-SS2	6/16/2009	Thallium	1.13		0.0485	0.0971				
0906-MWD090-07-SS3	6/16/2009	Thallium	1.47		0.0472	0.0943	14	na	na	5
0906-MWD090-07-SS1	6/16/2009	Uranium	35.2	J+	0.487	1.95				
0906-MWD090-07-SS2	6/16/2009	Uranium	32.8	J+	0.485	1.94				
0906-MWD090-07-SS3	6/16/2009	Uranium	33.7		0.472	1.89	3.6	na	na	230
0906-MWD090-07-SS1	6/16/2009	Vanadium	144		6.09	24.4				
0906-MWD090-07-SS2	6/16/2009	Vanadium	184		0.607	2.43				
0906-MWD090-07-SS3	6/16/2009	Vanadium	213		5.90	23.6	19	na	na	390
0906-MWD090-07-SS1	6/16/2009	Zinc	934		1.67	3.35				
0906-MWD090-07-SS2	6/16/2009	Zinc	817		1.87	3.75				
0906-MWD090-07-SS3	6/16/2009	Zinc	942		1.86	3.72	7.8	na	na	23000
0906-MWD091N-07-SS-1	6/22/2009	Antimony	4.23		1.81	3.63				
0906-MWD091N-07-SS-2	6/22/2009	Antimony	4.41		1.80	3.59				
0906-MWD091N-07-SS-3	6/22/2009	Antimony	4.8		1.87	3.75	6.5	na	na	31
0906-MWD091N-07-SS-1	6/22/2009	Arsenic	27.7		0.372	1.49				
0906-MWD091N-07-SS-2	6/22/2009	Arsenic	28.6		0.375	1.50				
0906-MWD091N-07-SS-3	6/22/2009	Arsenic	27.9		0.375	1.50	1.7	na	na	0.39
0906-MWD091N-07-SS-1	6/22/2009	Boron	18.6	J-	9.07	18.1				
0906-MWD091N-07-SS-2	6/22/2009	Boron	24.9	J-	8.99	18.0				
0906-MWD091N-07-SS-3	6/22/2009	Boron	24.9	J-	9.36	18.7	16	na	na	16000
0906-MWD091N-07-SS-1	6/22/2009	Cadmium	52.7		0.124	0.496				
0906-MWD091N-07-SS-2	6/22/2009	Cadmium	60.9		0.125	0.500				
0906-MWD091N-07-SS-3	6/22/2009	Cadmium	46.6		0.125	0.500	13	na	na	70
0906-MWD091N-07-SS-1	6/22/2009	Chromium	301		4.96	19.8				
0906-MWD091N-07-SS-2	6/22/2009	Chromium	384		5.00	20.0				
0906-MWD091N-07-SS-3	6/22/2009	Chromium	447		5.00	20.0	19	na	na	120000
0906-MWD091N-07-SS-1	6/22/2009	Chromium VI	0.497	UJ	0.497	0.994				
0906-MWD091N-07-SS-2	6/22/2009	Chromium VI	0.497	UJ	0.497	0.994				
0906-MWD091N-07-SS-3	6/22/2009	Chromium VI	0.245	UJ	0.245	0.490	na	na	na	na
0906-MWD091N-07-SS-1	6/22/2009	Cobalt	7.11		0.620	2.48				
0906-MWD091N-07-SS-2	6/22/2009	Cobalt	5.94		0.625	2.50				
0906-MWD091N-07-SS-3	6/22/2009	Cobalt	7.6		0.625	2.50	12	na	na	23

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MWD091N-07-SS-1	6/22/2009	Copper, total	127	J+	0.744	2.98				
0906-MWD091N-07-SS-2	6/22/2009	Copper, total	133	J+	0.750	3.00				
0906-MWD091N-07-SS-3	6/22/2009	Copper, total	118	J+	0.750	3.00	6.0	na	na	3100
0906-MWD091N-07-SS-1	6/22/2009	Manganese	198		0.363	1.81				
0906-MWD091N-07-SS-2	6/22/2009	Manganese	197		0.359	1.80				
0906-MWD091N-07-SS-3	6/22/2009	Manganese	222		0.375	1.87	6.9	na	na	1800
0906-MWD091N-07-SS-1	6/22/2009	Mercury	0.389		0.00992	0.248				
0906-MWD091N-07-SS-2	6/22/2009	Mercury	0.448		0.0100	0.250				
0906-MWD091N-07-SS-3	6/22/2009	Mercury	0.466		0.0100	0.250	9.3	na	na	5.6
0906-MWD091N-07-SS-1	6/22/2009	Molybdenum	24.9		5.44	10.9				
0906-MWD091N-07-SS-2	6/22/2009	Molybdenum	22.6		5.39	10.8				
0906-MWD091N-07-SS-3	6/22/2009	Molybdenum	26.5		5.62	11.2	7.9	na	na	390
0906-MWD091N-07-SS-1	6/22/2009	Nickel	256		9.92	39.7				
0906-MWD091N-07-SS-2	6/22/2009	Nickel	263		10.0	40.0				
0906-MWD091N-07-SS-3	6/22/2009	Nickel	269		10.0	40.0	2.5	na	na	1500
0906-MWD091N-07-SS-1	6/22/2009	Selenium	42.6	J	0.496	0.992				
0906-MWD091N-07-SS-2	6/22/2009	Selenium	45.9	J	0.500	1.00				
0906-MWD091N-07-SS-3	6/22/2009	Selenium	33.5	J	0.500	1.00	16	na	na	390
0906-MWD091N-07-SS-1	6/22/2009	Silver	6.78		0.248	0.992				
0906-MWD091N-07-SS-2	6/22/2009	Silver	5.66		0.250	1.00				
0906-MWD091N-07-SS-3	6/22/2009	Silver	5.75		0.250	1.00	10	na	na	390
0906-MWD091N-07-SS-1	6/22/2009	Thallium	1.17		0.0496	0.0992				
0906-MWD091N-07-SS-2	6/22/2009	Thallium	1.43		0.0500	0.100				
0906-MWD091N-07-SS-3	6/22/2009	Thallium	1.3		0.0500	0.100	10	na	na	5
0906-MWD091N-07-SS-1	6/22/2009	Uranium	37.9		0.496	1.98				
0906-MWD091N-07-SS-2	6/22/2009	Uranium	40.9		0.500	2.00				
0906-MWD091N-07-SS-3	6/22/2009	Uranium	37.8		0.500	2.00	4.5	na	na	230
0906-MWD091N-07-SS-1	6/22/2009	Vanadium	220		6.20	24.8				
0906-MWD091N-07-SS-2	6/22/2009	Vanadium	260		6.25	25.0				
0906-MWD091N-07-SS-3	6/22/2009	Vanadium	234		6.25	25.0	8.5	na	na	390
0906-MWD091N-07-SS-1	6/22/2009	Zinc	1140	J	1.81	3.63				
0906-MWD091N-07-SS-2	6/22/2009	Zinc	1120	J	1.80	3.59				
0906-MWD091N-07-SS-3	6/22/2009	Zinc	1050	J	1.87	3.75	4.3	na	na	23000
0906-MWD091S-07-SS-1	6/19/2009	Antimony	0.365	U	0.365	0.730				
0906-MWD091S-07-SS-2	6/19/2009	Antimony	0.355	U	0.355	0.711				
0906-MWD091S-07-SS-3	6/19/2009	Antimony	0.339	U	0.339	0.677	na	na	na	31
0906-MWD091S-07-SS-1	6/19/2009	Arsenic	6.06		0.0738	0.295				
0906-MWD091S-07-SS-2	6/19/2009	Arsenic	7.83		0.0710	0.284				
0906-MWD091S-07-SS-3	6/19/2009	Arsenic	6.68		0.0710	0.284	13	na	na	0.39
0906-MWD091S-07-SS-1	6/19/2009	Boron	7.23		1.82	3.65				
0906-MWD091S-07-SS-2	6/19/2009	Boron	8.29		1.78	3.55				
0906-MWD091S-07-SS-3	6/19/2009	Boron	9.65		1.69	3.39	14	na	na	16000
0906-MWD091S-07-SS-1	6/19/2009	Cadmium	11.2		0.0246	0.0984				
0906-MWD091S-07-SS-2	6/19/2009	Cadmium	14.3		0.0237	0.0947				
0906-MWD091S-07-SS-3	6/19/2009	Cadmium	11.9		0.0237	0.0947	13	na	na	70
0906-MWD091S-07-SS-1	6/19/2009	Chromium	61.1		4.92	19.7				
0906-MWD091S-07-SS-2	6/19/2009	Chromium	96.3		4.73	18.9				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MWD091S-07-SS-3	6/19/2009	Chromium	85.6		4.73	18.9	22	na	na	120000
0906-MWD091S-07-SS-1	6/19/2009	Chromium VI	0.487	U	0.487	0.975				
0906-MWD091S-07-SS-2	6/19/2009	Chromium VI	0.247	U	0.247	0.494				
0906-MWD091S-07-SS-3	6/19/2009	Chromium VI	0.249	U	0.249	0.499	na	na	na	na
0906-MWD091S-07-SS-1	6/19/2009	Cobalt	7.23		0.123	0.492				
0906-MWD091S-07-SS-2	6/19/2009	Cobalt	7.56		0.118	0.473				
0906-MWD091S-07-SS-3	6/19/2009	Cobalt	7.74		0.118	0.473	3.4	na	na	23
0906-MWD091S-07-SS-1	6/19/2009	Copper, total	25.6	J+	0.148	0.591				
0906-MWD091S-07-SS-2	6/19/2009	Copper, total	35.2	J+	0.142	0.568				
0906-MWD091S-07-SS-3	6/19/2009	Copper, total	30.5	J+	0.142	0.568	16	na	na	3100
0906-MWD091S-07-SS-1	6/19/2009	Manganese	989		0.0730	0.365				
0906-MWD091S-07-SS-2	6/19/2009	Manganese	804		0.0711	0.355				
0906-MWD091S-07-SS-3	6/19/2009	Manganese	1350		0.0677	0.339	27	na	na	1800
0906-MWD091S-07-SS-1	6/19/2009	Mercury	0.0552	J	0.00984	0.246				
0906-MWD091S-07-SS-2	6/19/2009	Mercury	0.0726	J	0.00947	0.237				
0906-MWD091S-07-SS-3	6/19/2009	Mercury	0.0579	J	0.00947	0.237	15	na	na	5.6
0906-MWD091S-07-SS-1	6/19/2009	Molybdenum	1.59	J	1.09	2.19				
0906-MWD091S-07-SS-2	6/19/2009	Molybdenum	3.36		1.07	2.13				
0906-MWD091S-07-SS-3	6/19/2009	Molybdenum	2.27		1.02	2.03	37	na	na	390
0906-MWD091S-07-SS-1	6/19/2009	Nickel	60.2		9.84	39.4				
0906-MWD091S-07-SS-2	6/19/2009	Nickel	90.8		9.47	37.9				
0906-MWD091S-07-SS-3	6/19/2009	Nickel	77.7		9.47	37.9	20	na	na	1500
0906-MWD091S-07-SS-1	6/19/2009	Selenium	12.6	J	0.0984	0.197				
0906-MWD091S-07-SS-2	6/19/2009	Selenium	13.9	J	0.0947	0.189				
0906-MWD091S-07-SS-3	6/19/2009	Selenium	13.8	J	0.0947	0.189	5.4	na	na	390
0906-MWD091S-07-SS-1	6/19/2009	Silver	0.66		0.0492	0.197				
0906-MWD091S-07-SS-2	6/19/2009	Silver	1.06		0.0473	0.189				
0906-MWD091S-07-SS-3	6/19/2009	Silver	0.826		0.0473	0.189	24	na	na	390
0906-MWD091S-07-SS-1	6/19/2009	Thallium	0.517		0.00984	0.0197				
0906-MWD091S-07-SS-2	6/19/2009	Thallium	0.748		0.00947	0.0189				
0906-MWD091S-07-SS-3	6/19/2009	Thallium	0.596		0.00947	0.0189	19	na	na	5
0906-MWD091S-07-SS-1	6/19/2009	Uranium	9.15	J+	0.0984	0.394				
0906-MWD091S-07-SS-2	6/19/2009	Uranium	12.8	J+	0.0947	0.379				
0906-MWD091S-07-SS-3	6/19/2009	Uranium	10.3	J+	0.0947	0.379	17	na	na	230
0906-MWD091S-07-SS-1	6/19/2009	Vanadium	55.3		6.15	24.6				
0906-MWD091S-07-SS-2	6/19/2009	Vanadium	91.4		5.92	23.7				
0906-MWD091S-07-SS-3	6/19/2009	Vanadium	78.8		5.92	23.7	24	na	na	390
0906-MWD091S-07-SS-1	6/19/2009	Zinc	239	J	0.365	0.730				
0906-MWD091S-07-SS-2	6/19/2009	Zinc	346	J	0.355	0.711				
0906-MWD091S-07-SS-3	6/19/2009	Zinc	282	J	0.339	0.677	19	na	na	23000
0906-MWD092-07-SS-1	6/19/2009	Antimony	4.08		1.89	3.79				
0906-MWD092-07-SS-2	6/19/2009	Antimony	4.1		1.82	3.64				
0906-MWD092-07-SS-3	6/19/2009	Antimony	6.29		1.85	3.69	26	na	na	31
0906-MWD092-07-SS-1	6/19/2009	Arsenic	10.8		0.0744	0.298				
0906-MWD092-07-SS-2	6/19/2009	Arsenic	20.6		0.358	1.43				
0906-MWD092-07-SS-3	6/19/2009	Arsenic	17.1		0.356	1.43	31	na	na	0.39
0906-MWD092-07-SS-1	6/19/2009	Boron	21.9	J+	9.46	18.9				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MWD092-07-SS-2	6/19/2009	Boron	16.5	J+	9.09	18.2				
0906-MWD092-07-SS-3	6/19/2009	Boron	15.8	J+	9.23	18.5	18	na	na	16000
0906-MWD092-07-SS-1	6/19/2009	Cadmium	46.9		1.24	4.96				
0906-MWD092-07-SS-2	6/19/2009	Cadmium	57.2		0.119	0.477				
0906-MWD092-07-SS-3	6/19/2009	Cadmium	45.4		0.119	0.475	13	na	na	70
0906-MWD092-07-SS-1	6/19/2009	Chromium	216	J+	4.96	19.8				
0906-MWD092-07-SS-2	6/19/2009	Chromium	360	J+	4.77	19.1				
0906-MWD092-07-SS-3	6/19/2009	Chromium	360	J+	4.75	19.0	27	na	na	120000
0906-MWD092-07-SS-1	6/19/2009	Chromium VI	0.246	U	0.246	0.491				
0906-MWD092-07-SS-2	6/19/2009	Chromium VI	0.493	U	0.493	0.986				
0906-MWD092-07-SS-3	6/19/2009	Chromium VI	0.481	U	0.481	0.962	na	na	na	na
0906-MWD092-07-SS-1	6/19/2009	Cobalt	6.24		0.124	0.496				
0906-MWD092-07-SS-2	6/19/2009	Cobalt	5.5		0.596	2.39				
0906-MWD092-07-SS-3	6/19/2009	Cobalt	4.16		0.594	2.38	20	na	na	23
0906-MWD092-07-SS-1	6/19/2009	Copper, total	102		7.44	29.8				
0906-MWD092-07-SS-2	6/19/2009	Copper, total	172		0.716	2.86				
0906-MWD092-07-SS-3	6/19/2009	Copper, total	117		0.713	2.85	28	na	na	3100
0906-MWD092-07-SS-1	6/19/2009	Manganese	383		0.379	1.89				
0906-MWD092-07-SS-2	6/19/2009	Manganese	124		0.364	1.82				
0906-MWD092-07-SS-3	6/19/2009	Manganese	245		0.369	1.85	52	na	na	1800
0906-MWD092-07-SS-1	6/19/2009	Mercury	0.228	J	0.00992	0.248				
0906-MWD092-07-SS-2	6/19/2009	Mercury	0.426		0.00954	0.239				
0906-MWD092-07-SS-3	6/19/2009	Mercury	0.317		0.00951	0.238	31	na	na	5.6
0906-MWD092-07-SS-1	6/19/2009	Molybdenum	6.68	J	5.68	11.4				
0906-MWD092-07-SS-2	6/19/2009	Molybdenum	7.27	J	5.45	10.9				
0906-MWD092-07-SS-3	6/19/2009	Molybdenum	10.1	J	5.54	11.1	23	na	na	390
0906-MWD092-07-SS-1	6/19/2009	Nickel	113		9.92	39.7				
0906-MWD092-07-SS-2	6/19/2009	Nickel	96.1		0.954	3.82				
0906-MWD092-07-SS-3	6/19/2009	Nickel	151		0.951	3.80	23	na	na	1500
0906-MWD092-07-SS-1	6/19/2009	Selenium	11.6	J	0.0992	0.198				
0906-MWD092-07-SS-2	6/19/2009	Selenium	11.6	J	0.477	0.954				
0906-MWD092-07-SS-3	6/19/2009	Selenium	83.7	J	0.475	0.951	117	na	na	390
0906-MWD092-07-SS-1	6/19/2009	Silver	2.45		0.0496	0.198				
0906-MWD092-07-SS-2	6/19/2009	Silver	4.35		0.239	0.954				
0906-MWD092-07-SS-3	6/19/2009	Silver	3.54		0.238	0.951	28	na	na	390
0906-MWD092-07-SS-1	6/19/2009	Thallium	1.09		0.00992	0.0198				
0906-MWD092-07-SS-2	6/19/2009	Thallium	1.07		0.0477	0.0954				
0906-MWD092-07-SS-3	6/19/2009	Thallium	1.11		0.0475	0.0951	1.8	na	na	5
0906-MWD092-07-SS-1	6/19/2009	Uranium	56.3		4.96	19.8				
0906-MWD092-07-SS-2	6/19/2009	Uranium	57.8		0.477	1.91				
0906-MWD092-07-SS-3	6/19/2009	Uranium	48.6		0.475	1.90	9.1	na	na	230
0906-MWD092-07-SS-1	6/19/2009	Vanadium	205	J+	6.20	24.8				
0906-MWD092-07-SS-2	6/19/2009	Vanadium	139	J+	0.596	2.39				
0906-MWD092-07-SS-3	6/19/2009	Vanadium	278	J+	5.94	23.8	34	na	na	390
0906-MWD092-07-SS-1	6/19/2009	Zinc	455		1.89	3.79				
0906-MWD092-07-SS-2	6/19/2009	Zinc	341		1.82	3.64				
0906-MWD092-07-SS-3	6/19/2009	Zinc	645		1.85	3.69	32	na	na	23000

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MWD093-07-SS-1	6/21/2009	Antimony	0.653	J	0.377	0.754				
0906-MWD093-07-SS-2	6/21/2009	Antimony	1.09		0.375	0.749				
0906-MWD093-07-SS-3	6/21/2009	Antimony	3.39		0.359	0.718	86	na	na	31
0906-MWD093-07-SS-1	6/21/2009	Arsenic	10.7	J	0.0741	0.296				
0906-MWD093-07-SS-2	6/21/2009	Arsenic	11.3	J	0.0750	0.300				
0906-MWD093-07-SS-3	6/21/2009	Arsenic	21.9	J	0.372	1.49	43	na	na	0.39
0906-MWD093-07-SS-1	6/21/2009	Boron	1.88	UJ	1.88	3.77				
0906-MWD093-07-SS-2	6/21/2009	Boron	5.18	J-	1.87	3.75				
0906-MWD093-07-SS-3	6/21/2009	Boron	6.34	J-	1.80	3.59	na	5.0	na	16000
0906-MWD093-07-SS-1	6/21/2009	Cadmium	6.89		0.0247	0.0988				
0906-MWD093-07-SS-2	6/21/2009	Cadmium	14.9		0.0250	0.100				
0906-MWD093-07-SS-3	6/21/2009	Cadmium	10.2		0.124	0.496	38	na	na	70
0906-MWD093-07-SS-1	6/21/2009	Chromium	69.6	J	4.94	19.8				
0906-MWD093-07-SS-2	6/21/2009	Chromium	93.6	J	5.00	20.0				
0906-MWD093-07-SS-3	6/21/2009	Chromium	267	J	4.96	19.8	75	na	na	120000
0906-MWD093-07-SS-1	6/21/2009	Chromium VI	0.499	U	0.499	0.998				
0906-MWD093-07-SS-2	6/21/2009	Chromium VI	0.497	U	0.497	0.994				
0906-MWD093-07-SS-3	6/21/2009	Chromium VI	0.499	U	0.499	0.997	na	na	na	na
0906-MWD093-07-SS-1	6/21/2009	Cobalt	7.76		0.124	0.494				
0906-MWD093-07-SS-2	6/21/2009	Cobalt	7.34		0.125	0.500				
0906-MWD093-07-SS-3	6/21/2009	Cobalt	6.06		0.620	2.48	13	na	na	23
0906-MWD093-07-SS-1	6/21/2009	Copper, total	38.5		0.148	0.593				
0906-MWD093-07-SS-2	6/21/2009	Copper, total	35.9		0.150	0.600				
0906-MWD093-07-SS-3	6/21/2009	Copper, total	71.9		0.744	2.98	41	na	na	3100
0906-MWD093-07-SS-1	6/21/2009	Manganese	463		0.0754	0.377				
0906-MWD093-07-SS-2	6/21/2009	Manganese	188		0.0749	0.375				
0906-MWD093-07-SS-3	6/21/2009	Manganese	220		0.0718	0.359	52	na	na	1800
0906-MWD093-07-SS-1	6/21/2009	Mercury	0.113	J	0.00988	0.247				
0906-MWD093-07-SS-2	6/21/2009	Mercury	0.117	J	0.0100	0.250				
0906-MWD093-07-SS-3	6/21/2009	Mercury	0.213	J	0.00992	0.248	38	na	na	5.6
0906-MWD093-07-SS-1	6/21/2009	Molybdenum	6.24		1.13	2.26				
0906-MWD093-07-SS-2	6/21/2009	Molybdenum	9.46		1.12	2.25				
0906-MWD093-07-SS-3	6/21/2009	Molybdenum	26.7		1.08	2.16	78	na	na	390
0906-MWD093-07-SS-1	6/21/2009	Nickel	132		9.88	39.5				
0906-MWD093-07-SS-2	6/21/2009	Nickel	152		10.0	40.0				
0906-MWD093-07-SS-3	6/21/2009	Nickel	218		9.92	39.7	27	na	na	1500
0906-MWD093-07-SS-1	6/21/2009	Selenium	7.17	J	0.0988	0.198				
0906-MWD093-07-SS-2	6/21/2009	Selenium	6.87	J	0.100	0.200				
0906-MWD093-07-SS-3	6/21/2009	Selenium	18.2	J	0.496	0.992	60	na	na	390
0906-MWD093-07-SS-1	6/21/2009	Silver	0.623		0.0494	0.198				
0906-MWD093-07-SS-2	6/21/2009	Silver	0.63		0.0500	0.200				
0906-MWD093-07-SS-3	6/21/2009	Silver	1.73		0.248	0.992	64	na	na	390
0906-MWD093-07-SS-1	6/21/2009	Thallium	0.448		0.00988	0.0198				
0906-MWD093-07-SS-2	6/21/2009	Thallium	0.941		0.0100	0.0200				
0906-MWD093-07-SS-3	6/21/2009	Thallium	0.638		0.0496	0.0992	37	na	na	5
0906-MWD093-07-SS-1	6/21/2009	Uranium	11.4		0.0988	0.395				
0906-MWD093-07-SS-2	6/21/2009	Uranium	13.4		0.100	0.400				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MWD093-07-SS-3	6/21/2009	Uranium	20.5		0.496	1.98	32	na	na	230
0906-MWD093-07-SS-1	6/21/2009	Vanadium	48.5	J+	6.18	24.7				
0906-MWD093-07-SS-2	6/21/2009	Vanadium	75.2	J+	6.25	25.0				
0906-MWD093-07-SS-3	6/21/2009	Vanadium	96.9	J+	0.620	2.48	33	na	na	390
0906-MWD093-07-SS-1	6/21/2009	Zinc	371		0.377	0.754				
0906-MWD093-07-SS-2	6/21/2009	Zinc	515		0.375	0.749				
0906-MWD093-07-SS-3	6/21/2009	Zinc	813		7.18	14.4	40	na	na	23000
Spring 2009 Triplicate Vegetation Sample Results										
0906-MBB001-07-GF-1	7/10/2009	Antimony	0.497	U	0.497	0.994				
0906-MBB001-07-GF-2	7/10/2009	Antimony	0.495	U	0.495	0.989				
0906-MBB001-07-GF-3	7/10/2009	Antimony	0.497	U	0.497	0.994	na	na	na	na
0906-MBB001-07-GF-1	7/10/2009	Arsenic	0.0734	UJ	0.0734	0.294				
0906-MBB001-07-GF-2	7/10/2009	Arsenic	0.0749	UJ	0.0749	0.299				
0906-MBB001-07-GF-3	7/10/2009	Arsenic	0.0728	UJ	0.0728	0.291	na	na	na	30
0906-MBB001-07-GF-1	7/10/2009	Boron	16.7		2.49	4.97				
0906-MBB001-07-GF-2	7/10/2009	Boron	19.8		2.47	4.95				
0906-MBB001-07-GF-3	7/10/2009	Boron	11.4		2.49	4.97	27	na	na	150
0906-MBB001-07-GF-1	7/10/2009	Cadmium	0.242	J	0.0245	0.0978				
0906-MBB001-07-GF-2	7/10/2009	Cadmium	0.374		0.0250	0.0998				
0906-MBB001-07-GF-3	7/10/2009	Cadmium	0.413	J	0.0243	0.0971	26	na	na	10
0906-MBB001-07-GF-1	7/10/2009	Chromium	1.85		0.0978	0.391				
0906-MBB001-07-GF-2	7/10/2009	Chromium	1.31		0.0998	0.399				
0906-MBB001-07-GF-3	7/10/2009	Chromium	1.64		0.0971	0.388	17	na	na	100
0906-MBB001-07-GF-1	7/10/2009	Cobalt	0.122	U	0.122	0.489				
0906-MBB001-07-GF-2	7/10/2009	Cobalt	0.125	U	0.125	0.499				
0906-MBB001-07-GF-3	7/10/2009	Cobalt	0.121	U	0.121	0.485	na	na	na	25
0906-MBB001-07-GF-1	7/10/2009	Copper, total	4.42		0.147	0.587				
0906-MBB001-07-GF-2	7/10/2009	Copper, total	5.68		0.150	0.599				
0906-MBB001-07-GF-3	7/10/2009	Copper, total	6.33		0.146	0.583	18	na	na	40
0906-MBB001-07-GF-1	7/10/2009	Manganese	44	J-	0.0994	0.497				
0906-MBB001-07-GF-2	7/10/2009	Manganese	47.5		0.0989	0.495				
0906-MBB001-07-GF-3	7/10/2009	Manganese	46	J-	0.0994	0.497	3.8	na	na	2000
0906-MBB001-07-GF-1	7/10/2009	Mercury	0.0196	U	0.0196	0.489				
0906-MBB001-07-GF-2	7/10/2009	Mercury	0.01	U	0.00998	0.250				
0906-MBB001-07-GF-3	7/10/2009	Mercury	0.0485	U	0.0485	1.21	na	na	na	na
0906-MBB001-07-GF-1	7/10/2009	Molybdenum	1.91	J	1.49	2.98				
0906-MBB001-07-GF-2	7/10/2009	Molybdenum	1.75	J	1.48	2.97				
0906-MBB001-07-GF-3	7/10/2009	Molybdenum	147		1.49	2.98	167	na	na	5
0906-MBB001-07-GF-1	7/10/2009	Nickel	1.07		0.196	0.783				
0906-MBB001-07-GF-2	7/10/2009	Nickel	0.798	J	0.200	0.798				
0906-MBB001-07-GF-3	7/10/2009	Nickel	0.778		0.194	0.777	18	na	na	100
0906-MBB001-07-GF-1	7/10/2009	Selenium	1.7		0.0978	0.196				
0906-MBB001-07-GF-2	7/10/2009	Selenium	0.205		0.0998	0.200				
0906-MBB001-07-GF-3	7/10/2009	Selenium	0.229		0.0971	0.194	120	na	na	5
0906-MBB001-07-GF-1	7/10/2009	Silver	0.0489	U	0.0489	0.196				
0906-MBB001-07-GF-2	7/10/2009	Silver	0.0499	U	0.0499	0.200				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MBB001-07-GF-3	7/10/2009	Silver	0.0485	U	0.0485	0.194	na	na	na	na
0906-MBB001-07-GF-1	7/10/2009	Thallium	0.0098	U	0.00978	0.0196				
0906-MBB001-07-GF-2	7/10/2009	Thallium	0.01	U	0.00998	0.0200				
0906-MBB001-07-GF-3	7/10/2009	Thallium	0.0097	U	0.00971	0.0194	na	na	na	na
0906-MBB001-07-GF-1	7/10/2009	Uranium	0.0978	U	0.0978	0.391				
0906-MBB001-07-GF-2	7/10/2009	Uranium	0.0998	U	0.0998	0.399				
0906-MBB001-07-GF-3	7/10/2009	Uranium	0.0971	U	0.0971	0.388	na	na	na	na
0906-MBB001-07-GF-1	7/10/2009	Vanadium	0.468	J	0.122	0.489				
0906-MBB001-07-GF-2	7/10/2009	Vanadium	0.358	J	0.125	0.499				
0906-MBB001-07-GF-3	7/10/2009	Vanadium	0.393	J	0.121	0.485	14	na	na	50
0906-MBB001-07-GF-1	7/10/2009	Zinc	25.1		0.497	0.994				
0906-MBB001-07-GF-2	7/10/2009	Zinc	30.9	J	0.495	0.989				
0906-MBB001-07-GF-3	7/10/2009	Zinc	26		0.497	0.994	11	na	na	500
0906-MBB001-07-SL-1-SYAL	7/10/2009	Antimony	0.499	U	0.499	0.997				
0906-MBB001-07-SL-2-SYAL	7/10/2009	Antimony	0.496	U	0.496	0.992				
0906-MBB001-07-SL-3-SYAL	7/10/2009	Antimony	0.496	U	0.496	0.992	na	na	na	na
0906-MBB001-07-SL-1-SYAL	7/10/2009	Arsenic	0.072	UJ	0.0720	0.288				
0906-MBB001-07-SL-2-SYAL	7/10/2009	Arsenic	0.0735	UJ	0.0735	0.294				
0906-MBB001-07-SL-3-SYAL	7/10/2009	Arsenic	0.0706	UJ	0.0706	0.282	na	na	na	30
0906-MBB001-07-SL-1-SYAL	7/10/2009	Boron	49.7		2.49	4.99				
0906-MBB001-07-SL-2-SYAL	7/10/2009	Boron	44.6		2.48	4.96				
0906-MBB001-07-SL-3-SYAL	7/10/2009	Boron	37.3		2.48	4.96	14	na	na	150
0906-MBB001-07-SL-1-SYAL	7/10/2009	Cadmium	0.0602	J	0.0240	0.0960				
0906-MBB001-07-SL-2-SYAL	7/10/2009	Cadmium	0.0646	J	0.0245	0.0980				
0906-MBB001-07-SL-3-SYAL	7/10/2009	Cadmium	0.0676	J	0.0235	0.0942	5.8	na	na	10
0906-MBB001-07-SL-1-SYAL	7/10/2009	Chromium	1.1		0.0960	0.384				
0906-MBB001-07-SL-2-SYAL	7/10/2009	Chromium	1.17		0.0980	0.392				
0906-MBB001-07-SL-3-SYAL	7/10/2009	Chromium	1.47		0.0942	0.377	16	na	na	100
0906-MBB001-07-SL-1-SYAL	7/10/2009	Cobalt	0.12	U	0.120	0.480				
0906-MBB001-07-SL-2-SYAL	7/10/2009	Cobalt	0.123	U	0.123	0.490				
0906-MBB001-07-SL-3-SYAL	7/10/2009	Cobalt	0.118	U	0.118	0.471	na	na	na	25
0906-MBB001-07-SL-1-SYAL	7/10/2009	Copper, total	5.55		0.144	0.576				
0906-MBB001-07-SL-2-SYAL	7/10/2009	Copper, total	5.07		0.147	0.588				
0906-MBB001-07-SL-3-SYAL	7/10/2009	Copper, total	4.17		0.141	0.565	14	na	na	40
0906-MBB001-07-SL-1-SYAL	7/10/2009	Manganese	95.9	J-	0.0997	0.499				
0906-MBB001-07-SL-2-SYAL	7/10/2009	Manganese	62.8		0.0992	0.496				
0906-MBB001-07-SL-3-SYAL	7/10/2009	Manganese	48.2	J-	0.0992	0.496	35	na	na	2000
0906-MBB001-07-SL-1-SYAL	7/10/2009	Mercury	0.0622	J+	0.0192	0.480				
0906-MBB001-07-SL-2-SYAL	7/10/2009	Mercury	0.0174	J	0.00980	0.245				
0906-MBB001-07-SL-3-SYAL	7/10/2009	Mercury	0.0471	U	0.0471	1.18	na	na	0.0448	na
0906-MBB001-07-SL-1-SYAL	7/10/2009	Molybdenum	1.5	U	1.50	2.99				
0906-MBB001-07-SL-2-SYAL	7/10/2009	Molybdenum	2.17	J	1.49	2.98				
0906-MBB001-07-SL-3-SYAL	7/10/2009	Molybdenum	1.49	U	1.49	2.98	na	na	na	5
0906-MBB001-07-SL-1-SYAL	7/10/2009	Nickel	1.76		0.192	0.768				
0906-MBB001-07-SL-2-SYAL	7/10/2009	Nickel	1.67		0.196	0.784				
0906-MBB001-07-SL-3-SYAL	7/10/2009	Nickel	1.68		0.188	0.753	2.9	na	na	100
0906-MBB001-07-SL-1-SYAL	7/10/2009	Selenium	0.498		0.0960	0.192				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MBB001-07-SL-2-SYAL	7/10/2009	Selenium	0.098	U	0.0980	0.196				
0906-MBB001-07-SL-3-SYAL	7/10/2009	Selenium	1.37		0.0942	0.188	na	23	na	5
0906-MBB001-07-SL-1-SYAL	7/10/2009	Silver	0.048	U	0.0480	0.192				
0906-MBB001-07-SL-2-SYAL	7/10/2009	Silver	0.049	U	0.0490	0.196				
0906-MBB001-07-SL-3-SYAL	7/10/2009	Silver	0.0471	U	0.0471	0.188	na	na	na	na
0906-MBB001-07-SL-1-SYAL	7/10/2009	Thallium	0.0096	U	0.00960	0.0192				
0906-MBB001-07-SL-2-SYAL	7/10/2009	Thallium	0.0098	U	0.00980	0.0196				
0906-MBB001-07-SL-3-SYAL	7/10/2009	Thallium	0.0094	U	0.00942	0.0188	na	na	na	na
0906-MBB001-07-SL-1-SYAL	7/10/2009	Uranium	0.096	U	0.0960	0.384				
0906-MBB001-07-SL-2-SYAL	7/10/2009	Uranium	0.098	U	0.0980	0.392				
0906-MBB001-07-SL-3-SYAL	7/10/2009	Uranium	0.0942	U	0.0942	0.377	na	na	na	na
0906-MBB001-07-SL-1-SYAL	7/10/2009	Vanadium	0.288	J	0.120	0.480				
0906-MBB001-07-SL-2-SYAL	7/10/2009	Vanadium	0.35	J	0.123	0.490				
0906-MBB001-07-SL-3-SYAL	7/10/2009	Vanadium	0.372	J	0.118	0.471	13	na	na	50
0906-MBB001-07-SL-1-SYAL	7/10/2009	Zinc	24.6		0.499	0.997				
0906-MBB001-07-SL-2-SYAL	7/10/2009	Zinc	23.8	J	0.496	0.992				
0906-MBB001-07-SL-3-SYAL	7/10/2009	Zinc	18.4		0.496	0.992	15	na	na	500
0906-MBB001-07-SM-1-SYAL	7/10/2009	Antimony	0.496	U	0.496	0.992				
0906-MBB001-07-SM-2-SYAL	7/10/2009	Antimony	0.498	U	0.498	0.995				
0906-MBB001-07-SM-3-SYAL	7/10/2009	Antimony	0.495	U	0.495	0.990	na	na	na	na
0906-MBB001-07-SM-1-SYAL	7/10/2009	Arsenic	0.0717	UJ	0.0717	0.287				
0906-MBB001-07-SM-2-SYAL	7/10/2009	Arsenic	0.0727	UJ	0.0727	0.291				
0906-MBB001-07-SM-3-SYAL	7/10/2009	Arsenic	0.0732	UJ	0.0732	0.293	na	na	na	30
0906-MBB001-07-SM-1-SYAL	7/10/2009	Boron	8.69		2.48	4.96				
0906-MBB001-07-SM-2-SYAL	7/10/2009	Boron	12.4		2.49	4.98				
0906-MBB001-07-SM-3-SYAL	7/10/2009	Boron	14.7		2.48	4.95	25	na	na	150
0906-MBB001-07-SM-1-SYAL	7/10/2009	Cadmium	0.264	J	0.0239	0.0956				
0906-MBB001-07-SM-2-SYAL	7/10/2009	Cadmium	0.207		0.0242	0.0969				
0906-MBB001-07-SM-3-SYAL	7/10/2009	Cadmium	0.161	J	0.0244	0.0977	24	na	na	10
0906-MBB001-07-SM-1-SYAL	7/10/2009	Chromium	1.41		0.0956	0.382				
0906-MBB001-07-SM-2-SYAL	7/10/2009	Chromium	0.956		0.0969	0.388				
0906-MBB001-07-SM-3-SYAL	7/10/2009	Chromium	0.888		0.0977	0.391	26	na	na	100
0906-MBB001-07-SM-1-SYAL	7/10/2009	Cobalt	0.12	U	0.120	0.478				
0906-MBB001-07-SM-2-SYAL	7/10/2009	Cobalt	0.121	U	0.121	0.484				
0906-MBB001-07-SM-3-SYAL	7/10/2009	Cobalt	0.122	U	0.122	0.488	na	na	na	25
0906-MBB001-07-SM-1-SYAL	7/10/2009	Copper, total	5.22		0.143	0.574				
0906-MBB001-07-SM-2-SYAL	7/10/2009	Copper, total	7.92		0.145	0.581				
0906-MBB001-07-SM-3-SYAL	7/10/2009	Copper, total	4.79		0.146	0.586	28	na	na	40
0906-MBB001-07-SM-1-SYAL	7/10/2009	Manganese	388	J-	0.0992	0.496				
0906-MBB001-07-SM-2-SYAL	7/10/2009	Manganese	153		0.0995	0.498				
0906-MBB001-07-SM-3-SYAL	7/10/2009	Manganese	138	J-	0.0990	0.495	62	na	na	2000
0906-MBB001-07-SM-1-SYAL	7/10/2009	Mercury	0.0478	U	0.0478	1.20				
0906-MBB001-07-SM-2-SYAL	7/10/2009	Mercury	0.0097	U	0.00969	0.242				
0906-MBB001-07-SM-3-SYAL	7/10/2009	Mercury	0.0195	U	0.0195	0.488	na	na	na	na
0906-MBB001-07-SM-1-SYAL	7/10/2009	Molybdenum	1.49	U	1.49	2.98				
0906-MBB001-07-SM-2-SYAL	7/10/2009	Molybdenum	1.49	U	1.49	2.99				
0906-MBB001-07-SM-3-SYAL	7/10/2009	Molybdenum	1.49	U	1.49	2.97	na	na	na	5

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MBB001-07-SM-1-SYAL	7/10/2009	Nickel	0.391	J	0.191	0.765				
0906-MBB001-07-SM-2-SYAL	7/10/2009	Nickel	0.712	J	0.194	0.775				
0906-MBB001-07-SM-3-SYAL	7/10/2009	Nickel	0.345	J	0.195	0.781	41	na	na	100
0906-MBB001-07-SM-1-SYAL	7/10/2009	Selenium	0.161	J	0.0956	0.191				
0906-MBB001-07-SM-2-SYAL	7/10/2009	Selenium	0.43		0.0969	0.194				
0906-MBB001-07-SM-3-SYAL	7/10/2009	Selenium	0.0977	U	0.0977	0.195	na	na	0.269	5
0906-MBB001-07-SM-1-SYAL	7/10/2009	Silver	0.0478	U	0.0478	0.191				
0906-MBB001-07-SM-2-SYAL	7/10/2009	Silver	0.0484	U	0.0484	0.194				
0906-MBB001-07-SM-3-SYAL	7/10/2009	Silver	0.0488	U	0.0488	0.195	na	na	na	na
0906-MBB001-07-SM-1-SYAL	7/10/2009	Thallium	0.0096	U	0.00956	0.0191				
0906-MBB001-07-SM-2-SYAL	7/10/2009	Thallium	0.0097	U	0.00969	0.0194				
0906-MBB001-07-SM-3-SYAL	7/10/2009	Thallium	0.0098	U	0.00977	0.0195	na	na	na	na
0906-MBB001-07-SM-1-SYAL	7/10/2009	Uranium	0.0956	U	0.0956	0.382				
0906-MBB001-07-SM-2-SYAL	7/10/2009	Uranium	0.0969	U	0.0969	0.388				
0906-MBB001-07-SM-3-SYAL	7/10/2009	Uranium	0.0977	U	0.0977	0.391	na	na	na	na
0906-MBB001-07-SM-1-SYAL	7/10/2009	Vanadium	0.434	J	0.120	0.478				
0906-MBB001-07-SM-2-SYAL	7/10/2009	Vanadium	0.277	J	0.121	0.484				
0906-MBB001-07-SM-3-SYAL	7/10/2009	Vanadium	0.262	J	0.122	0.488	29	na	na	50
0906-MBB001-07-SM-1-SYAL	7/10/2009	Zinc	38		0.496	0.992				
0906-MBB001-07-SM-2-SYAL	7/10/2009	Zinc	47.8	J	0.498	0.995				
0906-MBB001-07-SM-3-SYAL	7/10/2009	Zinc	20.5		0.495	0.990	39	na	na	500
0906-MBE001-07-FB-1	6/21/2009	Antimony	0.865	U	0.865	1.73				
0906-MBE001-07-FB-2	6/21/2009	Antimony	0.484	U	0.484	0.968				
0906-MBE001-07-FB-3	6/21/2009	Antimony	0.479	U	0.479	0.959	na	na	na	na
0906-MBE001-07-FB-1	6/21/2009	Arsenic	0.0981	J+	0.0737	0.295				
0906-MBE001-07-FB-2	6/21/2009	Arsenic	0.0876	J+	0.0749	0.299				
0906-MBE001-07-FB-3	6/21/2009	Arsenic	6.66	J+	0.0730	0.292	166	na	na	30
0906-MBE001-07-FB-1	6/21/2009	Boron	28.8		4.33	8.65				
0906-MBE001-07-FB-2	6/21/2009	Boron	17.9		2.42	4.84				
0906-MBE001-07-FB-3	6/21/2009	Boron	34.7		2.40	4.79	31	na	na	150
0906-MBE001-07-FB-1	6/21/2009	Cadmium	1.24		0.0246	0.0982				
0906-MBE001-07-FB-2	6/21/2009	Cadmium	0.391		0.0250	0.0998				
0906-MBE001-07-FB-3	6/21/2009	Cadmium	0.593		0.0243	0.0973	60	na	na	10
0906-MBE001-07-FB-1	6/21/2009	Chromium	1.7		0.0982	0.393				
0906-MBE001-07-FB-2	6/21/2009	Chromium	2.05		0.0998	0.399				
0906-MBE001-07-FB-3	6/21/2009	Chromium	2.01		0.0973	0.389	10	na	na	100
0906-MBE001-07-FB-1	6/21/2009	Cobalt	0.123	U	0.123	0.491				
0906-MBE001-07-FB-2	6/21/2009	Cobalt	0.125	U	0.125	0.499				
0906-MBE001-07-FB-3	6/21/2009	Cobalt	0.122	U	0.122	0.486	na	na	na	25
0906-MBE001-07-FB-1	6/21/2009	Copper, total	12.5		0.147	0.589				
0906-MBE001-07-FB-2	6/21/2009	Copper, total	6.4		0.150	0.599				
0906-MBE001-07-FB-3	6/21/2009	Copper, total	8.84		0.146	0.584	33	na	na	40
0906-MBE001-07-FB-1	6/21/2009	Manganese	43.4		0.173	0.865				
0906-MBE001-07-FB-2	6/21/2009	Manganese	32.3		0.0968	0.484				
0906-MBE001-07-FB-3	6/21/2009	Manganese	44.3		0.0959	0.479	17	na	na	2000
0906-MBE001-07-FB-1	6/21/2009	Mercury	0.0196	U	0.0196	0.491				
0906-MBE001-07-FB-2	6/21/2009	Mercury	0.02	U	0.0200	0.499				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MBE001-07-FB-3	6/21/2009	Mercury	0.0195	U	0.0195	0.486	na	na	na	na
0906-MBE001-07-FB-1	6/21/2009	Molybdenum	9.15		2.60	5.19				
0906-MBE001-07-FB-2	6/21/2009	Molybdenum	6.58		1.45	2.90				
0906-MBE001-07-FB-3	6/21/2009	Molybdenum	11		1.44	2.88	25	na	na	5
0906-MBE001-07-FB-1	6/21/2009	Nickel	1.65		0.196	0.786				
0906-MBE001-07-FB-2	6/21/2009	Nickel	2.2		0.200	0.798				
0906-MBE001-07-FB-3	6/21/2009	Nickel	2.86		0.195	0.778	27	na	na	100
0906-MBE001-07-FB-1	6/21/2009	Selenium	5.28		0.0982	0.196				
0906-MBE001-07-FB-2	6/21/2009	Selenium	6.42		0.0998	0.200				
0906-MBE001-07-FB-3	6/21/2009	Selenium	3.35		0.0973	0.195	31	na	na	5
0906-MBE001-07-FB-1	6/21/2009	Silver	0.0529	J	0.0491	0.196				
0906-MBE001-07-FB-2	6/21/2009	Silver	0.0499	U	0.0499	0.200				
0906-MBE001-07-FB-3	6/21/2009	Silver	0.0486	U	0.0486	0.195	na	na	na	na
0906-MBE001-07-FB-1	6/21/2009	Thallium	0.0141	J	0.00982	0.0196				
0906-MBE001-07-FB-2	6/21/2009	Thallium	0.01	U	0.00998	0.0200				
0906-MBE001-07-FB-3	6/21/2009	Thallium	0.0103	J	0.00973	0.0195	na	na	0.004	na
0906-MBE001-07-FB-1	6/21/2009	Uranium	0.0982	U	0.0982	0.393				
0906-MBE001-07-FB-2	6/21/2009	Uranium	0.0998	U	0.0998	0.399				
0906-MBE001-07-FB-3	6/21/2009	Uranium	0.0973	U	0.0973	0.389	na	na	na	na
0906-MBE001-07-FB-1	6/21/2009	Vanadium	0.573		0.123	0.491				
0906-MBE001-07-FB-2	6/21/2009	Vanadium	0.539		0.125	0.499				
0906-MBE001-07-FB-3	6/21/2009	Vanadium	0.666		0.122	0.486	11	na	na	50
0906-MBE001-07-FB-1	6/21/2009	Zinc	46.8	J-	0.865	1.73				
0906-MBE001-07-FB-2	6/21/2009	Zinc	31.7	J-	0.484	0.968				
0906-MBE001-07-FB-3	6/21/2009	Zinc	35.1	J-	0.479	0.959	21	na	na	500
0906-MBE001-07-GS-1	6/21/2009	Antimony	0.493	U	0.493	0.986				
0906-MBE001-07-GS-2	6/21/2009	Antimony	0.477	U	0.477	0.954				
0906-MBE001-07-GS-3	6/21/2009	Antimony	0.497	U	0.497	0.993	na	na	na	na
0906-MBE001-07-GS-1	6/21/2009	Arsenic	0.0727	U	0.0727	0.291				
0906-MBE001-07-GS-2	6/21/2009	Arsenic	0.0723	U	0.0723	0.289				
0906-MBE001-07-GS-3	6/21/2009	Arsenic	0.07	U	0.0700	0.280	na	na	na	30
0906-MBE001-07-GS-1	6/21/2009	Boron	3.04	J	2.47	4.93				
0906-MBE001-07-GS-2	6/21/2009	Boron	2.39	U	2.39	4.77				
0906-MBE001-07-GS-3	6/21/2009	Boron	2.48	U	2.48	4.97	na	na	na	150
0906-MBE001-07-GS-1	6/21/2009	Cadmium	0.303		0.0242	0.0969				
0906-MBE001-07-GS-2	6/21/2009	Cadmium	0.226		0.0241	0.0963				
0906-MBE001-07-GS-3	6/21/2009	Cadmium	0.247		0.0233	0.0933	15	na	na	10
0906-MBE001-07-GS-1	6/21/2009	Chromium	2.34		0.0969	0.388				
0906-MBE001-07-GS-2	6/21/2009	Chromium	2.32		0.0963	0.385				
0906-MBE001-07-GS-3	6/21/2009	Chromium	2.47		0.0933	0.373	3.4	na	na	100
0906-MBE001-07-GS-1	6/21/2009	Cobalt	0.121	U	0.121	0.484				
0906-MBE001-07-GS-2	6/21/2009	Cobalt	0.12	U	0.120	0.482				
0906-MBE001-07-GS-3	6/21/2009	Cobalt	0.117	U	0.117	0.466	na	na	na	25
0906-MBE001-07-GS-1	6/21/2009	Copper, total	6.45		0.145	0.581				
0906-MBE001-07-GS-2	6/21/2009	Copper, total	5.52		0.145	0.578				
0906-MBE001-07-GS-3	6/21/2009	Copper, total	4.76		0.140	0.560	15	na	na	40
0906-MBE001-07-GS-1	6/21/2009	Manganese	47.4		0.0986	0.493				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MBE001-07-GS-2	6/21/2009	Manganese	38.7		0.0954	0.477				
0906-MBE001-07-GS-3	6/21/2009	Manganese	39.1		0.0993	0.497	12	na	na	2000
0906-MBE001-07-GS-1	6/21/2009	Mercury	0.0194	U	0.0194	0.484				
0906-MBE001-07-GS-2	6/21/2009	Mercury	0.0193	U	0.0193	0.482				
0906-MBE001-07-GS-3	6/21/2009	Mercury	0.0187	U	0.0187	0.466	na	na	na	na
0906-MBE001-07-GS-1	6/21/2009	Molybdenum	8.18		1.48	2.96				
0906-MBE001-07-GS-2	6/21/2009	Molybdenum	5.75		1.43	2.86				
0906-MBE001-07-GS-3	6/21/2009	Molybdenum	10.4		1.49	2.98	29	na	na	5
0906-MBE001-07-GS-1	6/21/2009	Nickel	1.14		0.194	0.775				
0906-MBE001-07-GS-2	6/21/2009	Nickel	0.69	J	0.193	0.771				
0906-MBE001-07-GS-3	6/21/2009	Nickel	0.815		0.187	0.746	26	na	na	100
0906-MBE001-07-GS-1	6/21/2009	Selenium	2.63		0.0969	0.194				
0906-MBE001-07-GS-2	6/21/2009	Selenium	3.17		0.0963	0.193				
0906-MBE001-07-GS-3	6/21/2009	Selenium	3.97		0.0933	0.187	21	na	na	5
0906-MBE001-07-GS-1	6/21/2009	Silver	0.0484	U	0.0484	0.194				
0906-MBE001-07-GS-2	6/21/2009	Silver	0.0482	U	0.0482	0.193				
0906-MBE001-07-GS-3	6/21/2009	Silver	0.0466	U	0.0466	0.187	na	na	na	na
0906-MBE001-07-GS-1	6/21/2009	Thallium	0.0097	U	0.00969	0.0194				
0906-MBE001-07-GS-2	6/21/2009	Thallium	0.0096	U	0.00963	0.0193				
0906-MBE001-07-GS-3	6/21/2009	Thallium	0.014	J	0.00933	0.0187	na	na	na	na
0906-MBE001-07-GS-1	6/21/2009	Uranium	0.0969	U	0.0969	0.388				
0906-MBE001-07-GS-2	6/21/2009	Uranium	0.0963	U	0.0963	0.385				
0906-MBE001-07-GS-3	6/21/2009	Uranium	0.0933	U	0.0933	0.373	na	na	na	na
0906-MBE001-07-GS-1	6/21/2009	Vanadium	0.437	J	0.121	0.484				
0906-MBE001-07-GS-2	6/21/2009	Vanadium	0.315	J	0.120	0.482				
0906-MBE001-07-GS-3	6/21/2009	Vanadium	0.543		0.117	0.466	26	na	na	50
0906-MBE001-07-GS-1	6/21/2009	Zinc	25.5	J-	0.493	0.986				
0906-MBE001-07-GS-2	6/21/2009	Zinc	21.5	J-	0.477	0.954				
0906-MBE001-07-GS-3	6/21/2009	Zinc	22.1	J-	0.497	0.993	9.4	na	na	500
0906-MBH002-07-GF-1	6/16/2009	Antimony	0.479	U	0.479	0.958				
0906-MBH002-07-GF-2	6/16/2009	Antimony	0.499	U	0.499	0.997				
0906-MBH002-07-GF-3	6/16/2009	Antimony	0.488	U	0.488	0.976	na	na	na	na
0906-MBH002-07-GF-1	6/16/2009	Arsenic	0.131	J	0.0697	0.279				
0906-MBH002-07-GF-2	6/16/2009	Arsenic	0.074	J	0.0698	0.279				
0906-MBH002-07-GF-3	6/16/2009	Arsenic	0.149	J	0.0730	0.292	33	na	na	30
0906-MBH002-07-GF-1	6/16/2009	Boron	9.48		2.39	4.79				
0906-MBH002-07-GF-2	6/16/2009	Boron	9.92		2.49	4.99				
0906-MBH002-07-GF-3	6/16/2009	Boron	11		2.44	4.88	7.7	na	na	150
0906-MBH002-07-GF-1	6/16/2009	Cadmium	0.171		0.0232	0.0929				
0906-MBH002-07-GF-2	6/16/2009	Cadmium	0.0454	J	0.0233	0.0931				
0906-MBH002-07-GF-3	6/16/2009	Cadmium	0.115		0.0243	0.0973	57	na	na	10
0906-MBH002-07-GF-1	6/16/2009	Chromium	2.38		0.0929	0.372				
0906-MBH002-07-GF-2	6/16/2009	Chromium	3.64		0.0931	0.372				
0906-MBH002-07-GF-3	6/16/2009	Chromium	2.32		0.0973	0.389	27	na	na	100
0906-MBH002-07-GF-1	6/16/2009	Cobalt	0.116	U	0.116	0.465				
0906-MBH002-07-GF-2	6/16/2009	Cobalt	0.116	U	0.116	0.466				
0906-MBH002-07-GF-3	6/16/2009	Cobalt	0.122	U	0.122	0.486	na	na	na	25

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MBH002-07-GF-1	6/16/2009	Copper, total	4.72		0.139	0.558				
0906-MBH002-07-GF-2	6/16/2009	Copper, total	5.09		0.140	0.559				
0906-MBH002-07-GF-3	6/16/2009	Copper, total	5.4		0.146	0.584	6.7	na	na	40
0906-MBH002-07-GF-1	6/16/2009	Manganese	49.9		0.0958	0.479				
0906-MBH002-07-GF-2	6/16/2009	Manganese	47.6		0.0997	0.499				
0906-MBH002-07-GF-3	6/16/2009	Manganese	51.1		0.0976	0.488	3.6	na	na	2000
0906-MBH002-07-GF-1	6/16/2009	Mercury	0.0149	U	0.0149	0.372				
0906-MBH002-07-GF-2	6/16/2009	Mercury	0.0186	UJ	0.0186	0.466				
0906-MBH002-07-GF-3	6/16/2009	Mercury	0.0156	U	0.0156	0.389	na	na	na	na
0906-MBH002-07-GF-1	6/16/2009	Molybdenum	1.44	U	1.44	2.87				
0906-MBH002-07-GF-2	6/16/2009	Molybdenum	2.25	J	1.50	2.99				
0906-MBH002-07-GF-3	6/16/2009	Molybdenum	1.46	U	1.46	2.93	na	na	na	5
0906-MBH002-07-GF-1	6/16/2009	Nickel	1.08		0.186	0.743				
0906-MBH002-07-GF-2	6/16/2009	Nickel	0.569	J	0.186	0.745				
0906-MBH002-07-GF-3	6/16/2009	Nickel	1.13		0.195	0.778	34	na	na	100
0906-MBH002-07-GF-1	6/16/2009	Selenium	0.373		0.0929	0.186				
0906-MBH002-07-GF-2	6/16/2009	Selenium	0.318		0.0931	0.186				
0906-MBH002-07-GF-3	6/16/2009	Selenium	0.287		0.0973	0.195	13	na	na	5
0906-MBH002-07-GF-1	6/16/2009	Silver	0.0465	U	0.0465	0.186				
0906-MBH002-07-GF-2	6/16/2009	Silver	0.0466	UJ	0.0466	0.186				
0906-MBH002-07-GF-3	6/16/2009	Silver	0.0486	U	0.0486	0.195	na	na	na	na
0906-MBH002-07-GF-1	6/16/2009	Thallium	0.0093	U	0.00929	0.0186				
0906-MBH002-07-GF-2	6/16/2009	Thallium	0.0093	U	0.00931	0.0186				
0906-MBH002-07-GF-3	6/16/2009	Thallium	0.0097	U	0.00973	0.0195	na	na	na	na
0906-MBH002-07-GF-1	6/16/2009	Uranium	0.0929	U	0.0929	0.372				
0906-MBH002-07-GF-2	6/16/2009	Uranium	0.0931	U	0.0931	0.372				
0906-MBH002-07-GF-3	6/16/2009	Uranium	0.0973	U	0.0973	0.389	na	na	na	na
0906-MBH002-07-GF-1	6/16/2009	Vanadium	0.432	J	0.116	0.465				
0906-MBH002-07-GF-2	6/16/2009	Vanadium	0.947		0.116	0.466				
0906-MBH002-07-GF-3	6/16/2009	Vanadium	0.576		0.122	0.486	41	na	na	50
0906-MBH002-07-GF-1	6/16/2009	Zinc	20.5		0.479	0.958				
0906-MBH002-07-GF-2	6/16/2009	Zinc	19.9		0.499	0.997				
0906-MBH002-07-GF-3	6/16/2009	Zinc	16.1		0.488	0.976	13	na	na	500
0906-MHR001-07-GF-1	7/8/2009	Antimony	0.494	U	0.494	0.987				
0906-MHR001-07-GF-2	7/8/2009	Antimony	0.498	U	0.498	0.995				
0906-MHR001-07-GF-3	7/8/2009	Antimony	0.49	U	0.490	0.980	na	na	na	na
0906-MHR001-07-GF-1	7/8/2009	Arsenic	0.722		0.0717	0.287				
0906-MHR001-07-GF-2	7/8/2009	Arsenic	0.724		0.0704	0.281				
0906-MHR001-07-GF-3	7/8/2009	Arsenic	0.737		0.0716	0.286	1.1	na	na	30
0906-MHR001-07-GF-1	7/8/2009	Boron	6.74		2.47	4.94				
0906-MHR001-07-GF-2	7/8/2009	Boron	11.6		2.49	4.98				
0906-MHR001-07-GF-3	7/8/2009	Boron	12.3		2.45	4.90	30	na	na	150
0906-MHR001-07-GF-1	7/8/2009	Cadmium	1.05		0.0239	0.0956				
0906-MHR001-07-GF-2	7/8/2009	Cadmium	0.727		0.0235	0.0938				
0906-MHR001-07-GF-3	7/8/2009	Cadmium	0.714		0.0239	0.0954	23	na	na	10
0906-MHR001-07-GF-1	7/8/2009	Chromium	2.74		0.0956	0.382				
0906-MHR001-07-GF-2	7/8/2009	Chromium	1.33		0.0938	0.375				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MHR001-07-GF-3	7/8/2009	Chromium	1.37		0.0954	0.382	44	na	na	100
0906-MHR001-07-GF-1	7/8/2009	Cobalt	0.12	U	0.120	0.478				
0906-MHR001-07-GF-2	7/8/2009	Cobalt	0.117	U	0.117	0.469				
0906-MHR001-07-GF-3	7/8/2009	Cobalt	0.119	U	0.119	0.477	na	na	na	25
0906-MHR001-07-GF-1	7/8/2009	Copper, total	6.61		0.143	0.574				
0906-MHR001-07-GF-2	7/8/2009	Copper, total	4.25		0.141	0.563				
0906-MHR001-07-GF-3	7/8/2009	Copper, total	5.34		0.143	0.573	22	na	na	40
0906-MHR001-07-GF-1	7/8/2009	Manganese	17.9	J-	0.0987	0.494				
0906-MHR001-07-GF-2	7/8/2009	Manganese	15.1	J-	0.0995	0.498				
0906-MHR001-07-GF-3	7/8/2009	Manganese	18.5	J-	0.0980	0.490	11	na	na	2000
0906-MHR001-07-GF-1	7/8/2009	Mercury	0.0191	U	0.0191	0.478				
0906-MHR001-07-GF-2	7/8/2009	Mercury	0.0469	U	0.0469	1.17				
0906-MHR001-07-GF-3	7/8/2009	Mercury	0.0477	U	0.0477	1.19	na	na	na	na
0906-MHR001-07-GF-1	7/8/2009	Molybdenum	9.27		1.48	2.96				
0906-MHR001-07-GF-2	7/8/2009	Molybdenum	6.58		1.49	2.99				
0906-MHR001-07-GF-3	7/8/2009	Molybdenum	6.38		1.47	2.94	22	na	na	5
0906-MHR001-07-GF-1	7/8/2009	Nickel	3.1		0.191	0.765				
0906-MHR001-07-GF-2	7/8/2009	Nickel	4.41		0.188	0.750				
0906-MHR001-07-GF-3	7/8/2009	Nickel	3.58		0.191	0.763	18	na	na	100
0906-MHR001-07-GF-1	7/8/2009	Selenium	62.4	J	1.91	3.82				
0906-MHR001-07-GF-2	7/8/2009	Selenium	75.8	J	1.88	3.75				
0906-MHR001-07-GF-3	7/8/2009	Selenium	69.5	J	1.91	3.82	10	na	na	5
0906-MHR001-07-GF-1	7/8/2009	Silver	0.0478	U	0.0478	0.191				
0906-MHR001-07-GF-2	7/8/2009	Silver	0.0469	U	0.0469	0.188				
0906-MHR001-07-GF-3	7/8/2009	Silver	0.0477	U	0.0477	0.191	na	na	na	na
0906-MHR001-07-GF-1	7/8/2009	Thallium	0.0295		0.00956	0.0191				
0906-MHR001-07-GF-2	7/8/2009	Thallium	0.0229		0.00938	0.0188				
0906-MHR001-07-GF-3	7/8/2009	Thallium	0.0453		0.00954	0.0191	35	na	na	na
0906-MHR001-07-GF-1	7/8/2009	Uranium	0.122	J	0.0956	0.382				
0906-MHR001-07-GF-2	7/8/2009	Uranium	0.0938	U	0.0938	0.375				
0906-MHR001-07-GF-3	7/8/2009	Uranium	0.0954	U	0.0954	0.382	na	na	na	na
0906-MHR001-07-GF-1	7/8/2009	Vanadium	1.36		0.120	0.478				
0906-MHR001-07-GF-2	7/8/2009	Vanadium	0.509		0.117	0.469				
0906-MHR001-07-GF-3	7/8/2009	Vanadium	0.457	J	0.119	0.477	65	na	na	50
0906-MHR001-07-GF-1	7/8/2009	Zinc	48.2	J-	0.494	0.987				
0906-MHR001-07-GF-2	7/8/2009	Zinc	41.7	J-	0.498	0.995				
0906-MHR001-07-GF-3	7/8/2009	Zinc	49.5	J-	0.490	0.980	9.0	na	na	500
0906-MHR002-07-GF-1	6/18/2009	Antimony	0.482	U	0.482	0.964				
0906-MHR002-07-GF-2	6/18/2009	Antimony	0.485	U	0.485	0.971				
0906-MHR002-07-GF-3	6/18/2009	Antimony	0.482	U	0.482	0.963	na	na	na	na
0906-MHR002-07-GF-1	6/18/2009	Arsenic	0.0976	J	0.0727	0.291				
0906-MHR002-07-GF-2	6/18/2009	Arsenic	0.0859	J	0.0735	0.294				
0906-MHR002-07-GF-3	6/18/2009	Arsenic	0.108	J	0.0734	0.294	11	na	na	30
0906-MHR002-07-GF-1	6/18/2009	Boron	3.24	J	2.41	4.82				
0906-MHR002-07-GF-2	6/18/2009	Boron	2.43	U	2.43	4.85				
0906-MHR002-07-GF-3	6/18/2009	Boron	2.41	U	2.41	4.82	na	na	na	150
0906-MHR002-07-GF-1	6/18/2009	Cadmium	2.33		0.0242	0.0969				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MHR002-07-GF-2	6/18/2009	Cadmium	0.433		0.0245	0.0980				
0906-MHR002-07-GF-3	6/18/2009	Cadmium	0.179		0.0245	0.0978	120	na	na	10
0906-MHR002-07-GF-1	6/18/2009	Chromium	2.73		0.0969	0.388				
0906-MHR002-07-GF-2	6/18/2009	Chromium	2.67		0.0980	0.392				
0906-MHR002-07-GF-3	6/18/2009	Chromium	2.56		0.0978	0.391	3.2	na	na	100
0906-MHR002-07-GF-1	6/18/2009	Cobalt	0.121	U	0.121	0.484				
0906-MHR002-07-GF-2	6/18/2009	Cobalt	0.123	U	0.123	0.490				
0906-MHR002-07-GF-3	6/18/2009	Cobalt	0.122	U	0.122	0.489	na	na	na	25
0906-MHR002-07-GF-1	6/18/2009	Copper, total	9.96		0.145	0.581				
0906-MHR002-07-GF-2	6/18/2009	Copper, total	4.85		0.147	0.588				
0906-MHR002-07-GF-3	6/18/2009	Copper, total	4.05		0.147	0.587	51	na	na	40
0906-MHR002-07-GF-1	6/18/2009	Manganese	52.4		0.0964	0.482				
0906-MHR002-07-GF-2	6/18/2009	Manganese	47.6		0.0971	0.485				
0906-MHR002-07-GF-3	6/18/2009	Manganese	39.3		0.0963	0.482	14	na	na	2000
0906-MHR002-07-GF-1	6/18/2009	Mercury	0.0194	U	0.0194	0.484				
0906-MHR002-07-GF-2	6/18/2009	Mercury	0.0196	U	0.0196	0.490				
0906-MHR002-07-GF-3	6/18/2009	Mercury	0.0196	U	0.0196	0.489	na	na	na	na
0906-MHR002-07-GF-1	6/18/2009	Molybdenum	1.45	U	1.45	2.89				
0906-MHR002-07-GF-2	6/18/2009	Molybdenum	2.49	J	1.46	2.91				
0906-MHR002-07-GF-3	6/18/2009	Molybdenum	4.38		1.45	2.89	na	na	1.89	5
0906-MHR002-07-GF-1	6/18/2009	Nickel	8.53		0.194	0.775				
0906-MHR002-07-GF-2	6/18/2009	Nickel	1.78		0.196	0.784				
0906-MHR002-07-GF-3	6/18/2009	Nickel	0.578	J	0.196	0.783	118	na	na	100
0906-MHR002-07-GF-1	6/18/2009	Selenium	1.31		0.0969	0.194				
0906-MHR002-07-GF-2	6/18/2009	Selenium	1.6		0.0980	0.196				
0906-MHR002-07-GF-3	6/18/2009	Selenium	2.49		0.0978	0.196	34	na	na	5
0906-MHR002-07-GF-1	6/18/2009	Silver	0.0484	UJ	0.0484	0.194				
0906-MHR002-07-GF-2	6/18/2009	Silver	0.049	UJ	0.0490	0.196				
0906-MHR002-07-GF-3	6/18/2009	Silver	0.0489	UJ	0.0489	0.196	na	na	na	na
0906-MHR002-07-GF-1	6/18/2009	Thallium	0.22		0.00969	0.0194				
0906-MHR002-07-GF-2	6/18/2009	Thallium	0.0098	U	0.00980	0.0196				
0906-MHR002-07-GF-3	6/18/2009	Thallium	0.0098	U	0.00978	0.0196	na	na	na	na
0906-MHR002-07-GF-1	6/18/2009	Uranium	0.0969	U	0.0969	0.388				
0906-MHR002-07-GF-2	6/18/2009	Uranium	0.098	U	0.0980	0.392				
0906-MHR002-07-GF-3	6/18/2009	Uranium	0.0978	U	0.0978	0.391	na	na	na	na
0906-MHR002-07-GF-1	6/18/2009	Vanadium	1.3		0.121	0.484				
0906-MHR002-07-GF-2	6/18/2009	Vanadium	0.577		0.123	0.490				
0906-MHR002-07-GF-3	6/18/2009	Vanadium	0.529		0.122	0.489	54	na	na	50
0906-MHR002-07-GF-1	6/18/2009	Zinc	86		0.482	0.964				
0906-MHR002-07-GF-2	6/18/2009	Zinc	27.7		0.485	0.971				
0906-MHR002-07-GF-3	6/18/2009	Zinc	15.5		0.482	0.963	87	na	na	500
0906-MMP035-07-GF-1	7/9/2009	Antimony	0.496	U	0.496	0.992				
0906-MMP035-07-GF-2	7/9/2009	Antimony	0.498	U	0.498	0.996				
0906-MMP035-07-GF-3	7/9/2009	Antimony	0.495	U	0.495	0.989	na	na	na	na
0906-MMP035-07-GF-1	7/9/2009	Arsenic	1.87		0.0746	0.298				
0906-MMP035-07-GF-2	7/9/2009	Arsenic	1.36		0.0734	0.294				
0906-MMP035-07-GF-3	7/9/2009	Arsenic	2.17		0.0731	0.292	23	na	na	30

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MMP035-07-GF-1	7/9/2009	Boron	4.12	J	2.48	4.96				
0906-MMP035-07-GF-2	7/9/2009	Boron	5.88	J	2.49	4.98				
0906-MMP035-07-GF-3	7/9/2009	Boron	4.95	J	2.47	4.95	18	na	na	150
0906-MMP035-07-GF-1	7/9/2009	Cadmium	0.618		0.0249	0.0994				
0906-MMP035-07-GF-2	7/9/2009	Cadmium	0.579		0.0245	0.0978				
0906-MMP035-07-GF-3	7/9/2009	Cadmium	0.638		0.0244	0.0975	4.9	na	na	10
0906-MMP035-07-GF-1	7/9/2009	Chromium	1.22		0.0994	0.398				
0906-MMP035-07-GF-2	7/9/2009	Chromium	1.54		0.0978	0.391				
0906-MMP035-07-GF-3	7/9/2009	Chromium	1.37		0.0975	0.390	12	na	na	100
0906-MMP035-07-GF-1	7/9/2009	Cobalt	0.124	U	0.124	0.497				
0906-MMP035-07-GF-2	7/9/2009	Cobalt	0.122	U	0.122	0.489				
0906-MMP035-07-GF-3	7/9/2009	Cobalt	0.122	U	0.122	0.487	na	na	na	25
0906-MMP035-07-GF-1	7/9/2009	Copper, total	3.66		0.149	0.596				
0906-MMP035-07-GF-2	7/9/2009	Copper, total	3.36		0.147	0.587				
0906-MMP035-07-GF-3	7/9/2009	Copper, total	3.52		0.146	0.585	4.3	na	na	40
0906-MMP035-07-GF-1	7/9/2009	Manganese	16.1	J-	0.0992	0.496				
0906-MMP035-07-GF-2	7/9/2009	Manganese	13.4	J-	0.0996	0.498				
0906-MMP035-07-GF-3	7/9/2009	Manganese	13.1	J-	0.0989	0.495	12	na	na	2000
0906-MMP035-07-GF-1	7/9/2009	Mercury	0.0182	U	0.0182	0.455				
0906-MMP035-07-GF-2	7/9/2009	Mercury	0.0192	U	0.0192	0.479				
0906-MMP035-07-GF-3	7/9/2009	Mercury	0.0195	U	0.0195	0.486	na	na	na	na
0906-MMP035-07-GF-1	7/9/2009	Molybdenum	5.16	J-	1.49	2.98				
0906-MMP035-07-GF-2	7/9/2009	Molybdenum	6.15	J-	1.49	2.99				
0906-MMP035-07-GF-3	7/9/2009	Molybdenum	6.62	J-	1.48	2.97	12	na	na	5
0906-MMP035-07-GF-1	7/9/2009	Nickel	2.59		0.199	0.795				
0906-MMP035-07-GF-2	7/9/2009	Nickel	2.36		0.196	0.783				
0906-MMP035-07-GF-3	7/9/2009	Nickel	2.29		0.195	0.780	6.5	na	na	100
0906-MMP035-07-GF-1	7/9/2009	Selenium	124	J	1.99	3.98				
0906-MMP035-07-GF-2	7/9/2009	Selenium	111	J	1.96	3.91				
0906-MMP035-07-GF-3	7/9/2009	Selenium	130	J	1.95	3.90	8.0	na	na	5
0906-MMP035-07-GF-1	7/9/2009	Silver	0.0497	U	0.0497	0.199				
0906-MMP035-07-GF-2	7/9/2009	Silver	0.0489	U	0.0489	0.196				
0906-MMP035-07-GF-3	7/9/2009	Silver	0.0487	U	0.0487	0.195	na	na	na	na
0906-MMP035-07-GF-1	7/9/2009	Thallium	0.0571		0.00994	0.0199				
0906-MMP035-07-GF-2	7/9/2009	Thallium	0.0247		0.00978	0.0196				
0906-MMP035-07-GF-3	7/9/2009	Thallium	0.0542		0.00975	0.0195	40	na	na	na
0906-MMP035-07-GF-1	7/9/2009	Uranium	0.0994	U	0.0994	0.398				
0906-MMP035-07-GF-2	7/9/2009	Uranium	0.0978	U	0.0978	0.391				
0906-MMP035-07-GF-3	7/9/2009	Uranium	0.0975	U	0.0975	0.390	na	na	na	na
0906-MMP035-07-GF-1	7/9/2009	Vanadium	0.301	J	0.124	0.497				
0906-MMP035-07-GF-2	7/9/2009	Vanadium	0.193	J	0.122	0.489				
0906-MMP035-07-GF-3	7/9/2009	Vanadium	0.27	J	0.122	0.487	22	na	na	50
0906-MMP035-07-GF-1	7/9/2009	Zinc	87.6		0.496	0.992				
0906-MMP035-07-GF-2	7/9/2009	Zinc	49		0.498	0.996				
0906-MMP035-07-GF-3	7/9/2009	Zinc	43.8		0.495	0.989	40	na	na	500
0906-MMP036-07-GF-1	6/22/2009	Antimony	0.492	U	0.492	0.983				
0906-MMP036-07-GF-2	6/22/2009	Antimony	0.499	U	0.499	0.998				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MMP036-07-GF-3	6/22/2009	Antimony	0.489	U	0.489	0.978	na	na	na	na
0906-MMP036-07-GF-1	6/22/2009	Arsenic	0.0735	U	0.0735	0.294				
0906-MMP036-07-GF-2	6/22/2009	Arsenic	0.0876	J	0.0730	0.292				
0906-MMP036-07-GF-3	6/22/2009	Arsenic	0.134	J	0.0737	0.295	na	na	0.046	30
0906-MMP036-07-GF-1	6/22/2009	Boron	10.6		2.46	4.92				
0906-MMP036-07-GF-2	6/22/2009	Boron	7.3		2.50	4.99				
0906-MMP036-07-GF-3	6/22/2009	Boron	4.3	J	2.44	4.89	43	na	na	150
0906-MMP036-07-GF-1	6/22/2009	Cadmium	1.45		0.0245	0.0980				
0906-MMP036-07-GF-2	6/22/2009	Cadmium	2.15		0.0243	0.0973				
0906-MMP036-07-GF-3	6/22/2009	Cadmium	2.16		0.0246	0.0982	21	na	na	10
0906-MMP036-07-GF-1	6/22/2009	Chromium	2		0.0980	0.392				
0906-MMP036-07-GF-2	6/22/2009	Chromium	2.17		0.0973	0.389				
0906-MMP036-07-GF-3	6/22/2009	Chromium	1.66		0.0982	0.393	13	na	na	100
0906-MMP036-07-GF-1	6/22/2009	Cobalt	0.123	U	0.123	0.490				
0906-MMP036-07-GF-2	6/22/2009	Cobalt	0.122	U	0.122	0.486				
0906-MMP036-07-GF-3	6/22/2009	Cobalt	0.123	U	0.123	0.491	na	na	na	25
0906-MMP036-07-GF-1	6/22/2009	Copper, total	6.15		0.147	0.588				
0906-MMP036-07-GF-2	6/22/2009	Copper, total	4.35		0.146	0.584				
0906-MMP036-07-GF-3	6/22/2009	Copper, total	5.57		0.147	0.589	17	na	na	40
0906-MMP036-07-GF-1	6/22/2009	Manganese	37.8		0.0983	0.492				
0906-MMP036-07-GF-2	6/22/2009	Manganese	47.7		0.0998	0.499				
0906-MMP036-07-GF-3	6/22/2009	Manganese	39.2		0.0978	0.489	13	na	na	2000
0906-MMP036-07-GF-1	6/22/2009	Mercury	0.0102	J-	0.00980	0.245				
0906-MMP036-07-GF-2	6/22/2009	Mercury	0.0097	R	0.00973	0.243				
0906-MMP036-07-GF-3	6/22/2009	Mercury	0.0098	R	0.00982	0.246	na	na	na	na
0906-MMP036-07-GF-1	6/22/2009	Molybdenum	5.08		1.47	2.95				
0906-MMP036-07-GF-2	6/22/2009	Molybdenum	9.18		1.50	2.99				
0906-MMP036-07-GF-3	6/22/2009	Molybdenum	11.7		1.47	2.93	39	na	na	5
0906-MMP036-07-GF-1	6/22/2009	Nickel	2.83		0.196	0.784				
0906-MMP036-07-GF-2	6/22/2009	Nickel	2.67		0.195	0.778				
0906-MMP036-07-GF-3	6/22/2009	Nickel	2.97		0.196	0.786	5.3	na	na	100
0906-MMP036-07-GF-1	6/22/2009	Selenium	0.778		0.0980	0.196				
0906-MMP036-07-GF-2	6/22/2009	Selenium	0.444		0.0973	0.195				
0906-MMP036-07-GF-3	6/22/2009	Selenium	0.538		0.0982	0.196	29	na	na	5
0906-MMP036-07-GF-1	6/22/2009	Silver	0.049	U	0.0490	0.196				
0906-MMP036-07-GF-2	6/22/2009	Silver	0.0486	U	0.0486	0.195				
0906-MMP036-07-GF-3	6/22/2009	Silver	0.0491	U	0.0491	0.196	na	na	na	na
0906-MMP036-07-GF-1	6/22/2009	Thallium	0.0378		0.00980	0.0196				
0906-MMP036-07-GF-2	6/22/2009	Thallium	0.0484		0.00973	0.0195				
0906-MMP036-07-GF-3	6/22/2009	Thallium	0.0195	J	0.00982	0.0196	41	na	na	na
0906-MMP036-07-GF-1	6/22/2009	Uranium	0.098	U	0.0980	0.392				
0906-MMP036-07-GF-2	6/22/2009	Uranium	0.0973	U	0.0973	0.389				
0906-MMP036-07-GF-3	6/22/2009	Uranium	0.0982	U	0.0982	0.393	na	na	na	na
0906-MMP036-07-GF-1	6/22/2009	Vanadium	0.667		0.123	0.490				
0906-MMP036-07-GF-2	6/22/2009	Vanadium	0.721		0.122	0.486				
0906-MMP036-07-GF-3	6/22/2009	Vanadium	0.455	J	0.123	0.491	23	na	na	50
0906-MMP036-07-GF-1	6/22/2009	Zinc	38.9		0.492	0.983				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MMP036-07-GF-2	6/22/2009	Zinc	41.1		0.499	0.998				
0906-MMP036-07-GF-3	6/22/2009	Zinc	46.2		0.489	0.978	8.9	na	na	500
0906-MWD080-07-GF-1	6/23/2009	Antimony	0.495	U	0.495	0.990				
0906-MWD080-07-GF-2	6/23/2009	Antimony	0.494	U	0.494	0.988				
0906-MWD080-07-GF-3	6/23/2009	Antimony	0.477	U	0.477	0.954	na	na	na	na
0906-MWD080-07-GF-1	6/23/2009	Arsenic	0.481		0.0717	0.287				
0906-MWD080-07-GF-2	6/23/2009	Arsenic	0.351		0.0744	0.298				
0906-MWD080-07-GF-3	6/23/2009	Arsenic	0.246	J	0.0750	0.300	33	na	na	30
0906-MWD080-07-GF-1	6/23/2009	Boron	3.55	J	2.48	4.95				
0906-MWD080-07-GF-2	6/23/2009	Boron	7.74		2.47	4.94				
0906-MWD080-07-GF-3	6/23/2009	Boron	7.14		2.39	4.77	37	na	na	150
0906-MWD080-07-GF-1	6/23/2009	Cadmium	1.66		0.0239	0.0956				
0906-MWD080-07-GF-2	6/23/2009	Cadmium	1.28		0.0248	0.0992				
0906-MWD080-07-GF-3	6/23/2009	Cadmium	1.81		0.0250	0.100	17	na	na	10
0906-MWD080-07-GF-1	6/23/2009	Chromium	2.1		0.0956	0.382				
0906-MWD080-07-GF-2	6/23/2009	Chromium	2.12		0.0992	0.397				
0906-MWD080-07-GF-3	6/23/2009	Chromium	2.05		0.100	0.400	2	na	na	100
0906-MWD080-07-GF-1	6/23/2009	Cobalt	0.12	U	0.120	0.478				
0906-MWD080-07-GF-2	6/23/2009	Cobalt	0.124	U	0.124	0.496				
0906-MWD080-07-GF-3	6/23/2009	Cobalt	0.125	U	0.125	0.500	na	na	na	25
0906-MWD080-07-GF-1	6/23/2009	Copper, total	5.64		0.143	0.574				
0906-MWD080-07-GF-2	6/23/2009	Copper, total	4.92		0.149	0.595				
0906-MWD080-07-GF-3	6/23/2009	Copper, total	6.87	J+	0.150	0.600	17	na	na	40
0906-MWD080-07-GF-1	6/23/2009	Manganese	14.6		0.0990	0.495				
0906-MWD080-07-GF-2	6/23/2009	Manganese	21.7		0.0988	0.494				
0906-MWD080-07-GF-3	6/23/2009	Manganese	26.2		0.0954	0.477	28	na	na	2000
0906-MWD080-07-GF-1	6/23/2009	Mercury	0.0191	UJ	0.0191	0.478				
0906-MWD080-07-GF-2	6/23/2009	Mercury	0.0198	UJ	0.0198	0.496				
0906-MWD080-07-GF-3	6/23/2009	Mercury	0.02	U	0.0200	0.500	na	na	na	na
0906-MWD080-07-GF-1	6/23/2009	Molybdenum	4.89		1.49	2.97				
0906-MWD080-07-GF-2	6/23/2009	Molybdenum	3.7		1.48	2.96				
0906-MWD080-07-GF-3	6/23/2009	Molybdenum	6.06		1.43	2.86	24	na	na	5
0906-MWD080-07-GF-1	6/23/2009	Nickel	4.09		0.191	0.765				
0906-MWD080-07-GF-2	6/23/2009	Nickel	3.15		0.198	0.794				
0906-MWD080-07-GF-3	6/23/2009	Nickel	6.73		0.200	0.800	40	na	na	100
0906-MWD080-07-GF-1	6/23/2009	Selenium	47.2		2.39	4.78				
0906-MWD080-07-GF-2	6/23/2009	Selenium	28.1		0.0992	0.198				
0906-MWD080-07-GF-3	6/23/2009	Selenium	28.7	J	0.100	0.200	31	na	na	5
0906-MWD080-07-GF-1	6/23/2009	Silver	0.0478	U	0.0478	0.191				
0906-MWD080-07-GF-2	6/23/2009	Silver	0.0496	U	0.0496	0.198				
0906-MWD080-07-GF-3	6/23/2009	Silver	0.05	U	0.0500	0.200	na	na	na	na
0906-MWD080-07-GF-1	6/23/2009	Thallium	0.109		0.00956	0.0191				
0906-MWD080-07-GF-2	6/23/2009	Thallium	0.0831		0.00992	0.0198				
0906-MWD080-07-GF-3	6/23/2009	Thallium	0.118		0.0100	0.0200	18	na	na	na
0906-MWD080-07-GF-1	6/23/2009	Uranium	0.0956	U	0.0956	0.382				
0906-MWD080-07-GF-2	6/23/2009	Uranium	0.0992	U	0.0992	0.397				
0906-MWD080-07-GF-3	6/23/2009	Uranium	0.1	U	0.100	0.400	na	na	na	na

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MWD080-07-GF-1	6/23/2009	Vanadium	0.474	J	0.120	0.478				
0906-MWD080-07-GF-2	6/23/2009	Vanadium	0.442	J	0.124	0.496				
0906-MWD080-07-GF-3	6/23/2009	Vanadium	0.403	J	0.125	0.500	8.1	na	na	50
0906-MWD080-07-GF-1	6/23/2009	Zinc	60.9	J-	0.495	0.990				
0906-MWD080-07-GF-2	6/23/2009	Zinc	56.4	J-	0.494	0.988				
0906-MWD080-07-GF-3	6/23/2009	Zinc	63.6	J-	0.477	0.954	6.0	na	na	500
0906-MWD081-AL03-GF-1	6/23/2009	Antimony	0.492	U	0.492	0.984				
0906-MWD081-AL03-GF-2	6/23/2009	Antimony	0.495	U	0.495	0.989				
0906-MWD081-AL03-GF-3	6/23/2009	Antimony	0.496	U	0.496	0.992	na	na	na	na
0906-MWD081-AL03-GF-1	6/23/2009	Arsenic	0.134	J	0.0735	0.294				
0906-MWD081-AL03-GF-2	6/23/2009	Arsenic	0.215	J	0.0749	0.299				
0906-MWD081-AL03-GF-3	6/23/2009	Arsenic	0.175	J	0.0740	0.296	23	na	na	30
0906-MWD081-AL03-GF-1	6/23/2009	Boron	12.3		2.46	4.92				
0906-MWD081-AL03-GF-2	6/23/2009	Boron	13.8		2.47	4.95				
0906-MWD081-AL03-GF-3	6/23/2009	Boron	8.92		2.48	4.96	21	na	na	150
0906-MWD081-AL03-GF-1	6/23/2009	Cadmium	4.68		0.0245	0.0980				
0906-MWD081-AL03-GF-2	6/23/2009	Cadmium	4.97		0.0250	0.0998				
0906-MWD081-AL03-GF-3	6/23/2009	Cadmium	3.96		0.0247	0.0986	11	na	na	10
0906-MWD081-AL03-GF-1	6/23/2009	Chromium	2.19		0.0980	0.392				
0906-MWD081-AL03-GF-2	6/23/2009	Chromium	1.99		0.0998	0.399				
0906-MWD081-AL03-GF-3	6/23/2009	Chromium	1.95		0.0986	0.394	6.3	na	na	100
0906-MWD081-AL03-GF-1	6/23/2009	Cobalt	0.123	U	0.123	0.490				
0906-MWD081-AL03-GF-2	6/23/2009	Cobalt	0.125	U	0.125	0.499				
0906-MWD081-AL03-GF-3	6/23/2009	Cobalt	0.123	U	0.123	0.493	na	na	na	25
0906-MWD081-AL03-GF-1	6/23/2009	Copper, total	6.43	J+	0.147	0.588				
0906-MWD081-AL03-GF-2	6/23/2009	Copper, total	5.41	J+	0.150	0.599				
0906-MWD081-AL03-GF-3	6/23/2009	Copper, total	5.49	J+	0.148	0.592	10	na	na	40
0906-MWD081-AL03-GF-1	6/23/2009	Manganese	17.3		0.0984	0.492				
0906-MWD081-AL03-GF-2	6/23/2009	Manganese	14.3		0.0989	0.495				
0906-MWD081-AL03-GF-3	6/23/2009	Manganese	13.8		0.0992	0.496	13	na	na	2000
0906-MWD081-AL03-GF-1	6/23/2009	Mercury	0.0196	U	0.0196	0.490				
0906-MWD081-AL03-GF-2	6/23/2009	Mercury	0.02	U	0.0200	0.499				
0906-MWD081-AL03-GF-3	6/23/2009	Mercury	0.0197	U	0.0197	0.493	na	na	na	na
0906-MWD081-AL03-GF-1	6/23/2009	Molybdenum	21.5		1.48	2.95				
0906-MWD081-AL03-GF-2	6/23/2009	Molybdenum	17.9		1.48	2.97				
0906-MWD081-AL03-GF-3	6/23/2009	Molybdenum	18.8		1.49	2.98	10	na	na	5
0906-MWD081-AL03-GF-1	6/23/2009	Nickel	17.1		0.196	0.784				
0906-MWD081-AL03-GF-2	6/23/2009	Nickel	12.7		0.200	0.798				
0906-MWD081-AL03-GF-3	6/23/2009	Nickel	12.6		0.197	0.789	18	na	na	100
0906-MWD081-AL03-GF-1	6/23/2009	Selenium	9.75	J	0.0980	0.196				
0906-MWD081-AL03-GF-2	6/23/2009	Selenium	21.3	J	0.0998	0.200				
0906-MWD081-AL03-GF-3	6/23/2009	Selenium	12.6	J	0.0986	0.197	41	na	na	5
0906-MWD081-AL03-GF-1	6/23/2009	Silver	0.049	U	0.0490	0.196				
0906-MWD081-AL03-GF-2	6/23/2009	Silver	0.0499	U	0.0499	0.200				
0906-MWD081-AL03-GF-3	6/23/2009	Silver	0.0493	U	0.0493	0.197	na	na	na	na
0906-MWD081-AL03-GF-1	6/23/2009	Thallium	0.186		0.00980	0.0196				
0906-MWD081-AL03-GF-2	6/23/2009	Thallium	0.237		0.00998	0.0200				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MWD081-AL03-GF-3	6/23/2009	Thallium	0.237		0.00986	0.0197	13	na	na	na
0906-MWD081-AL03-GF-1	6/23/2009	Uranium	0.098	U	0.0980	0.392				
0906-MWD081-AL03-GF-2	6/23/2009	Uranium	0.0998	U	0.0998	0.399				
0906-MWD081-AL03-GF-3	6/23/2009	Uranium	0.0986	U	0.0986	0.394	na	na	na	na
0906-MWD081-AL03-GF-1	6/23/2009	Vanadium	0.835		0.123	0.490				
0906-MWD081-AL03-GF-2	6/23/2009	Vanadium	0.95		0.125	0.499				
0906-MWD081-AL03-GF-3	6/23/2009	Vanadium	0.751		0.123	0.493	12	na	na	50
0906-MWD081-AL03-GF-1	6/23/2009	Zinc	178		0.492	0.984				
0906-MWD081-AL03-GF-2	6/23/2009	Zinc	133		0.495	0.989				
0906-MWD081-AL03-GF-3	6/23/2009	Zinc	176		0.496	0.992	16	na	na	500
0906-MWD082-07-GF-1	7/8/2009	Antimony	0.485	U	0.485	0.971				
0906-MWD082-07-GF-2	7/8/2009	Antimony	0.498	U	0.498	0.996				
0906-MWD082-07-GF-3	7/8/2009	Antimony	0.497	U	0.497	0.994	na	na	na	na
0906-MWD082-07-GF-1	7/8/2009	Arsenic	0.0813	J	0.0725	0.290				
0906-MWD082-07-GF-2	7/8/2009	Arsenic	0.0783	J	0.0697	0.279				
0906-MWD082-07-GF-3	7/8/2009	Arsenic	0.0712	U	0.0712	0.285	na	na	0.0030	30
0906-MWD082-07-GF-1	7/8/2009	Boron	11.2		2.43	4.85				
0906-MWD082-07-GF-2	7/8/2009	Boron	11.9		2.49	4.98				
0906-MWD082-07-GF-3	7/8/2009	Boron	9.55		2.49	4.97	11	na	na	150
0906-MWD082-07-GF-1	7/8/2009	Cadmium	0.247		0.0242	0.0967				
0906-MWD082-07-GF-2	7/8/2009	Cadmium	0.252		0.0232	0.0929				
0906-MWD082-07-GF-3	7/8/2009	Cadmium	0.212		0.0237	0.0949	9.2	na	na	10
0906-MWD082-07-GF-1	7/8/2009	Chromium	1.25		0.0967	0.387				
0906-MWD082-07-GF-2	7/8/2009	Chromium	1.05		0.0929	0.372				
0906-MWD082-07-GF-3	7/8/2009	Chromium	0.994		0.0949	0.380	12	na	na	100
0906-MWD082-07-GF-1	7/8/2009	Cobalt	0.121	U	0.121	0.484				
0906-MWD082-07-GF-2	7/8/2009	Cobalt	0.116	U	0.116	0.465				
0906-MWD082-07-GF-3	7/8/2009	Cobalt	0.119	U	0.119	0.474	na	na	na	25
0906-MWD082-07-GF-1	7/8/2009	Copper, total	3.5		0.145	0.580				
0906-MWD082-07-GF-2	7/8/2009	Copper, total	3.64		0.139	0.558				
0906-MWD082-07-GF-3	7/8/2009	Copper, total	3.74		0.142	0.569	3.3	na	na	40
0906-MWD082-07-GF-1	7/8/2009	Manganese	54.4	J-	0.0971	0.485				
0906-MWD082-07-GF-2	7/8/2009	Manganese	48	J-	0.0996	0.498				
0906-MWD082-07-GF-3	7/8/2009	Manganese	53	J-	0.0994	0.497	6.5	na	na	2000
0906-MWD082-07-GF-1	7/8/2009	Mercury	0.0193	U	0.0193	0.484				
0906-MWD082-07-GF-2	7/8/2009	Mercury	0.0186	U	0.0186	0.465				
0906-MWD082-07-GF-3	7/8/2009	Mercury	0.019	U	0.0190	0.474	na	na	na	na
0906-MWD082-07-GF-1	7/8/2009	Molybdenum	13.8		1.46	2.91				
0906-MWD082-07-GF-2	7/8/2009	Molybdenum	7.21		1.49	2.99				
0906-MWD082-07-GF-3	7/8/2009	Molybdenum	13.7		1.49	2.98	33	na	na	5
0906-MWD082-07-GF-1	7/8/2009	Nickel	1.89		0.193	0.774				
0906-MWD082-07-GF-2	7/8/2009	Nickel	2.21		0.186	0.743				
0906-MWD082-07-GF-3	7/8/2009	Nickel	1.46		0.190	0.759	20	na	na	100
0906-MWD082-07-GF-1	7/8/2009	Selenium	0.506	J	0.0967	0.193				
0906-MWD082-07-GF-2	7/8/2009	Selenium	0.379	J	0.0929	0.186				
0906-MWD082-07-GF-3	7/8/2009	Selenium	0.26	J	0.0949	0.190	32	na	na	5
0906-MWD082-07-GF-1	7/8/2009	Silver	0.0484	U	0.0484	0.193				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MWD082-07-GF-2	7/8/2009	Silver	0.0465	U	0.0465	0.186				
0906-MWD082-07-GF-3	7/8/2009	Silver	0.0474	U	0.0474	0.190	na	na	na	na
0906-MWD082-07-GF-1	7/8/2009	Thallium	0.0097	U	0.00967	0.0193				
0906-MWD082-07-GF-2	7/8/2009	Thallium	0.0099	J	0.00929	0.0186				
0906-MWD082-07-GF-3	7/8/2009	Thallium	0.0095	U	0.00949	0.0190	na	na	na	na
0906-MWD082-07-GF-1	7/8/2009	Uranium	0.0967	U	0.0967	0.387				
0906-MWD082-07-GF-2	7/8/2009	Uranium	0.0929	U	0.0929	0.372				
0906-MWD082-07-GF-3	7/8/2009	Uranium	0.0949	U	0.0949	0.380	na	na	na	na
0906-MWD082-07-GF-1	7/8/2009	Vanadium	0.188	J	0.121	0.484				
0906-MWD082-07-GF-2	7/8/2009	Vanadium	0.196	J	0.116	0.465				
0906-MWD082-07-GF-3	7/8/2009	Vanadium	0.173	J	0.119	0.474	6.3	na	na	50
0906-MWD082-07-GF-1	7/8/2009	Zinc	26.1	J-	0.485	0.971				
0906-MWD082-07-GF-2	7/8/2009	Zinc	25.7	J-	0.498	0.996				
0906-MWD082-07-GF-3	7/8/2009	Zinc	22	J-	0.497	0.994	9.2	na	na	500
0906-MWD083-07-GF-1	6/18/2009	Antimony	0.494	U	0.494	0.988				
0906-MWD083-07-GF-2	6/18/2009	Antimony	0.498	U	0.498	0.996				
0906-MWD083-07-GF-3	6/18/2009	Antimony	0.495	U	0.495	0.990	na	na	na	na
0906-MWD083-07-GF-1	6/18/2009	Arsenic	0.142	J	0.0735	0.294				
0906-MWD083-07-GF-2	6/18/2009	Arsenic	0.114	J	0.0744	0.298				
0906-MWD083-07-GF-3	6/18/2009	Arsenic	0.0748	J	0.0709	0.284	31	na	na	30
0906-MWD083-07-GF-1	6/18/2009	Boron	7.69		2.47	4.94				
0906-MWD083-07-GF-2	6/18/2009	Boron	3.49	J	2.49	4.98				
0906-MWD083-07-GF-3	6/18/2009	Boron	6.31		2.48	4.95	37	na	na	150
0906-MWD083-07-GF-1	6/18/2009	Cadmium	0.733		0.0245	0.0980				
0906-MWD083-07-GF-2	6/18/2009	Cadmium	0.523		0.0248	0.0992				
0906-MWD083-07-GF-3	6/18/2009	Cadmium	0.674		0.0236	0.0945	17	na	na	10
0906-MWD083-07-GF-1	6/18/2009	Chromium	3.24		0.0980	0.392				
0906-MWD083-07-GF-2	6/18/2009	Chromium	2.54		0.0992	0.397				
0906-MWD083-07-GF-3	6/18/2009	Chromium	2.87		0.0945	0.378	12	na	na	100
0906-MWD083-07-GF-1	6/18/2009	Cobalt	0.123	U	0.123	0.490				
0906-MWD083-07-GF-2	6/18/2009	Cobalt	0.124	U	0.124	0.496				
0906-MWD083-07-GF-3	6/18/2009	Cobalt	0.118	U	0.118	0.473	na	na	na	25
0906-MWD083-07-GF-1	6/18/2009	Copper, total	5.58		0.147	0.588				
0906-MWD083-07-GF-2	6/18/2009	Copper, total	4.55		0.149	0.595				
0906-MWD083-07-GF-3	6/18/2009	Copper, total	4.64		0.142	0.567	12	na	na	40
0906-MWD083-07-GF-1	6/18/2009	Manganese	63.9		0.0988	0.494				
0906-MWD083-07-GF-2	6/18/2009	Manganese	54.5		0.0996	0.498				
0906-MWD083-07-GF-3	6/18/2009	Manganese	50.6		0.0990	0.495	12	na	na	2000
0906-MWD083-07-GF-1	6/18/2009	Mercury	0.0196	U	0.0196	0.490				
0906-MWD083-07-GF-2	6/18/2009	Mercury	0.0198	U	0.0198	0.496				
0906-MWD083-07-GF-3	6/18/2009	Mercury	0.0189	U	0.0189	0.473	na	na	na	na
0906-MWD083-07-GF-1	6/18/2009	Molybdenum	5.02		1.48	2.96				
0906-MWD083-07-GF-2	6/18/2009	Molybdenum	1.76	J	1.49	2.99				
0906-MWD083-07-GF-3	6/18/2009	Molybdenum	2.44	J	1.49	2.97	56	na	na	5
0906-MWD083-07-GF-1	6/18/2009	Nickel	2.91		0.196	0.784				
0906-MWD083-07-GF-2	6/18/2009	Nickel	1.95		0.198	0.794				
0906-MWD083-07-GF-3	6/18/2009	Nickel	2.01		0.189	0.756	23	na	na	100

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
(Page 40 of 58)

Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MWD083-07-GF-1	6/18/2009	Selenium	1.64		0.0980	0.196				
0906-MWD083-07-GF-2	6/18/2009	Selenium	4.53		0.0992	0.198				
0906-MWD083-07-GF-3	6/18/2009	Selenium	1.77		0.0945	0.189	62	na	na	5
0906-MWD083-07-GF-1	6/18/2009	Silver	0.049	UJ	0.0490	0.196				
0906-MWD083-07-GF-2	6/18/2009	Silver	0.0496	UJ	0.0496	0.198				
0906-MWD083-07-GF-3	6/18/2009	Silver	0.0473	UJ	0.0473	0.189	na	na	na	na
0906-MWD083-07-GF-1	6/18/2009	Thallium	0.0112	J	0.00980	0.0196				
0906-MWD083-07-GF-2	6/18/2009	Thallium	0.0124	J	0.00992	0.0198				
0906-MWD083-07-GF-3	6/18/2009	Thallium	0.0095	U	0.00945	0.0189	na	na	0.0012	na
0906-MWD083-07-GF-1	6/18/2009	Uranium	0.098	U	0.0980	0.392				
0906-MWD083-07-GF-2	6/18/2009	Uranium	0.0992	U	0.0992	0.397				
0906-MWD083-07-GF-3	6/18/2009	Uranium	0.0945	U	0.0945	0.378	na	na	na	na
0906-MWD083-07-GF-1	6/18/2009	Vanadium	0.953		0.123	0.490				
0906-MWD083-07-GF-2	6/18/2009	Vanadium	0.585		0.124	0.496				
0906-MWD083-07-GF-3	6/18/2009	Vanadium	0.751		0.118	0.473	24	na	na	50
0906-MWD083-07-GF-1	6/18/2009	Zinc	41.2		0.494	0.988				
0906-MWD083-07-GF-2	6/18/2009	Zinc	34.2		0.498	0.996				
0906-MWD083-07-GF-3	6/18/2009	Zinc	34.1		0.495	0.990	11	na	na	500
0906-MWD084-07-GF-1	6/20/2009	Antimony	0.474	U	0.474	0.949				
0906-MWD084-07-GF-2	6/20/2009	Antimony	0.483	U	0.483	0.965				
0906-MWD084-07-GF-3	6/20/2009	Antimony	0.478	U	0.478	0.955	na	na	na	na
0906-MWD084-07-GF-1	6/20/2009	Arsenic	0.0717	UJ	0.0717	0.287				
0906-MWD084-07-GF-2	6/20/2009	Arsenic	6.72	J	0.0741	0.296				
0906-MWD084-07-GF-3	6/20/2009	Arsenic	0.0727	UJ	0.0727	0.291	na	na	na	30
0906-MWD084-07-GF-1	6/20/2009	Boron	9.08		2.37	4.74				
0906-MWD084-07-GF-2	6/20/2009	Boron	9.58		2.41	4.83				
0906-MWD084-07-GF-3	6/20/2009	Boron	8.1		2.39	4.78	8.4	na	na	150
0906-MWD084-07-GF-1	6/20/2009	Cadmium	0.263		0.0239	0.0956				
0906-MWD084-07-GF-2	6/20/2009	Cadmium	0.148		0.0247	0.0988				
0906-MWD084-07-GF-3	6/20/2009	Cadmium	0.173		0.0242	0.0969	31	na	na	10
0906-MWD084-07-GF-1	6/20/2009	Chromium	1.8		0.0956	0.382				
0906-MWD084-07-GF-2	6/20/2009	Chromium	1.75		0.0988	0.395				
0906-MWD084-07-GF-3	6/20/2009	Chromium	2.03		0.0969	0.388	8.0	na	na	100
0906-MWD084-07-GF-1	6/20/2009	Cobalt	0.12	U	0.120	0.478				
0906-MWD084-07-GF-2	6/20/2009	Cobalt	0.124	U	0.124	0.494				
0906-MWD084-07-GF-3	6/20/2009	Cobalt	0.121	U	0.121	0.484	na	na	na	25
0906-MWD084-07-GF-1	6/20/2009	Copper, total	7.36		0.143	0.574				
0906-MWD084-07-GF-2	6/20/2009	Copper, total	6.19		0.148	0.593				
0906-MWD084-07-GF-3	6/20/2009	Copper, total	6.49		0.145	0.581	9.1	na	na	40
0906-MWD084-07-GF-1	6/20/2009	Manganese	45.2		0.0949	0.474				
0906-MWD084-07-GF-2	6/20/2009	Manganese	48.3		0.0965	0.483				
0906-MWD084-07-GF-3	6/20/2009	Manganese	52.8		0.0955	0.478	7.8	na	na	2000
0906-MWD084-07-GF-1	6/20/2009	Mercury	0.0099	J	0.00956	0.239				
0906-MWD084-07-GF-2	6/20/2009	Mercury	0.0099	UJ	0.00988	0.247				
0906-MWD084-07-GF-3	6/20/2009	Mercury	0.0097	UJ	0.00969	0.242	na	na	na	na
0906-MWD084-07-GF-1	6/20/2009	Molybdenum	4.4		1.42	2.85				
0906-MWD084-07-GF-2	6/20/2009	Molybdenum	2.1	J	1.45	2.90				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MWD084-07-GF-3	6/20/2009	Molybdenum	3.78		1.43	2.87	35	na	na	5
0906-MWD084-07-GF-1	6/20/2009	Nickel	1.5		0.191	0.765				
0906-MWD084-07-GF-2	6/20/2009	Nickel	0.99		0.198	0.791				
0906-MWD084-07-GF-3	6/20/2009	Nickel	2.02		0.194	0.775	34	na	na	100
0906-MWD084-07-GF-1	6/20/2009	Selenium	2.15	J	0.0956	0.191				
0906-MWD084-07-GF-2	6/20/2009	Selenium	0.7	J	0.0988	0.198				
0906-MWD084-07-GF-3	6/20/2009	Selenium	3.32	J	0.0969	0.194	64	na	na	5
0906-MWD084-07-GF-1	6/20/2009	Silver	0.0478	U	0.0478	0.191				
0906-MWD084-07-GF-2	6/20/2009	Silver	0.0494	U	0.0494	0.198				
0906-MWD084-07-GF-3	6/20/2009	Silver	0.0484	U	0.0484	0.194	na	na	na	na
0906-MWD084-07-GF-1	6/20/2009	Thallium	0.0096	U	0.00956	0.0191				
0906-MWD084-07-GF-2	6/20/2009	Thallium	0.0099	U	0.00988	0.0198				
0906-MWD084-07-GF-3	6/20/2009	Thallium	0.0097	U	0.00969	0.0194	na	na	na	na
0906-MWD084-07-GF-1	6/20/2009	Uranium	0.0956	U	0.0956	0.382				
0906-MWD084-07-GF-2	6/20/2009	Uranium	0.0988	U	0.0988	0.395				
0906-MWD084-07-GF-3	6/20/2009	Uranium	0.0969	U	0.0969	0.388	na	na	na	na
0906-MWD084-07-GF-1	6/20/2009	Vanadium	0.4	J	0.120	0.478				
0906-MWD084-07-GF-2	6/20/2009	Vanadium	0.427	J	0.124	0.494				
0906-MWD084-07-GF-3	6/20/2009	Vanadium	0.395	J	0.121	0.484	4.2	na	na	50
0906-MWD084-07-GF-1	6/20/2009	Zinc	28.4		0.474	0.949				
0906-MWD084-07-GF-2	6/20/2009	Zinc	25.2		0.483	0.965				
0906-MWD084-07-GF-3	6/20/2009	Zinc	30.5		0.478	0.955	10	na	na	500
0906-MWD085-07-GF-1	6/17/2009	Antimony	0.482	U	0.482	0.963				
0906-MWD085-07-GF-2	6/17/2009	Antimony	0.484	U	0.484	0.967				
0906-MWD085-07-GF-3	6/17/2009	Antimony	0.483	U	0.483	0.965	na	na	na	na
0906-MWD085-07-GF-1	6/17/2009	Arsenic	0.0828	J	0.0683	0.273				
0906-MWD085-07-GF-2	6/17/2009	Arsenic	0.138	J	0.0741	0.296				
0906-MWD085-07-GF-3	6/17/2009	Arsenic	0.214	J	0.0738	0.295	45	na	na	30
0906-MWD085-07-GF-1	6/17/2009	Boron	4.66	J	2.41	4.82				
0906-MWD085-07-GF-2	6/17/2009	Boron	6.61		2.42	4.84				
0906-MWD085-07-GF-3	6/17/2009	Boron	9.23		2.41	4.83	34	na	na	150
0906-MWD085-07-GF-1	6/17/2009	Cadmium	0.912		0.0228	0.0911				
0906-MWD085-07-GF-2	6/17/2009	Cadmium	1.27	J	0.0247	0.0988				
0906-MWD085-07-GF-3	6/17/2009	Cadmium	0.993	J	0.0246	0.0984	18	na	na	10
0906-MWD085-07-GF-1	6/17/2009	Chromium	2.99		0.0911	0.364				
0906-MWD085-07-GF-2	6/17/2009	Chromium	5.93		0.0988	0.395				
0906-MWD085-07-GF-3	6/17/2009	Chromium	4.1		0.0984	0.394	34	na	na	100
0906-MWD085-07-GF-1	6/17/2009	Cobalt	0.114	U	0.114	0.455				
0906-MWD085-07-GF-2	6/17/2009	Cobalt	0.171	J	0.124	0.494				
0906-MWD085-07-GF-3	6/17/2009	Cobalt	0.123	U	0.123	0.492	na	na	na	25
0906-MWD085-07-GF-1	6/17/2009	Copper, total	4.08		0.137	0.546				
0906-MWD085-07-GF-2	6/17/2009	Copper, total	4.1		0.148	0.593				
0906-MWD085-07-GF-3	6/17/2009	Copper, total	5.35		0.148	0.591	16	na	na	40
0906-MWD085-07-GF-1	6/17/2009	Manganese	37.6		0.0963	0.482				
0906-MWD085-07-GF-2	6/17/2009	Manganese	49.1		0.0967	0.484				
0906-MWD085-07-GF-3	6/17/2009	Manganese	35		0.0965	0.483	18	na	na	2000
0906-MWD085-07-GF-1	6/17/2009	Mercury	0.0091	UJ	0.00911	0.228				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MWD085-07-GF-2	6/17/2009	Mercury	0.0099	UJ	0.00988	0.247				
0906-MWD085-07-GF-3	6/17/2009	Mercury	0.0098	UJ	0.00984	0.246	na	na	na	na
0906-MWD085-07-GF-1	6/17/2009	Molybdenum	7.21		1.45	2.89				
0906-MWD085-07-GF-2	6/17/2009	Molybdenum	4.86		1.45	2.90				
0906-MWD085-07-GF-3	6/17/2009	Molybdenum	4.57		1.45	2.90	26	na	na	5
0906-MWD085-07-GF-1	6/17/2009	Nickel	1.36		0.182	0.729				
0906-MWD085-07-GF-2	6/17/2009	Nickel	2.41		0.198	0.791				
0906-MWD085-07-GF-3	6/17/2009	Nickel	1.91		0.197	0.787	28	na	na	100
0906-MWD085-07-GF-1	6/17/2009	Selenium	3.2	J	0.0911	0.182				
0906-MWD085-07-GF-2	6/17/2009	Selenium	4.06		0.0988	0.198				
0906-MWD085-07-GF-3	6/17/2009	Selenium	5.86		0.0984	0.197	31	na	na	5
0906-MWD085-07-GF-1	6/17/2009	Silver	0.0455	U	0.0455	0.182				
0906-MWD085-07-GF-2	6/17/2009	Silver	0.0494	UJ	0.0494	0.198				
0906-MWD085-07-GF-3	6/17/2009	Silver	0.0492	UJ	0.0492	0.197	na	na	na	na
0906-MWD085-07-GF-1	6/17/2009	Thallium	0.0772		0.00911	0.0182				
0906-MWD085-07-GF-2	6/17/2009	Thallium	0.139		0.00988	0.0198				
0906-MWD085-07-GF-3	6/17/2009	Thallium	0.267		0.00984	0.0197	60	na	na	na
0906-MWD085-07-GF-1	6/17/2009	Uranium	0.0911	U	0.0911	0.364				
0906-MWD085-07-GF-2	6/17/2009	Uranium	0.0988	U	0.0988	0.395				
0906-MWD085-07-GF-3	6/17/2009	Uranium	0.0984	U	0.0984	0.394	na	na	na	na
0906-MWD085-07-GF-1	6/17/2009	Vanadium	0.85		0.114	0.455				
0906-MWD085-07-GF-2	6/17/2009	Vanadium	1.62		0.124	0.494				
0906-MWD085-07-GF-3	6/17/2009	Vanadium	1.09		0.123	0.492	33	na	na	50
0906-MWD085-07-GF-1	6/17/2009	Zinc	27.9	J-	0.482	0.963				
0906-MWD085-07-GF-2	6/17/2009	Zinc	27.3		0.484	0.967				
0906-MWD085-07-GF-3	6/17/2009	Zinc	35.1		0.483	0.965	14	na	na	500
0906-MWD086-07-GS-1	6/17/2009	Antimony	0.488	U	0.488	0.977				
0906-MWD086-07-GS-2	6/17/2009	Antimony	0.464	U	0.464	0.928				
0906-MWD086-07-GS-3	6/17/2009	Antimony	0.472	U	0.472	0.944	na	na	na	na
0906-MWD086-07-GS-1	6/17/2009	Arsenic	0.0724	U	0.0724	0.290				
0906-MWD086-07-GS-2	6/17/2009	Arsenic	0.0731	U	0.0731	0.292				
0906-MWD086-07-GS-3	6/17/2009	Arsenic	0.0704	U	0.0704	0.281	na	na	na	30
0906-MWD086-07-GS-1	6/17/2009	Boron	2.44	U	2.44	4.88				
0906-MWD086-07-GS-2	6/17/2009	Boron	2.5	J	2.32	4.64				
0906-MWD086-07-GS-3	6/17/2009	Boron	2.36	U	2.36	4.72	na	na	na	150
0906-MWD086-07-GS-1	6/17/2009	Cadmium	0.304		0.0241	0.0965				
0906-MWD086-07-GS-2	6/17/2009	Cadmium	0.205		0.0244	0.0975				
0906-MWD086-07-GS-3	6/17/2009	Cadmium	0.252		0.0235	0.0938	20	na	na	10
0906-MWD086-07-GS-1	6/17/2009	Chromium	2.21		0.0965	0.386				
0906-MWD086-07-GS-2	6/17/2009	Chromium	3.11		0.0975	0.390				
0906-MWD086-07-GS-3	6/17/2009	Chromium	2.87		0.0938	0.375	17	na	na	100
0906-MWD086-07-GS-1	6/17/2009	Cobalt	0.121	U	0.121	0.483				
0906-MWD086-07-GS-2	6/17/2009	Cobalt	0.122	U	0.122	0.487				
0906-MWD086-07-GS-3	6/17/2009	Cobalt	0.117	U	0.117	0.469	na	na	na	25
0906-MWD086-07-GS-1	6/17/2009	Copper, total	4.68		0.145	0.579				
0906-MWD086-07-GS-2	6/17/2009	Copper, total	4.85		0.146	0.585				
0906-MWD086-07-GS-3	6/17/2009	Copper, total	4.52		0.141	0.563	3.5	na	na	40

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
(Page 43 of 58)

Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MWD086-07-GS-1	6/17/2009	Manganese	28.2		0.0977	0.488				
0906-MWD086-07-GS-2	6/17/2009	Manganese	29.9		0.0928	0.464				
0906-MWD086-07-GS-3	6/17/2009	Manganese	26		0.0944	0.472	7.0	na	na	2000
0906-MWD086-07-GS-1	6/17/2009	Mercury	0.0097	UJ	0.00965	0.241				
0906-MWD086-07-GS-2	6/17/2009	Mercury	0.0244	J	0.00975	0.244				
0906-MWD086-07-GS-3	6/17/2009	Mercury	0.0094	UJ	0.00938	0.235	na	na	na	na
0906-MWD086-07-GS-1	6/17/2009	Molybdenum	8.64		1.46	2.93				
0906-MWD086-07-GS-2	6/17/2009	Molybdenum	9.91		1.39	2.78				
0906-MWD086-07-GS-3	6/17/2009	Molybdenum	11.9		1.42	2.83	16	na	na	5
0906-MWD086-07-GS-1	6/17/2009	Nickel	1.39		0.193	0.772				
0906-MWD086-07-GS-2	6/17/2009	Nickel	1.26		0.195	0.780				
0906-MWD086-07-GS-3	6/17/2009	Nickel	0.95		0.188	0.750	19	na	na	100
0906-MWD086-07-GS-1	6/17/2009	Selenium	1.8	J	0.0965	0.193				
0906-MWD086-07-GS-2	6/17/2009	Selenium	1.09	J	0.0975	0.195				
0906-MWD086-07-GS-3	6/17/2009	Selenium	1.13	J	0.0938	0.188	30	na	na	5
0906-MWD086-07-GS-1	6/17/2009	Silver	0.0483	U	0.0483	0.193				
0906-MWD086-07-GS-2	6/17/2009	Silver	0.0487	U	0.0487	0.195				
0906-MWD086-07-GS-3	6/17/2009	Silver	0.0469	U	0.0469	0.188	na	na	na	na
0906-MWD086-07-GS-1	6/17/2009	Thallium	0.0164	J	0.00965	0.0193				
0906-MWD086-07-GS-2	6/17/2009	Thallium	0.0193	J	0.00975	0.0195				
0906-MWD086-07-GS-3	6/17/2009	Thallium	0.0131	J	0.00938	0.0188	19	na	na	na
0906-MWD086-07-GS-1	6/17/2009	Uranium	0.0965	U	0.0965	0.386				
0906-MWD086-07-GS-2	6/17/2009	Uranium	0.0975	U	0.0975	0.390				
0906-MWD086-07-GS-3	6/17/2009	Uranium	0.0938	U	0.0938	0.375	na	na	na	na
0906-MWD086-07-GS-1	6/17/2009	Vanadium	0.51		0.121	0.483				
0906-MWD086-07-GS-2	6/17/2009	Vanadium	0.634		0.122	0.487				
0906-MWD086-07-GS-3	6/17/2009	Vanadium	0.598		0.117	0.469	11	na	na	50
0906-MWD086-07-GS-1	6/17/2009	Zinc	25.8	J-	0.488	0.977				
0906-MWD086-07-GS-2	6/17/2009	Zinc	28.5	J-	0.464	0.928				
0906-MWD086-07-GS-3	6/17/2009	Zinc	24.6	J-	0.472	0.944	7.6	na	na	500
0906-MWD087-07-GF-1	6/16/2009	Antimony	0.498	U	0.498	0.996				
0906-MWD087-07-GF-2	6/16/2009	Antimony	0.497	U	0.497	0.994				
0906-MWD087-07-GF-3	6/16/2009	Antimony	0.5	U	0.500	1.00	na	na	na	na
0906-MWD087-07-GF-1	6/16/2009	Arsenic	0.199	J	0.0710	0.284				
0906-MWD087-07-GF-2	6/16/2009	Arsenic	0.345		0.0701	0.280				
0906-MWD087-07-GF-3	6/16/2009	Arsenic	0.323		0.0712	0.285	27	na	na	30
0906-MWD087-07-GF-1	6/16/2009	Boron	33.7		2.49	4.98				
0906-MWD087-07-GF-2	6/16/2009	Boron	27.6		2.49	4.97				
0906-MWD087-07-GF-3	6/16/2009	Boron	23.5		2.50	5.00	18	na	na	150
0906-MWD087-07-GF-1	6/16/2009	Cadmium	5.13		0.0237	0.0947				
0906-MWD087-07-GF-2	6/16/2009	Cadmium	5		0.0234	0.0935				
0906-MWD087-07-GF-3	6/16/2009	Cadmium	5.74		0.0237	0.0949	7.5	na	na	10
0906-MWD087-07-GF-1	6/16/2009	Chromium	3		0.0947	0.379				
0906-MWD087-07-GF-2	6/16/2009	Chromium	4.39		0.0935	0.374				
0906-MWD087-07-GF-3	6/16/2009	Chromium	5.75		0.0949	0.380	31	na	na	100
0906-MWD087-07-GF-1	6/16/2009	Cobalt	0.118	U	0.118	0.473				
0906-MWD087-07-GF-2	6/16/2009	Cobalt	0.157	J	0.117	0.467				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MWD087-07-GF-3	6/16/2009	Cobalt	0.147	J	0.119	0.474	na	na	0.010	25
0906-MWD087-07-GF-1	6/16/2009	Copper, total	9.79		0.142	0.568				
0906-MWD087-07-GF-2	6/16/2009	Copper, total	9.65		0.140	0.561				
0906-MWD087-07-GF-3	6/16/2009	Copper, total	10.9		0.142	0.569	6.8	na	na	40
0906-MWD087-07-GF-1	6/16/2009	Manganese	20.3		0.0996	0.498				
0906-MWD087-07-GF-2	6/16/2009	Manganese	21.9		0.0994	0.497				
0906-MWD087-07-GF-3	6/16/2009	Manganese	23.4		0.100	0.500	7.1	na	na	2000
0906-MWD087-07-GF-1	6/16/2009	Mercury	0.0128	J	0.00758	0.189				
0906-MWD087-07-GF-2	6/16/2009	Mercury	0.0165	J	0.00748	0.187				
0906-MWD087-07-GF-3	6/16/2009	Mercury	0.0184	J	0.00759	0.190	18	na	na	na
0906-MWD087-07-GF-1	6/16/2009	Molybdenum	93.8		1.49	2.99				
0906-MWD087-07-GF-2	6/16/2009	Molybdenum	64.9		1.49	2.98				
0906-MWD087-07-GF-3	6/16/2009	Molybdenum	64.1		1.50	3.00	23	na	na	5
0906-MWD087-07-GF-1	6/16/2009	Nickel	9.81		0.189	0.758				
0906-MWD087-07-GF-2	6/16/2009	Nickel	9.27		0.187	0.748				
0906-MWD087-07-GF-3	6/16/2009	Nickel	8.76		0.190	0.759	5.7	na	na	100
0906-MWD087-07-GF-1	6/16/2009	Selenium	0.782		0.0947	0.189				
0906-MWD087-07-GF-2	6/16/2009	Selenium	1.11		0.0935	0.187				
0906-MWD087-07-GF-3	6/16/2009	Selenium	0.725		0.0949	0.190	24	na	na	5
0906-MWD087-07-GF-1	6/16/2009	Silver	0.0473	U	0.0473	0.189				
0906-MWD087-07-GF-2	6/16/2009	Silver	0.0467	U	0.0467	0.187				
0906-MWD087-07-GF-3	6/16/2009	Silver	0.0474	U	0.0474	0.190	na	na	na	na
0906-MWD087-07-GF-1	6/16/2009	Thallium	0.155		0.00947	0.0189				
0906-MWD087-07-GF-2	6/16/2009	Thallium	0.113		0.00935	0.0187				
0906-MWD087-07-GF-3	6/16/2009	Thallium	0.27		0.00949	0.0190	45	na	na	na
0906-MWD087-07-GF-1	6/16/2009	Uranium	0.0947	U	0.0947	0.379				
0906-MWD087-07-GF-2	6/16/2009	Uranium	0.213	J	0.0935	0.374				
0906-MWD087-07-GF-3	6/16/2009	Uranium	0.2	J	0.0949	0.380	na	na	0.013	na
0906-MWD087-07-GF-1	6/16/2009	Vanadium	1.71		0.118	0.473				
0906-MWD087-07-GF-2	6/16/2009	Vanadium	2.73		0.117	0.467				
0906-MWD087-07-GF-3	6/16/2009	Vanadium	2.69		0.119	0.474	24	na	na	50
0906-MWD087-07-GF-1	6/16/2009	Zinc	90.2		0.498	0.996				
0906-MWD087-07-GF-2	6/16/2009	Zinc	87.2		0.497	0.994				
0906-MWD087-07-GF-3	6/16/2009	Zinc	102		0.500	1.00	8.4	na	na	500
0906-MWD088-01-GF-1	6/15/2009	Antimony	0.499	U	0.499	0.998				
0906-MWD088-01-GF-2	6/15/2009	Antimony	0.498	U	0.498	0.995				
0906-MWD088-01-GF-3	6/15/2009	Antimony	0.499	U	0.499	0.998	na	na	na	na
0906-MWD088-01-GF-1	6/15/2009	Arsenic	0.185	J	0.0724	0.290				
0906-MWD088-01-GF-2	6/15/2009	Arsenic	0.107	J	0.0727	0.291				
0906-MWD088-01-GF-3	6/15/2009	Arsenic	0.0928	J	0.0732	0.293	39	na	na	30
0906-MWD088-01-GF-1	6/15/2009	Boron	18.1		2.50	4.99				
0906-MWD088-01-GF-2	6/15/2009	Boron	2.81	J	2.49	4.98				
0906-MWD088-01-GF-3	6/15/2009	Boron	3.43	J	2.50	4.99	107	na	na	150
0906-MWD088-01-GF-1	6/15/2009	Cadmium	1.58		0.0241	0.0965				
0906-MWD088-01-GF-2	6/15/2009	Cadmium	0.547		0.0242	0.0969				
0906-MWD088-01-GF-3	6/15/2009	Cadmium	0.4		0.0244	0.0977	76	na	na	10
0906-MWD088-01-GF-1	6/15/2009	Chromium	4.28		0.0965	0.386				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MWD088-01-GF-2	6/15/2009	Chromium	2.42		0.0969	0.388				
0906-MWD088-01-GF-3	6/15/2009	Chromium	3.37		0.0977	0.391	28	na	na	100
0906-MWD088-01-GF-1	6/15/2009	Cobalt	0.121	U	0.121	0.483				
0906-MWD088-01-GF-2	6/15/2009	Cobalt	0.121	U	0.121	0.484				
0906-MWD088-01-GF-3	6/15/2009	Cobalt	0.122	U	0.122	0.488	na	na	na	25
0906-MWD088-01-GF-1	6/15/2009	Copper, total	7.34		0.145	0.579				
0906-MWD088-01-GF-2	6/15/2009	Copper, total	4.53		0.145	0.581				
0906-MWD088-01-GF-3	6/15/2009	Copper, total	7.91		0.146	0.586	27	na	na	40
0906-MWD088-01-GF-1	6/15/2009	Manganese	22.6		0.0998	0.499				
0906-MWD088-01-GF-2	6/15/2009	Manganese	37.8		0.0995	0.498				
0906-MWD088-01-GF-3	6/15/2009	Manganese	34.9		0.0998	0.499	25	na	na	2000
0906-MWD088-01-GF-1	6/15/2009	Mercury	0.0154	U	0.0154	0.386				
0906-MWD088-01-GF-2	6/15/2009	Mercury	0.0155	U	0.0155	0.388				
0906-MWD088-01-GF-3	6/15/2009	Mercury	0.0156	U	0.0156	0.391	na	na	na	na
0906-MWD088-01-GF-1	6/15/2009	Molybdenum	7.64		1.50	2.99				
0906-MWD088-01-GF-2	6/15/2009	Molybdenum	10.3		1.49	2.99				
0906-MWD088-01-GF-3	6/15/2009	Molybdenum	13		1.50	2.99	26	na	na	5
0906-MWD088-01-GF-1	6/15/2009	Nickel	9.17		0.193	0.772				
0906-MWD088-01-GF-2	6/15/2009	Nickel	2.02		0.194	0.775				
0906-MWD088-01-GF-3	6/15/2009	Nickel	2.58		0.195	0.781	87	na	na	100
0906-MWD088-01-GF-1	6/15/2009	Selenium	1.85		0.0965	0.193				
0906-MWD088-01-GF-2	6/15/2009	Selenium	0.544		0.0969	0.194				
0906-MWD088-01-GF-3	6/15/2009	Selenium	0.692		0.0977	0.195	70	na	na	5
0906-MWD088-01-GF-1	6/15/2009	Silver	0.0483	U	0.0483	0.193				
0906-MWD088-01-GF-2	6/15/2009	Silver	0.0835	J	0.0484	0.194				
0906-MWD088-01-GF-3	6/15/2009	Silver	0.0488	U	0.0488	0.195	na	na	na	na
0906-MWD088-01-GF-1	6/15/2009	Thallium	0.0829		0.00965	0.0193				
0906-MWD088-01-GF-2	6/15/2009	Thallium	0.0753		0.00969	0.0194				
0906-MWD088-01-GF-3	6/15/2009	Thallium	0.0653		0.00977	0.0195	12	na	na	na
0906-MWD088-01-GF-1	6/15/2009	Uranium	0.0965	U	0.0965	0.386				
0906-MWD088-01-GF-2	6/15/2009	Uranium	0.0969	U	0.0969	0.388				
0906-MWD088-01-GF-3	6/15/2009	Uranium	0.0977	U	0.0977	0.391	na	na	na	na
0906-MWD088-01-GF-1	6/15/2009	Vanadium	1.04		0.121	0.483				
0906-MWD088-01-GF-2	6/15/2009	Vanadium	0.764		0.121	0.484				
0906-MWD088-01-GF-3	6/15/2009	Vanadium	0.62		0.122	0.488	26	na	na	50
0906-MWD088-01-GF-1	6/15/2009	Zinc	44.7		0.499	0.998				
0906-MWD088-01-GF-2	6/15/2009	Zinc	29.8		0.498	0.995				
0906-MWD088-01-GF-3	6/15/2009	Zinc	37.5		0.499	0.998	20	na	na	500
0906-MWD090-07-GF1	6/16/2009	Antimony	0.498	U	0.498	0.995				
0906-MWD090-07-GF2	6/16/2009	Antimony	0.497	U	0.497	0.994				
0906-MWD090-07-GF3	6/16/2009	Antimony	0.492	U	0.492	0.984	na	na	na	na
0906-MWD090-07-GF1	6/16/2009	Arsenic	0.0747	U	0.0747	0.299				
0906-MWD090-07-GF2	6/16/2009	Arsenic	0.0932	J	0.0740	0.296				
0906-MWD090-07-GF3	6/16/2009	Arsenic	0.0731	U	0.0731	0.292	na	na	na	30
0906-MWD090-07-GF1	6/16/2009	Boron	3.79	J	2.49	4.98				
0906-MWD090-07-GF2	6/16/2009	Boron	4.12	J	2.49	4.97				
0906-MWD090-07-GF3	6/16/2009	Boron	3.98	J	2.46	4.92	4.2	na	na	150

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MWD090-07-GF1	6/16/2009	Cadmium	0.355		0.0249	0.0996				
0906-MWD090-07-GF2	6/16/2009	Cadmium	0.454		0.0247	0.0986				
0906-MWD090-07-GF3	6/16/2009	Cadmium	0.384		0.0244	0.0975	13	na	na	10
0906-MWD090-07-GF1	6/16/2009	Chromium	1.57		0.0996	0.398				
0906-MWD090-07-GF2	6/16/2009	Chromium	1.8		0.0986	0.394				
0906-MWD090-07-GF3	6/16/2009	Chromium	1.9		0.0975	0.390	10	na	na	100
0906-MWD090-07-GF1	6/16/2009	Cobalt	0.125	U	0.125	0.498				
0906-MWD090-07-GF2	6/16/2009	Cobalt	0.123	U	0.123	0.493				
0906-MWD090-07-GF3	6/16/2009	Cobalt	0.122	U	0.122	0.487	na	na	na	25
0906-MWD090-07-GF1	6/16/2009	Copper, total	6.99		0.149	0.598				
0906-MWD090-07-GF2	6/16/2009	Copper, total	7.22		0.148	0.592				
0906-MWD090-07-GF3	6/16/2009	Copper, total	7.41		0.146	0.585	2.9	na	na	40
0906-MWD090-07-GF1	6/16/2009	Manganese	20.8		0.0995	0.498				
0906-MWD090-07-GF2	6/16/2009	Manganese	21.6		0.0994	0.497				
0906-MWD090-07-GF3	6/16/2009	Manganese	18.9		0.0984	0.492	6.8	na	na	2000
0906-MWD090-07-GF1	6/16/2009	Mercury	0.0159	U	0.0159	0.398				
0906-MWD090-07-GF2	6/16/2009	Mercury	0.0166	J	0.0158	0.394				
0906-MWD090-07-GF3	6/16/2009	Mercury	0.0156	U	0.0156	0.390	na	na	na	na
0906-MWD090-07-GF1	6/16/2009	Molybdenum	24.5		1.49	2.99				
0906-MWD090-07-GF2	6/16/2009	Molybdenum	16.9		1.49	2.98				
0906-MWD090-07-GF3	6/16/2009	Molybdenum	24.2		1.48	2.95	20	na	na	5
0906-MWD090-07-GF1	6/16/2009	Nickel	1.2		0.199	0.797				
0906-MWD090-07-GF2	6/16/2009	Nickel	1.68		0.197	0.789				
0906-MWD090-07-GF3	6/16/2009	Nickel	1.91		0.195	0.780	23	na	na	100
0906-MWD090-07-GF1	6/16/2009	Selenium	1.62		0.0996	0.199				
0906-MWD090-07-GF2	6/16/2009	Selenium	3.61		0.0986	0.197				
0906-MWD090-07-GF3	6/16/2009	Selenium	1.91		0.0975	0.195	45	na	na	5
0906-MWD090-07-GF1	6/16/2009	Silver	0.0498	U	0.0498	0.199				
0906-MWD090-07-GF2	6/16/2009	Silver	0.0493	U	0.0493	0.197				
0906-MWD090-07-GF3	6/16/2009	Silver	0.0487	U	0.0487	0.195	na	na	na	na
0906-MWD090-07-GF1	6/16/2009	Thallium	0.105		0.00996	0.0199				
0906-MWD090-07-GF2	6/16/2009	Thallium	0.0807		0.00986	0.0197				
0906-MWD090-07-GF3	6/16/2009	Thallium	0.186		0.00975	0.0195	45	na	na	na
0906-MWD090-07-GF1	6/16/2009	Uranium	0.0996	U	0.0996	0.398				
0906-MWD090-07-GF2	6/16/2009	Uranium	0.0986	U	0.0986	0.394				
0906-MWD090-07-GF3	6/16/2009	Uranium	0.0975	U	0.0975	0.390	na	na	na	na
0906-MWD090-07-GF1	6/16/2009	Vanadium	0.304	J	0.125	0.498				
0906-MWD090-07-GF2	6/16/2009	Vanadium	0.365	J	0.123	0.493				
0906-MWD090-07-GF3	6/16/2009	Vanadium	0.353	J	0.122	0.487	9.5	na	na	50
0906-MWD090-07-GF1	6/16/2009	Zinc	33.1		0.498	0.995				
0906-MWD090-07-GF2	6/16/2009	Zinc	39		0.497	0.994				
0906-MWD090-07-GF3	6/16/2009	Zinc	42.5		0.492	0.984	12	na	na	500
0906-MWD091N-07-FB-1	6/22/2009	Antimony	0.478	U	0.478	0.956				
0906-MWD091N-07-FB-2	6/22/2009	Antimony	0.478	U	0.478	0.957				
0906-MWD091N-07-FB-3	6/22/2009	Antimony	0.498	U	0.498	0.995	na	na	na	na
0906-MWD091N-07-FB-1	6/22/2009	Arsenic	0.227	J	0.0744	0.298				
0906-MWD091N-07-FB-2	6/22/2009	Arsenic	0.339		0.0728	0.291				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MWD091N-07-FB-3	6/22/2009	Arsenic	0.112	J	0.0687	0.275	50	na	na	30
0906-MWD091N-07-FB-1	6/22/2009	Boron	23.6		2.39	4.78				
0906-MWD091N-07-FB-2	6/22/2009	Boron	32.4		2.39	4.78				
0906-MWD091N-07-FB-3	6/22/2009	Boron	28.5		2.49	4.98	16	na	na	150
0906-MWD091N-07-FB-1	6/22/2009	Cadmium	4.72		0.0248	0.0992				
0906-MWD091N-07-FB-2	6/22/2009	Cadmium	4.83		0.0243	0.0971				
0906-MWD091N-07-FB-3	6/22/2009	Cadmium	3.13		0.0229	0.0916	23	na	na	10
0906-MWD091N-07-FB-1	6/22/2009	Chromium	3.33		0.0992	0.397				
0906-MWD091N-07-FB-2	6/22/2009	Chromium	1.67		0.0971	0.388				
0906-MWD091N-07-FB-3	6/22/2009	Chromium	1.61		0.0916	0.366	44	na	na	100
0906-MWD091N-07-FB-1	6/22/2009	Cobalt	0.124	U	0.124	0.496				
0906-MWD091N-07-FB-2	6/22/2009	Cobalt	0.121	U	0.121	0.485				
0906-MWD091N-07-FB-3	6/22/2009	Cobalt	0.114	U	0.114	0.458	na	na	na	25
0906-MWD091N-07-FB-1	6/22/2009	Copper, total	7.79		0.149	0.595				
0906-MWD091N-07-FB-2	6/22/2009	Copper, total	7.78		0.146	0.583				
0906-MWD091N-07-FB-3	6/22/2009	Copper, total	6.25		0.137	0.549	12	na	na	40
0906-MWD091N-07-FB-1	6/22/2009	Manganese	20		0.0956	0.478				
0906-MWD091N-07-FB-2	6/22/2009	Manganese	29.2		0.0957	0.478				
0906-MWD091N-07-FB-3	6/22/2009	Manganese	20.3		0.0995	0.498	23	na	na	2000
0906-MWD091N-07-FB-1	6/22/2009	Mercury	0.0198	UJ	0.0198	0.496				
0906-MWD091N-07-FB-2	6/22/2009	Mercury	0.0194	R	0.0194	0.485				
0906-MWD091N-07-FB-3	6/22/2009	Mercury	0.0183	UJ	0.0183	0.458	na	na	na	na
0906-MWD091N-07-FB-1	6/22/2009	Molybdenum	24.4		1.43	2.87				
0906-MWD091N-07-FB-2	6/22/2009	Molybdenum	23.8		1.44	2.87				
0906-MWD091N-07-FB-3	6/22/2009	Molybdenum	27.3		1.49	2.99	7.4	na	na	5
0906-MWD091N-07-FB-1	6/22/2009	Nickel	6.65		0.198	0.794				
0906-MWD091N-07-FB-2	6/22/2009	Nickel	8.08		0.194	0.777				
0906-MWD091N-07-FB-3	6/22/2009	Nickel	5.36		0.183	0.733	20	na	na	100
0906-MWD091N-07-FB-1	6/22/2009	Selenium	11.7		0.0992	0.198				
0906-MWD091N-07-FB-2	6/22/2009	Selenium	61.5		2.43	4.85				
0906-MWD091N-07-FB-3	6/22/2009	Selenium	7.75		0.0916	0.183	111	na	na	5
0906-MWD091N-07-FB-1	6/22/2009	Silver	0.0496	U	0.0496	0.198				
0906-MWD091N-07-FB-2	6/22/2009	Silver	0.0485	U	0.0485	0.194				
0906-MWD091N-07-FB-3	6/22/2009	Silver	0.0458	U	0.0458	0.183	na	na	na	na
0906-MWD091N-07-FB-1	6/22/2009	Thallium	0.188		0.00992	0.0198				
0906-MWD091N-07-FB-2	6/22/2009	Thallium	0.222		0.00971	0.0194				
0906-MWD091N-07-FB-3	6/22/2009	Thallium	0.0957		0.00916	0.0183	39	na	na	na
0906-MWD091N-07-FB-1	6/22/2009	Uranium	0.125	J	0.0992	0.397				
0906-MWD091N-07-FB-2	6/22/2009	Uranium	0.0971	U	0.0971	0.388				
0906-MWD091N-07-FB-3	6/22/2009	Uranium	0.0916	U	0.0916	0.366	na	na	na	na
0906-MWD091N-07-FB-1	6/22/2009	Vanadium	1.42		0.124	0.496				
0906-MWD091N-07-FB-2	6/22/2009	Vanadium	0.674		0.121	0.485				
0906-MWD091N-07-FB-3	6/22/2009	Vanadium	0.556		0.114	0.458	53	na	na	50
0906-MWD091N-07-FB-1	6/22/2009	Zinc	66.8		0.478	0.956				
0906-MWD091N-07-FB-2	6/22/2009	Zinc	84.6		0.478	0.957				
0906-MWD091N-07-FB-3	6/22/2009	Zinc	65.8		0.498	0.995	15	na	na	500
0906-MWD091N-07-GS-1	6/22/2009	Antimony	0.493	U	0.493	0.985				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MWD091N-07-GS-2	6/22/2009	Antimony	0.492	U	0.492	0.984				
0906-MWD091N-07-GS-3	6/22/2009	Antimony	0.489	U	0.489	0.978	na	na	na	na
0906-MWD091N-07-GS-1	6/22/2009	Arsenic	0.0861	J	0.0732	0.293				
0906-MWD091N-07-GS-2	6/22/2009	Arsenic	0.0949	J	0.0720	0.288				
0906-MWD091N-07-GS-3	6/22/2009	Arsenic	0.0716	U	0.0716	0.286	na	na	0.0088	30
0906-MWD091N-07-GS-1	6/22/2009	Boron	14.6		2.46	4.93				
0906-MWD091N-07-GS-2	6/22/2009	Boron	13.2		2.46	4.92				
0906-MWD091N-07-GS-3	6/22/2009	Boron	2.94	J	2.45	4.89	62	na	na	150
0906-MWD091N-07-GS-1	6/22/2009	Cadmium	2.24		0.0244	0.0977				
0906-MWD091N-07-GS-2	6/22/2009	Cadmium	1.78		0.0240	0.0960				
0906-MWD091N-07-GS-3	6/22/2009	Cadmium	1.56		0.0239	0.0954	19	na	na	10
0906-MWD091N-07-GS-1	6/22/2009	Chromium	1.98		0.0977	0.391				
0906-MWD091N-07-GS-2	6/22/2009	Chromium	2.09		0.0960	0.384				
0906-MWD091N-07-GS-3	6/22/2009	Chromium	2.42		0.0954	0.382	11	na	na	100
0906-MWD091N-07-GS-1	6/22/2009	Cobalt	0.122	U	0.122	0.488				
0906-MWD091N-07-GS-2	6/22/2009	Cobalt	0.12	U	0.120	0.480				
0906-MWD091N-07-GS-3	6/22/2009	Cobalt	0.119	U	0.119	0.477	na	na	na	25
0906-MWD091N-07-GS-1	6/22/2009	Copper, total	8.85		0.146	0.586				
0906-MWD091N-07-GS-2	6/22/2009	Copper, total	7.99		0.144	0.576				
0906-MWD091N-07-GS-3	6/22/2009	Copper, total	7.11		0.143	0.573	11	na	na	40
0906-MWD091N-07-GS-1	6/22/2009	Manganese	16.7		0.0985	0.493				
0906-MWD091N-07-GS-2	6/22/2009	Manganese	54.5		0.0984	0.492				
0906-MWD091N-07-GS-3	6/22/2009	Manganese	37.4		0.0978	0.489	52	na	na	2000
0906-MWD091N-07-GS-1	6/22/2009	Mercury	0.0195	R	0.0195	0.488				
0906-MWD091N-07-GS-2	6/22/2009	Mercury	0.0192	UJ	0.0192	0.480				
0906-MWD091N-07-GS-3	6/22/2009	Mercury	0.0191	UJ	0.0191	0.477	na	na	na	na
0906-MWD091N-07-GS-1	6/22/2009	Molybdenum	1.48	U	1.48	2.96				
0906-MWD091N-07-GS-2	6/22/2009	Molybdenum	47.3		1.48	2.95				
0906-MWD091N-07-GS-3	6/22/2009	Molybdenum	13.7		1.47	2.94	114	na	na	5
0906-MWD091N-07-GS-1	6/22/2009	Nickel	6.02		0.195	0.781				
0906-MWD091N-07-GS-2	6/22/2009	Nickel	6.54		0.192	0.768				
0906-MWD091N-07-GS-3	6/22/2009	Nickel	2.66		0.191	0.763	42	na	na	100
0906-MWD091N-07-GS-1	6/22/2009	Selenium	1.55		0.0977	0.195				
0906-MWD091N-07-GS-2	6/22/2009	Selenium	2.42		0.0960	0.192				
0906-MWD091N-07-GS-3	6/22/2009	Selenium	1.32		0.0954	0.191	33	na	na	5
0906-MWD091N-07-GS-1	6/22/2009	Silver	0.0488	U	0.0488	0.195				
0906-MWD091N-07-GS-2	6/22/2009	Silver	0.048	U	0.0480	0.192				
0906-MWD091N-07-GS-3	6/22/2009	Silver	0.0477	U	0.0477	0.191	na	na	na	na
0906-MWD091N-07-GS-1	6/22/2009	Thallium	0.0446		0.00977	0.0195				
0906-MWD091N-07-GS-2	6/22/2009	Thallium	0.0337		0.00960	0.0192				
0906-MWD091N-07-GS-3	6/22/2009	Thallium	0.136		0.00954	0.0191	79	na	na	na
0906-MWD091N-07-GS-1	6/22/2009	Uranium	0.0977	U	0.0977	0.391				
0906-MWD091N-07-GS-2	6/22/2009	Uranium	0.096	U	0.0960	0.384				
0906-MWD091N-07-GS-3	6/22/2009	Uranium	0.0954	U	0.0954	0.382	na	na	na	na
0906-MWD091N-07-GS-1	6/22/2009	Vanadium	0.394	J	0.122	0.488				
0906-MWD091N-07-GS-2	6/22/2009	Vanadium	0.392	J	0.120	0.480				
0906-MWD091N-07-GS-3	6/22/2009	Vanadium	0.324	J	0.119	0.477	11	na	na	50

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MWD091N-07-GS-1	6/22/2009	Zinc	5.41		0.493	0.985				
0906-MWD091N-07-GS-2	6/22/2009	Zinc	122		0.492	0.984				
0906-MWD091N-07-GS-3	6/22/2009	Zinc	86		0.489	0.978	84	na	na	500
0906-MWD091S-07-FB-1	6/19/2009	Antimony	0.486	U	0.486	0.972				
0906-MWD091S-07-FB-2	6/19/2009	Antimony	0.484	U	0.484	0.968				
0906-MWD091S-07-FB-3	6/19/2009	Antimony	0.482	U	0.482	0.963	na	na	na	na
0906-MWD091S-07-FB-1	6/19/2009	Arsenic	13.8		0.0731	0.292				
0906-MWD091S-07-FB-2	6/19/2009	Arsenic	0.0723	J	0.0714	0.286				
0906-MWD091S-07-FB-3	6/19/2009	Arsenic	0.0725	U	0.0725	0.290	na	na	13.7	30
0906-MWD091S-07-FB-1	6/19/2009	Boron	23.9		2.43	4.86				
0906-MWD091S-07-FB-2	6/19/2009	Boron	35.3		2.42	4.84				
0906-MWD091S-07-FB-3	6/19/2009	Boron	25.8		2.41	4.82	22	na	na	150
0906-MWD091S-07-FB-1	6/19/2009	Cadmium	0.843		0.0244	0.0975				
0906-MWD091S-07-FB-2	6/19/2009	Cadmium	1.01		0.0238	0.0952				
0906-MWD091S-07-FB-3	6/19/2009	Cadmium	1.08		0.0242	0.0967	12	na	na	10
0906-MWD091S-07-FB-1	6/19/2009	Chromium	2.4		0.0975	0.390				
0906-MWD091S-07-FB-2	6/19/2009	Chromium	1.81		0.0952	0.381				
0906-MWD091S-07-FB-3	6/19/2009	Chromium	2.01		0.0967	0.387	14	na	na	100
0906-MWD091S-07-FB-1	6/19/2009	Cobalt	0.122	U	0.122	0.487				
0906-MWD091S-07-FB-2	6/19/2009	Cobalt	0.119	U	0.119	0.476				
0906-MWD091S-07-FB-3	6/19/2009	Cobalt	0.121	U	0.121	0.484	na	na	na	25
0906-MWD091S-07-FB-1	6/19/2009	Copper, total	6.47		0.146	0.585				
0906-MWD091S-07-FB-2	6/19/2009	Copper, total	6.08		0.143	0.571				
0906-MWD091S-07-FB-3	6/19/2009	Copper, total	6.26		0.145	0.580	3.1	na	na	40
0906-MWD091S-07-FB-1	6/19/2009	Manganese	41.7		0.0972	0.486				
0906-MWD091S-07-FB-2	6/19/2009	Manganese	40.7		0.0968	0.484				
0906-MWD091S-07-FB-3	6/19/2009	Manganese	34.1		0.0963	0.482	11	na	na	2000
0906-MWD091S-07-FB-1	6/19/2009	Mercury	0.0098	U	0.00975	0.244				
0906-MWD091S-07-FB-2	6/19/2009	Mercury	0.0099	J	0.00952	0.238				
0906-MWD091S-07-FB-3	6/19/2009	Mercury	0.0097	U	0.00967	0.242	na	na	na	na
0906-MWD091S-07-FB-1	6/19/2009	Molybdenum	4.53		1.46	2.92				
0906-MWD091S-07-FB-2	6/19/2009	Molybdenum	4.56		1.45	2.90				
0906-MWD091S-07-FB-3	6/19/2009	Molybdenum	5.91		1.45	2.89	16	na	na	5
0906-MWD091S-07-FB-1	6/19/2009	Nickel	5.75		0.195	0.780				
0906-MWD091S-07-FB-2	6/19/2009	Nickel	4.17		0.190	0.762				
0906-MWD091S-07-FB-3	6/19/2009	Nickel	2.78		0.193	0.774	35	na	na	100
0906-MWD091S-07-FB-1	6/19/2009	Selenium	7.18		0.0975	0.195				
0906-MWD091S-07-FB-2	6/19/2009	Selenium	4.15		0.0952	0.190				
0906-MWD091S-07-FB-3	6/19/2009	Selenium	3.31		0.0967	0.193	42	na	na	5
0906-MWD091S-07-FB-1	6/19/2009	Silver	0.0487	U	0.0487	0.195				
0906-MWD091S-07-FB-2	6/19/2009	Silver	0.0476	U	0.0476	0.190				
0906-MWD091S-07-FB-3	6/19/2009	Silver	0.0484	U	0.0484	0.193	na	na	na	na
0906-MWD091S-07-FB-1	6/19/2009	Thallium	0.0531		0.00975	0.0195				
0906-MWD091S-07-FB-2	6/19/2009	Thallium	0.0215		0.00952	0.0190				
0906-MWD091S-07-FB-3	6/19/2009	Thallium	0.0404		0.00967	0.0193	41	na	na	na
0906-MWD091S-07-FB-1	6/19/2009	Uranium	0.0975	U	0.0975	0.390				
0906-MWD091S-07-FB-2	6/19/2009	Uranium	0.0952	U	0.0952	0.381				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MWD091S-07-FB-3	6/19/2009	Uranium	0.0967	U	0.0967	0.387	na	na	na	na
0906-MWD091S-07-FB-1	6/19/2009	Vanadium	0.717		0.122	0.487				
0906-MWD091S-07-FB-2	6/19/2009	Vanadium	0.527		0.119	0.476				
0906-MWD091S-07-FB-3	6/19/2009	Vanadium	0.739		0.121	0.484	18	na	na	50
0906-MWD091S-07-FB-1	6/19/2009	Zinc	44.8		0.486	0.972				
0906-MWD091S-07-FB-2	6/19/2009	Zinc	54.4		0.484	0.968				
0906-MWD091S-07-FB-3	6/19/2009	Zinc	44.6		0.482	0.963	12	na	na	500
0906-MWD091S-07-GS-1	6/19/2009	Antimony	0.497	U	0.497	0.994				
0906-MWD091S-07-GS-2	6/19/2009	Antimony	0.477	U	0.477	0.954				
0906-MWD091S-07-GS-3	6/19/2009	Antimony	0.488	U	0.488	0.976	na	na	na	na
0906-MWD091S-07-GS-1	6/19/2009	Arsenic	0.073	U	0.0730	0.292				
0906-MWD091S-07-GS-2	6/19/2009	Arsenic	0.0768	J	0.0724	0.290				
0906-MWD091S-07-GS-3	6/19/2009	Arsenic	0.108	J	0.0727	0.291	na	na	0.0312	30
0906-MWD091S-07-GS-1	6/19/2009	Boron	3.94	J	2.49	4.97				
0906-MWD091S-07-GS-2	6/19/2009	Boron	7.69		2.39	4.77				
0906-MWD091S-07-GS-3	6/19/2009	Boron	6.9		2.44	4.88	32	na	na	150
0906-MWD091S-07-GS-1	6/19/2009	Cadmium	0.529		0.0243	0.0973				
0906-MWD091S-07-GS-2	6/19/2009	Cadmium	0.945		0.0241	0.0965				
0906-MWD091S-07-GS-3	6/19/2009	Cadmium	0.831		0.0242	0.0969	28	na	na	10
0906-MWD091S-07-GS-1	6/19/2009	Chromium	2.75		0.0973	0.389				
0906-MWD091S-07-GS-2	6/19/2009	Chromium	2.36		0.0965	0.386				
0906-MWD091S-07-GS-3	6/19/2009	Chromium	2.44		0.0969	0.388	8.2	na	na	100
0906-MWD091S-07-GS-1	6/19/2009	Cobalt	0.122	U	0.122	0.486				
0906-MWD091S-07-GS-2	6/19/2009	Cobalt	0.121	U	0.121	0.483				
0906-MWD091S-07-GS-3	6/19/2009	Cobalt	0.121	U	0.121	0.484	na	na	na	25
0906-MWD091S-07-GS-1	6/19/2009	Copper, total	6.33		0.146	0.584				
0906-MWD091S-07-GS-2	6/19/2009	Copper, total	9.38		0.145	0.579				
0906-MWD091S-07-GS-3	6/19/2009	Copper, total	7.96		0.145	0.581	19	na	na	40
0906-MWD091S-07-GS-1	6/19/2009	Manganese	68.9		0.0994	0.497				
0906-MWD091S-07-GS-2	6/19/2009	Manganese	67.9		0.0954	0.477				
0906-MWD091S-07-GS-3	6/19/2009	Manganese	55.6		0.0976	0.488	12	na	na	2000
0906-MWD091S-07-GS-1	6/19/2009	Mercury	0.0097	U	0.00973	0.243				
0906-MWD091S-07-GS-2	6/19/2009	Mercury	0.0097	U	0.00965	0.241				
0906-MWD091S-07-GS-3	6/19/2009	Mercury	0.0097	U	0.00969	0.242	na	na	na	na
0906-MWD091S-07-GS-1	6/19/2009	Molybdenum	3.96		1.49	2.98				
0906-MWD091S-07-GS-2	6/19/2009	Molybdenum	1.92	J	1.43	2.86				
0906-MWD091S-07-GS-3	6/19/2009	Molybdenum	2.48	J	1.46	2.93	38	na	na	5
0906-MWD091S-07-GS-1	6/19/2009	Nickel	3.53		0.195	0.778				
0906-MWD091S-07-GS-2	6/19/2009	Nickel	3.02		0.193	0.772				
0906-MWD091S-07-GS-3	6/19/2009	Nickel	2.53		0.194	0.775	17	na	na	100
0906-MWD091S-07-GS-1	6/19/2009	Selenium	4.85		0.0973	0.195				
0906-MWD091S-07-GS-2	6/19/2009	Selenium	2.5		0.0965	0.193				
0906-MWD091S-07-GS-3	6/19/2009	Selenium	3.3		0.0969	0.194	34	na	na	5
0906-MWD091S-07-GS-1	6/19/2009	Silver	0.0486	U	0.0486	0.195				
0906-MWD091S-07-GS-2	6/19/2009	Silver	0.0483	U	0.0483	0.193				
0906-MWD091S-07-GS-3	6/19/2009	Silver	0.0484	U	0.0484	0.194	na	na	na	na
0906-MWD091S-07-GS-1	6/19/2009	Thallium	0.0244		0.00973	0.0195				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MWD091S-07-GS-2	6/19/2009	Thallium	0.051		0.00965	0.0193				
0906-MWD091S-07-GS-3	6/19/2009	Thallium	0.0196		0.00969	0.0194	53	na	na	na
0906-MWD091S-07-GS-1	6/19/2009	Uranium	0.0973	U	0.0973	0.389				
0906-MWD091S-07-GS-2	6/19/2009	Uranium	0.0965	U	0.0965	0.386				
0906-MWD091S-07-GS-3	6/19/2009	Uranium	0.0969	U	0.0969	0.388	na	na	na	na
0906-MWD091S-07-GS-1	6/19/2009	Vanadium	0.722		0.122	0.486				
0906-MWD091S-07-GS-2	6/19/2009	Vanadium	0.654		0.121	0.483				
0906-MWD091S-07-GS-3	6/19/2009	Vanadium	0.489		0.121	0.484	19	na	na	50
0906-MWD091S-07-GS-1	6/19/2009	Zinc	35.9		0.497	0.994				
0906-MWD091S-07-GS-2	6/19/2009	Zinc	37.5		0.477	0.954				
0906-MWD091S-07-GS-3	6/19/2009	Zinc	36.8		0.488	0.976	2.2	na	na	500
0906-MWD092-07-GF-1	6/19/2009	Antimony	0.492	U	0.492	0.984				
0906-MWD092-07-GF-2	6/19/2009	Antimony	0.493	U	0.493	0.986				
0906-MWD092-07-GF-3	6/19/2009	Antimony	0.487	U	0.487	0.975	na	na	na	na
0906-MWD092-07-GF-1	6/19/2009	Arsenic	0.46		0.0735	0.294				
0906-MWD092-07-GF-2	6/19/2009	Arsenic	0.351		0.0735	0.294				
0906-MWD092-07-GF-3	6/19/2009	Arsenic	0.786		0.0714	0.286	43	na	na	30
0906-MWD092-07-GF-1	6/19/2009	Boron	3.99	J	2.46	4.92				
0906-MWD092-07-GF-2	6/19/2009	Boron	5.58		2.47	4.93				
0906-MWD092-07-GF-3	6/19/2009	Boron	5.67		2.44	4.87	19	na	na	150
0906-MWD092-07-GF-1	6/19/2009	Cadmium	2.58		0.0245	0.0980				
0906-MWD092-07-GF-2	6/19/2009	Cadmium	4.16		0.0245	0.0980				
0906-MWD092-07-GF-3	6/19/2009	Cadmium	1.26		0.0238	0.0952	54	na	na	10
0906-MWD092-07-GF-1	6/19/2009	Chromium	5.73		0.0980	0.392				
0906-MWD092-07-GF-2	6/19/2009	Chromium	4.18		0.0980	0.392				
0906-MWD092-07-GF-3	6/19/2009	Chromium	3.63		0.0952	0.381	24	na	na	100
0906-MWD092-07-GF-1	6/19/2009	Cobalt	0.123	U	0.123	0.490				
0906-MWD092-07-GF-2	6/19/2009	Cobalt	0.123	U	0.123	0.490				
0906-MWD092-07-GF-3	6/19/2009	Cobalt	0.119	U	0.119	0.476	na	na	na	25
0906-MWD092-07-GF-1	6/19/2009	Copper, total	8.28		0.147	0.588				
0906-MWD092-07-GF-2	6/19/2009	Copper, total	9.52		0.147	0.588				
0906-MWD092-07-GF-3	6/19/2009	Copper, total	5.45		0.143	0.571	27	na	na	40
0906-MWD092-07-GF-1	6/19/2009	Manganese	51.5		0.0984	0.492				
0906-MWD092-07-GF-2	6/19/2009	Manganese	67.6		0.0986	0.493				
0906-MWD092-07-GF-3	6/19/2009	Manganese	29.5		0.0975	0.487	39	na	na	2000
0906-MWD092-07-GF-1	6/19/2009	Mercury	0.0196	U	0.0196	0.490				
0906-MWD092-07-GF-2	6/19/2009	Mercury	0.0196	U	0.0196	0.490				
0906-MWD092-07-GF-3	6/19/2009	Mercury	0.019	U	0.0190	0.476	na	na	na	na
0906-MWD092-07-GF-1	6/19/2009	Molybdenum	4.46		1.48	2.95				
0906-MWD092-07-GF-2	6/19/2009	Molybdenum	5.24		1.48	2.96				
0906-MWD092-07-GF-3	6/19/2009	Molybdenum	4.2		1.46	2.92	12	na	na	5
0906-MWD092-07-GF-1	6/19/2009	Nickel	5.43		0.196	0.784				
0906-MWD092-07-GF-2	6/19/2009	Nickel	7.98		0.196	0.784				
0906-MWD092-07-GF-3	6/19/2009	Nickel	4.52		0.190	0.762	30	na	na	100
0906-MWD092-07-GF-1	6/19/2009	Selenium	46.4		1.96	3.92				
0906-MWD092-07-GF-2	6/19/2009	Selenium	14.3		0.0980	0.196				
0906-MWD092-07-GF-3	6/19/2009	Selenium	63.3		1.90	3.81	60	na	na	5

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MWD092-07-GF-1	6/19/2009	Silver	0.0851	J-	0.0490	0.196				
0906-MWD092-07-GF-2	6/19/2009	Silver	0.0959	J-	0.0490	0.196				
0906-MWD092-07-GF-3	6/19/2009	Silver	0.0488	J-	0.0476	0.190	32	na	na	na
0906-MWD092-07-GF-1	6/19/2009	Thallium	0.0631		0.00980	0.0196				
0906-MWD092-07-GF-2	6/19/2009	Thallium	0.0695		0.00980	0.0196				
0906-MWD092-07-GF-3	6/19/2009	Thallium	0.0852		0.00952	0.0190	16	na	na	na
0906-MWD092-07-GF-1	6/19/2009	Uranium	0.306	J	0.0980	0.392				
0906-MWD092-07-GF-2	6/19/2009	Uranium	0.273	J	0.0980	0.392				
0906-MWD092-07-GF-3	6/19/2009	Uranium	0.19	J	0.0952	0.381	23	na	na	na
0906-MWD092-07-GF-1	6/19/2009	Vanadium	2.37		0.123	0.490				
0906-MWD092-07-GF-2	6/19/2009	Vanadium	1.32		0.123	0.490				
0906-MWD092-07-GF-3	6/19/2009	Vanadium	1.39		0.119	0.476	35	na	na	50
0906-MWD092-07-GF-1	6/19/2009	Zinc	40.3		0.492	0.984				
0906-MWD092-07-GF-2	6/19/2009	Zinc	51.6		0.493	0.986				
0906-MWD092-07-GF-3	6/19/2009	Zinc	45.9		0.487	0.975	12	na	na	500
0906-MWD093-07-GF-1	6/21/2009	Antimony	0.479	U	0.479	0.958				
0906-MWD093-07-GF-2	6/21/2009	Antimony	0.481	U	0.481	0.962				
0906-MWD093-07-GF-3	6/21/2009	Antimony	0.5	U	0.500	0.999	na	na	na	na
0906-MWD093-07-GF-1	6/21/2009	Arsenic	0.0758	J	0.0735	0.294				
0906-MWD093-07-GF-2	6/21/2009	Arsenic	0.0717	U	0.0717	0.287				
0906-MWD093-07-GF-3	6/21/2009	Arsenic	0.0784	J	0.0747	0.299	na	na	0.0026	30
0906-MWD093-07-GF-1	6/21/2009	Boron	8.49		2.39	4.79				
0906-MWD093-07-GF-2	6/21/2009	Boron	4.05	J	2.41	4.81				
0906-MWD093-07-GF-3	6/21/2009	Boron	9.2		2.50	5.00	39	na	na	150
0906-MWD093-07-GF-1	6/21/2009	Cadmium	0.616		0.0245	0.0980				
0906-MWD093-07-GF-2	6/21/2009	Cadmium	1.27		0.0239	0.0956				
0906-MWD093-07-GF-3	6/21/2009	Cadmium	0.625		0.0249	0.0996	45	na	na	10
0906-MWD093-07-GF-1	6/21/2009	Chromium	2.33		0.0980	0.392				
0906-MWD093-07-GF-2	6/21/2009	Chromium	1.89		0.0956	0.382				
0906-MWD093-07-GF-3	6/21/2009	Chromium	1.99		0.0996	0.398	11	na	na	100
0906-MWD093-07-GF-1	6/21/2009	Cobalt	0.123	U	0.123	0.490				
0906-MWD093-07-GF-2	6/21/2009	Cobalt	0.12	U	0.120	0.478				
0906-MWD093-07-GF-3	6/21/2009	Cobalt	0.125	U	0.125	0.498	na	na	na	25
0906-MWD093-07-GF-1	6/21/2009	Copper, total	5.28		0.147	0.588				
0906-MWD093-07-GF-2	6/21/2009	Copper, total	7.04		0.143	0.574				
0906-MWD093-07-GF-3	6/21/2009	Copper, total	6.33		0.149	0.598	14	na	na	40
0906-MWD093-07-GF-1	6/21/2009	Manganese	46.9		0.0958	0.479				
0906-MWD093-07-GF-2	6/21/2009	Manganese	47.5		0.0962	0.481				
0906-MWD093-07-GF-3	6/21/2009	Manganese	32.8	J-	0.0999	0.500	20	na	na	2000
0906-MWD093-07-GF-1	6/21/2009	Mercury	0.0196	U	0.0196	0.490				
0906-MWD093-07-GF-2	6/21/2009	Mercury	0.0191	U	0.0191	0.478				
0906-MWD093-07-GF-3	6/21/2009	Mercury	0.0199	U	0.0199	0.498	na	na	na	na
0906-MWD093-07-GF-1	6/21/2009	Molybdenum	3.76		1.44	2.87				
0906-MWD093-07-GF-2	6/21/2009	Molybdenum	5.97		1.44	2.89				
0906-MWD093-07-GF-3	6/21/2009	Molybdenum	3.95		1.50	3.00	27	na	na	5
0906-MWD093-07-GF-1	6/21/2009	Nickel	2.88		0.196	0.784				
0906-MWD093-07-GF-2	6/21/2009	Nickel	3.72		0.191	0.765				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0906-MWD093-07-GF-3	6/21/2009	Nickel	2.86		0.199	0.797	16	na	na	100
0906-MWD093-07-GF-1	6/21/2009	Selenium	0.949		0.0980	0.196				
0906-MWD093-07-GF-2	6/21/2009	Selenium	0.471		0.0956	0.191				
0906-MWD093-07-GF-3	6/21/2009	Selenium	2.57		0.0996	0.199	83	na	na	5
0906-MWD093-07-GF-1	6/21/2009	Silver	0.049	UJ	0.0490	0.196				
0906-MWD093-07-GF-2	6/21/2009	Silver	0.0478	UJ	0.0478	0.191				
0906-MWD093-07-GF-3	6/21/2009	Silver	0.0498	U	0.0498	0.199	na	na	na	na
0906-MWD093-07-GF-1	6/21/2009	Thallium	0.0237		0.00980	0.0196				
0906-MWD093-07-GF-2	6/21/2009	Thallium	0.0176	J	0.00956	0.0191				
0906-MWD093-07-GF-3	6/21/2009	Thallium	0.0118	J	0.00996	0.0199	34	na	na	na
0906-MWD093-07-GF-1	6/21/2009	Uranium	0.098	U	0.0980	0.392				
0906-MWD093-07-GF-2	6/21/2009	Uranium	0.0956	U	0.0956	0.382				
0906-MWD093-07-GF-3	6/21/2009	Uranium	0.0996	U	0.0996	0.398	na	na	na	na
0906-MWD093-07-GF-1	6/21/2009	Vanadium	0.308	J	0.123	0.490				
0906-MWD093-07-GF-2	6/21/2009	Vanadium	0.307	J	0.120	0.478				
0906-MWD093-07-GF-3	6/21/2009	Vanadium	0.438	J	0.125	0.498	21	na	na	50
0906-MWD093-07-GF-1	6/21/2009	Zinc	39.1		0.479	0.958				
0906-MWD093-07-GF-2	6/21/2009	Zinc	69		0.481	0.962				
0906-MWD093-07-GF-3	6/21/2009	Zinc	39		0.500	0.999	35	na	na	500
Fall 2009 Triplicate Vegetation Sample Results										
0908-MBE001-07-FB-1	8/24/2009	Antimony	0.494	U	0.494	0.987				
0908-MBE001-07-FB-2	8/24/2009	Antimony	0.495	U	0.495	0.989				
0908-MBE001-07-FB-3	8/24/2009	Antimony	0.499	U	0.499	0.998	na	na	na	na
0908-MBE001-07-FB-1	8/24/2009	Arsenic	0.374	J	0.367	1.47				
0908-MBE001-07-FB-2	8/24/2009	Arsenic	0.102	J	0.0741	0.296				
0908-MBE001-07-FB-3	8/24/2009	Arsenic	0.0731	U	0.0731	0.292	na	na	0.272	30
0908-MBE001-07-FB-1	8/24/2009	Boron	54.1		2.47	4.94				
0908-MBE001-07-FB-2	8/24/2009	Boron	35		2.47	4.95				
0908-MBE001-07-FB-3	8/24/2009	Boron	79.1		2.50	4.99	39	na	na	150
0908-MBE001-07-FB-1	8/24/2009	Cadmium	0.533		0.0245	0.0978				
0908-MBE001-07-FB-2	8/24/2009	Cadmium	1.88		0.0247	0.0988				
0908-MBE001-07-FB-3	8/24/2009	Cadmium	0.501		0.0244	0.0975	81	na	na	10
0908-MBE001-07-FB-1	8/24/2009	Chromium	1.49	J	0.489	1.96				
0908-MBE001-07-FB-2	8/24/2009	Chromium	1.61		0.0988	0.395				
0908-MBE001-07-FB-3	8/24/2009	Chromium	1.62		0.0975	0.390	4.6	na	na	100
0908-MBE001-07-FB-1	8/24/2009	Cobalt	0.612	U	0.612	2.45				
0908-MBE001-07-FB-2	8/24/2009	Cobalt	0.124	U	0.124	0.494				
0908-MBE001-07-FB-3	8/24/2009	Cobalt	0.122	U	0.122	0.487	na	na	na	25
0908-MBE001-07-FB-1	8/24/2009	Copper, total	3.32		0.734	2.94				
0908-MBE001-07-FB-2	8/24/2009	Copper, total	4.74		0.148	0.593				
0908-MBE001-07-FB-3	8/24/2009	Copper, total	4.85		0.146	0.585	20	na	na	40
0908-MBE001-07-FB-1	8/24/2009	Manganese	17.3		0.0987	0.494				
0908-MBE001-07-FB-2	8/24/2009	Manganese	33		0.0989	0.495				
0908-MBE001-07-FB-3	8/24/2009	Manganese	27.7		0.0998	0.499	31	na	na	2000
0908-MBE001-07-FB-1	8/24/2009	Mercury	0.0196	UJ	0.0196	0.489				
0908-MBE001-07-FB-2	8/24/2009	Mercury	0.0198	UJ	0.0198	0.494				

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SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0908-MBE001-07-FB-3	8/24/2009	Mercury	0.0195	UJ	0.0195	0.487	na	na	na	na
0908-MBE001-07-FB-1	8/24/2009	Molybdenum	30.2		1.48	2.96				
0908-MBE001-07-FB-2	8/24/2009	Molybdenum	8.17		1.48	2.97				
0908-MBE001-07-FB-3	8/24/2009	Molybdenum	13.5		1.50	2.99	66	na	na	5
0908-MBE001-07-FB-1	8/24/2009	Nickel	1.04	J	0.978	3.91				
0908-MBE001-07-FB-2	8/24/2009	Nickel	1.28		0.198	0.791				
0908-MBE001-07-FB-3	8/24/2009	Nickel	1.43		0.195	0.780	16	na	na	100
0908-MBE001-07-FB-1	8/24/2009	Selenium	10.4		0.489	0.978				
0908-MBE001-07-FB-2	8/24/2009	Selenium	2.89		0.0988	0.198				
0908-MBE001-07-FB-3	8/24/2009	Selenium	8.55		0.0975	0.195	54	na	na	5
0908-MBE001-07-FB-1	8/24/2009	Silver	0.0489	U	0.0489	0.196				
0908-MBE001-07-FB-2	8/24/2009	Silver	0.0494	U	0.0494	0.198				
0908-MBE001-07-FB-3	8/24/2009	Silver	0.0487	U	0.0487	0.195	na	na	na	na
0908-MBE001-07-FB-1	8/24/2009	Thallium	0.0112	J	0.00978	0.0196				
0908-MBE001-07-FB-2	8/24/2009	Thallium	0.0337		0.00988	0.0198				
0908-MBE001-07-FB-3	8/24/2009	Thallium	0.0098	U	0.00975	0.0195	na	na	0.023	na
0908-MBE001-07-FB-1	8/24/2009	Uranium	0.0978	U	0.0978	0.391				
0908-MBE001-07-FB-2	8/24/2009	Uranium	0.0988	U	0.0988	0.395				
0908-MBE001-07-FB-3	8/24/2009	Uranium	0.0975	U	0.0975	0.390	na	na	na	na
0908-MBE001-07-FB-1	8/24/2009	Vanadium	0.612	U	0.612	2.45				
0908-MBE001-07-FB-2	8/24/2009	Vanadium	0.53		0.124	0.494				
0908-MBE001-07-FB-3	8/24/2009	Vanadium	0.544		0.122	0.487	na	0.7	na	50
0908-MBE001-07-FB-1	8/24/2009	Zinc	26	J-	0.494	0.987				
0908-MBE001-07-FB-2	8/24/2009	Zinc	28.8	J-	0.495	0.989				
0908-MBE001-07-FB-3	8/24/2009	Zinc	17.5	J-	0.499	0.998	24	na	na	500
0908-MWD086-07-FB-1	8/25/2009	Antimony	0.498	U	0.498	0.995				
0908-MWD086-07-FB-2	8/25/2009	Antimony	0.497	U	0.497	0.994				
0908-MWD086-07-FB-3	8/25/2009	Antimony	0.492	U	0.492	0.984	na	na	na	na
0908-MWD086-07-FB-1	8/25/2009	Arsenic	0.0816	J	0.0724	0.290				
0908-MWD086-07-FB-2	8/25/2009	Arsenic	0.0723	U	0.0723	0.289				
0908-MWD086-07-FB-3	8/25/2009	Arsenic	0.0737	U	0.0737	0.295	na	na	na	30
0908-MWD086-07-FB-1	8/25/2009	Boron	23.9		2.49	4.98				
0908-MWD086-07-FB-2	8/25/2009	Boron	24.6		2.49	4.97				
0908-MWD086-07-FB-3	8/25/2009	Boron	55.1		2.46	4.92	52	na	na	150
0908-MWD086-07-FB-1	8/25/2009	Cadmium	0.568		0.0241	0.0965				
0908-MWD086-07-FB-2	8/25/2009	Cadmium	0.537		0.0241	0.0963				
0908-MWD086-07-FB-3	8/25/2009	Cadmium	1.78		0.0246	0.0982	74	na	na	10
0908-MWD086-07-FB-1	8/25/2009	Chromium	1.69		0.0965	0.386				
0908-MWD086-07-FB-2	8/25/2009	Chromium	1.55		0.0963	0.385				
0908-MWD086-07-FB-3	8/25/2009	Chromium	1.35		0.0982	0.393	11	na	na	100
0908-MWD086-07-FB-1	8/25/2009	Cobalt	0.121	U	0.121	0.483				
0908-MWD086-07-FB-2	8/25/2009	Cobalt	0.12	U	0.120	0.482				
0908-MWD086-07-FB-3	8/25/2009	Cobalt	0.123	U	0.123	0.491	na	na	na	25
0908-MWD086-07-FB-1	8/25/2009	Copper, total	4.72		0.145	0.579				
0908-MWD086-07-FB-2	8/25/2009	Copper, total	3.64		0.145	0.578				
0908-MWD086-07-FB-3	8/25/2009	Copper, total	3.43		0.147	0.589	18	na	na	40
0908-MWD086-07-FB-1	8/25/2009	Manganese	12.9		0.0995	0.498				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0908-MWD086-07-FB-2	8/25/2009	Manganese	13.3		0.0994	0.497				
0908-MWD086-07-FB-3	8/25/2009	Manganese	9.74		0.0984	0.492	16	na	na	2000
0908-MWD086-07-FB-1	8/25/2009	Mercury	0.0193	U	0.0193	0.483				
0908-MWD086-07-FB-2	8/25/2009	Mercury	0.0193	U	0.0193	0.482				
0908-MWD086-07-FB-3	8/25/2009	Mercury	0.0196	U	0.0196	0.491	na	na	na	na
0908-MWD086-07-FB-1	8/25/2009	Molybdenum	6.65		1.49	2.99				
0908-MWD086-07-FB-2	8/25/2009	Molybdenum	5.34		1.49	2.98				
0908-MWD086-07-FB-3	8/25/2009	Molybdenum	20.1		1.48	2.95	76	na	na	5
0908-MWD086-07-FB-1	8/25/2009	Nickel	3.44		0.193	0.772				
0908-MWD086-07-FB-2	8/25/2009	Nickel	5.27		0.193	0.771				
0908-MWD086-07-FB-3	8/25/2009	Nickel	5.79		0.196	0.786	26	na	na	100
0908-MWD086-07-FB-1	8/25/2009	Selenium	1.88		0.0965	0.193				
0908-MWD086-07-FB-2	8/25/2009	Selenium	3.45		0.0963	0.193				
0908-MWD086-07-FB-3	8/25/2009	Selenium	9.11		0.0982	0.196	79	na	na	5
0908-MWD086-07-FB-1	8/25/2009	Silver	0.0483	U	0.0483	0.193				
0908-MWD086-07-FB-2	8/25/2009	Silver	0.0482	U	0.0482	0.193				
0908-MWD086-07-FB-3	8/25/2009	Silver	0.0491	U	0.0491	0.196	na	na	na	na
0908-MWD086-07-FB-1	8/25/2009	Thallium	0.339		0.00965	0.0193				
0908-MWD086-07-FB-2	8/25/2009	Thallium	0.339		0.00963	0.0193				
0908-MWD086-07-FB-3	8/25/2009	Thallium	0.0629		0.00982	0.0196	65	na	na	na
0908-MWD086-07-FB-1	8/25/2009	Uranium	0.0965	U	0.0965	0.386				
0908-MWD086-07-FB-2	8/25/2009	Uranium	0.0963	U	0.0963	0.385				
0908-MWD086-07-FB-3	8/25/2009	Uranium	0.0982	U	0.0982	0.393	na	na	na	na
0908-MWD086-07-FB-1	8/25/2009	Vanadium	0.565		0.121	0.483				
0908-MWD086-07-FB-2	8/25/2009	Vanadium	0.472	J	0.120	0.482				
0908-MWD086-07-FB-3	8/25/2009	Vanadium	0.501		0.123	0.491	9.3	na	na	50
0908-MWD086-07-FB-1	8/25/2009	Zinc	34.1		0.498	0.995				
0908-MWD086-07-FB-2	8/25/2009	Zinc	41		0.497	0.994				
0908-MWD086-07-FB-3	8/25/2009	Zinc	38.5		0.492	0.984	9.2	na	na	500
0908-MWD091N-07-FB-1	8/24/2009	Antimony	0.499	U	0.499	0.997				
0908-MWD091N-07-FB-2	8/24/2009	Antimony	0.496	U	0.496	0.992				
0908-MWD091N-07-FB-3	8/24/2009	Antimony	0.497	U	0.497	0.993	na	na	na	na
0908-MWD091N-07-FB-1	8/24/2009	Arsenic	0.0743	U	0.0743	0.297				
0908-MWD091N-07-FB-2	8/24/2009	Arsenic	0.366	U	0.366	1.46				
0908-MWD091N-07-FB-3	8/24/2009	Arsenic	0.366	U	0.366	1.46	na	na	na	30
0908-MWD091N-07-FB-1	8/24/2009	Boron	21.3		2.49	4.99				
0908-MWD091N-07-FB-2	8/24/2009	Boron	51.3		2.48	4.96				
0908-MWD091N-07-FB-3	8/24/2009	Boron	35.7		2.48	4.97	42	na	na	150
0908-MWD091N-07-FB-1	8/24/2009	Cadmium	1.94		0.0248	0.0990				
0908-MWD091N-07-FB-2	8/24/2009	Cadmium	1.95		0.0244	0.0977				
0908-MWD091N-07-FB-3	8/24/2009	Cadmium	1.48		0.0244	0.0977	15	na	na	10
0908-MWD091N-07-FB-1	8/24/2009	Chromium	1.5		0.0990	0.396				
0908-MWD091N-07-FB-2	8/24/2009	Chromium	1.96		0.0977	0.391				
0908-MWD091N-07-FB-3	8/24/2009	Chromium	2.28		0.0977	0.391	20	na	na	100
0908-MWD091N-07-FB-1	8/24/2009	Cobalt	0.124	U	0.124	0.495				
0908-MWD091N-07-FB-2	8/24/2009	Cobalt	0.122	U	0.122	0.488				
0908-MWD091N-07-FB-3	8/24/2009	Cobalt	0.122	U	0.122	0.488	na	na	na	25

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0908-MWD091N-07-FB-1	8/24/2009	Copper, total	3.11		0.149	0.594				
0908-MWD091N-07-FB-2	8/24/2009	Copper, total	3.63		0.146	0.586				
0908-MWD091N-07-FB-3	8/24/2009	Copper, total	3.48		0.146	0.586	7.9	na	na	40
0908-MWD091N-07-FB-1	8/24/2009	Manganese	11.8		0.0997	0.499				
0908-MWD091N-07-FB-2	8/24/2009	Manganese	20.7		0.0992	0.496				
0908-MWD091N-07-FB-3	8/24/2009	Manganese	14.5		0.0993	0.497	29	na	na	2000
0908-MWD091N-07-FB-1	8/24/2009	Mercury	0.0099	UJ	0.00990	0.248				
0908-MWD091N-07-FB-2	8/24/2009	Mercury	0.0112	J	0.00977	0.244				
0908-MWD091N-07-FB-3	8/24/2009	Mercury	0.0098	UJ	0.00977	0.244	na	na	na	na
0908-MWD091N-07-FB-1	8/24/2009	Molybdenum	11.2		1.50	2.99				
0908-MWD091N-07-FB-2	8/24/2009	Molybdenum	30.9		1.49	2.98				
0908-MWD091N-07-FB-3	8/24/2009	Molybdenum	8.14		1.49	2.98	74	na	na	5
0908-MWD091N-07-FB-1	8/24/2009	Nickel	3.8		0.198	0.792				
0908-MWD091N-07-FB-2	8/24/2009	Nickel	5.33		0.195	0.781				
0908-MWD091N-07-FB-3	8/24/2009	Nickel	3.84		0.195	0.781	20	na	na	100
0908-MWD091N-07-FB-1	8/24/2009	Selenium	8.78	J	0.0990	0.198				
0908-MWD091N-07-FB-2	8/24/2009	Selenium	76	J	0.488	0.977				
0908-MWD091N-07-FB-3	8/24/2009	Selenium	22.4	J	0.0977	0.195	99	na	na	5
0908-MWD091N-07-FB-1	8/24/2009	Silver	0.0495	U	0.0495	0.198				
0908-MWD091N-07-FB-2	8/24/2009	Silver	0.0488	U	0.0488	0.195				
0908-MWD091N-07-FB-3	8/24/2009	Silver	0.0488	U	0.0488	0.195	na	na	na	na
0908-MWD091N-07-FB-1	8/24/2009	Thallium	0.137		0.00990	0.0198				
0908-MWD091N-07-FB-2	8/24/2009	Thallium	0.0462		0.00977	0.0195				
0908-MWD091N-07-FB-3	8/24/2009	Thallium	0.163		0.00977	0.0195	53	na	na	na
0908-MWD091N-07-FB-1	8/24/2009	Uranium	0.099	U	0.0990	0.396				
0908-MWD091N-07-FB-2	8/24/2009	Uranium	0.0977	U	0.0977	0.391				
0908-MWD091N-07-FB-3	8/24/2009	Uranium	0.0977	U	0.0977	0.391	na	na	na	na
0908-MWD091N-07-FB-1	8/24/2009	Vanadium	0.527		0.124	0.495				
0908-MWD091N-07-FB-2	8/24/2009	Vanadium	0.593		0.122	0.488				
0908-MWD091N-07-FB-3	8/24/2009	Vanadium	0.685		0.122	0.488	13	na	na	50
0908-MWD091N-07-FB-1	8/24/2009	Zinc	38.2		0.499	0.997				
0908-MWD091N-07-FB-2	8/24/2009	Zinc	54.4		0.496	0.992				
0908-MWD091N-07-FB-3	8/24/2009	Zinc	38.6		0.497	0.993	21	na	na	500
0908-MWD091S-07-FB-1	8/24/2009	Antimony	0.496	U	0.496	0.991				
0908-MWD091S-07-FB-2	8/24/2009	Antimony	0.499	U	0.499	0.997				
0908-MWD091S-07-FB-3	8/24/2009	Antimony	0.498	U	0.498	0.996	na	na	na	na
0908-MWD091S-07-FB-1	8/24/2009	Arsenic	0.0767	J	0.0738	0.295				
0908-MWD091S-07-FB-2	8/24/2009	Arsenic	0.0732	U	0.0732	0.293				
0908-MWD091S-07-FB-3	8/24/2009	Arsenic	0.178	J	0.0749	0.299	na	na	0.101	30
0908-MWD091S-07-FB-1	8/24/2009	Boron	25.3		2.48	4.96				
0908-MWD091S-07-FB-2	8/24/2009	Boron	20.3		2.49	4.99				
0908-MWD091S-07-FB-3	8/24/2009	Boron	23.3		2.49	4.98	11	na	na	150
0908-MWD091S-07-FB-1	8/24/2009	Cadmium	1.77		0.0246	0.0984				
0908-MWD091S-07-FB-2	8/24/2009	Cadmium	0.815		0.0244	0.0977				
0908-MWD091S-07-FB-3	8/24/2009	Cadmium	2.14		0.0250	0.0998	43	na	na	10
0908-MWD091S-07-FB-1	8/24/2009	Chromium	1.79		0.0984	0.394				
0908-MWD091S-07-FB-2	8/24/2009	Chromium	1.43		0.0977	0.391				

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	
0908-MWD091S-07-FB-3	8/24/2009	Chromium	1.52		0.0998	0.399	12	na	na	100
0908-MWD091S-07-FB-1	8/24/2009	Cobalt	0.199	J	0.123	0.492				
0908-MWD091S-07-FB-2	8/24/2009	Cobalt	0.122	U	0.122	0.488				
0908-MWD091S-07-FB-3	8/24/2009	Cobalt	0.125	U	0.125	0.499	na	na	na	25
0908-MWD091S-07-FB-1	8/24/2009	Copper, total	4.88		0.148	0.591				
0908-MWD091S-07-FB-2	8/24/2009	Copper, total	4.73		0.146	0.586				
0908-MWD091S-07-FB-3	8/24/2009	Copper, total	3.7		0.150	0.599	14	na	na	40
0908-MWD091S-07-FB-1	8/24/2009	Manganese	28		0.0991	0.496				
0908-MWD091S-07-FB-2	8/24/2009	Manganese	16.3		0.0997	0.499				
0908-MWD091S-07-FB-3	8/24/2009	Manganese	18.8		0.0996	0.498	29	na	na	2000
0908-MWD091S-07-FB-1	8/24/2009	Mercury	0.0098	UJ	0.00984	0.246				
0908-MWD091S-07-FB-2	8/24/2009	Mercury	0.0098	UJ	0.00977	0.244				
0908-MWD091S-07-FB-3	8/24/2009	Mercury	0.01	UJ	0.00998	0.250	na	na	na	na
0908-MWD091S-07-FB-1	8/24/2009	Molybdenum	4.5		1.49	2.97				
0908-MWD091S-07-FB-2	8/24/2009	Molybdenum	5.56		1.50	2.99				
0908-MWD091S-07-FB-3	8/24/2009	Molybdenum	1.93	J	1.49	2.99	47	na	na	5
0908-MWD091S-07-FB-1	8/24/2009	Nickel	8.01		0.197	0.787				
0908-MWD091S-07-FB-2	8/24/2009	Nickel	7.46		0.195	0.781				
0908-MWD091S-07-FB-3	8/24/2009	Nickel	11.2		0.200	0.798	23	na	na	100
0908-MWD091S-07-FB-1	8/24/2009	Selenium	10.5	J	0.0984	0.197				
0908-MWD091S-07-FB-2	8/24/2009	Selenium	13.4	J	0.0977	0.195				
0908-MWD091S-07-FB-3	8/24/2009	Selenium	6.52	J	0.0998	0.200	34	na	na	5
0908-MWD091S-07-FB-1	8/24/2009	Silver	0.0492	U	0.0492	0.197				
0908-MWD091S-07-FB-2	8/24/2009	Silver	0.0488	U	0.0488	0.195				
0908-MWD091S-07-FB-3	8/24/2009	Silver	0.0499	U	0.0499	0.200	na	na	na	na
0908-MWD091S-07-FB-1	8/24/2009	Thallium	0.11		0.00984	0.0197				
0908-MWD091S-07-FB-2	8/24/2009	Thallium	0.0261		0.00977	0.0195				
0908-MWD091S-07-FB-3	8/24/2009	Thallium	0.0814		0.00998	0.0200	59	na	na	na
0908-MWD091S-07-FB-1	8/24/2009	Uranium	0.0984	U	0.0984	0.394				
0908-MWD091S-07-FB-2	8/24/2009	Uranium	0.0977	U	0.0977	0.391				
0908-MWD091S-07-FB-3	8/24/2009	Uranium	0.0998	U	0.0998	0.399	na	na	na	na
0908-MWD091S-07-FB-1	8/24/2009	Vanadium	0.657		0.123	0.492				
0908-MWD091S-07-FB-2	8/24/2009	Vanadium	0.476	J	0.122	0.488				
0908-MWD091S-07-FB-3	8/24/2009	Vanadium	0.55		0.125	0.499	16	na	na	50
0908-MWD091S-07-FB-1	8/24/2009	Zinc	45.1		0.496	0.991				
0908-MWD091S-07-FB-2	8/24/2009	Zinc	40		0.499	0.997				
0908-MWD091S-07-FB-3	8/24/2009	Zinc	49.4		0.498	0.996	10	na	na	500

Flag Definition:
'U' - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
'J' - The result is an estimated quantity. The associated numerical value is the approximated concentration of the analyte in the sample.
'J+' - The result is an estimated quantity, but the result may be biased high.
'J-' - The result is an estimated quantity, but the result may be biased low.
'R' - The result is unusable. The
'UJ' - The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate

TABLE 2-9

SUMMARY OF FIELD TRIPLICATE RESULTS
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Field Sample Identification	Collection Date	Analyte	Result (mg/kg, dw)				Variability [a]			Screening Level [b]
			Result	Flag	MDL	RL	%RSD	RPD	Abs Diff	

or imprecise.

Abs Diff - absolute difference
MDL - method detection limit
mg/kg, dw - milligrams per kilogram, dry weight
na - not applicable
RL - reporting limit
RPD - relative percent difference
RSD - relative standard deviation

[a] Per Section 1.4.4.1 of the QAPP: Three replicate samples (triplicates) will be collected at 10 percent of sampling locations. Each parameter of the triplicate samples and its applicable project screening values will be tabulated and presented in the report of investigation, along with one of the following calculations: (a) the RPD between two values: If one of the triplicate results is not detected for the tested parameter, then the RPD for the two remaining results will be calculated; however, if one or both the detected values are less than the reporting limit, then the absolute difference between the values will be calculated, and (b) the percent RSD (%RSD): If the given parameter is detected in each of the triplicate samples, and all values are greater than their reporting limits, then a %RSD will be calculated. RPDs, absolute differences, and %RSDs will not be calculated for other result scenarios. The data users will take into account the field replicate variability when assessing trends and/or decisions made with respect to field sample results. Since the material tested is waste rock, and composite samples are being collected, variability associated with triplicate results will be a reflection of obvious variability associated with the material being sampled, as well as any inherent variability in the sampling and analysis of the tested material. Therefore, the precision of triplicate samples will be used to document this variability but will not be used to assess data usability with respect to comparisons of sample results to screening values.

[b] Screening levels as listed on Table 3-1 of the RI/FS Work Plan.

TABLE 2-10

RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES
(Page 1 of 52)

Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
Spring 2009 Soil and Vegetation Sampling Event								
0906-MWD086-08-SS	Soil	L09060486-17	Antimony	<0.370	L09060486-19	MS1	92.3	
			Arsenic	4.50	L09060486-19	MS1	87.2	
			Boron	2.86 J	L09060486-19	MS1	79.2	
			Cadmium	2.13	L09060486-19	MS1	97.8	
			Chromium	22.7 J+	L09060486-19	MS1	76.2	
			Chromium, Hexavalent	<0.995	L09060486-19	MS1	172	
			Cobalt	9.86	L09060486-19	MS1	94.6	
			Copper, total	18.9	L09060486-19	MS1	81.1	
			Manganese	1230	L09060486-19	MS1	-176	
			Mercury	0.0221 J	L09060486-19	MS1	116	
			Molybdenum	<1.11	L09060486-19	MS1	98.2	
			Nickel	26.2 J-	L09060486-19	MS1	71.3	
			Selenium	2.86	L09060486-19	MS1	90.2	
			Silver	0.260	L09060486-19	MS1	100	
			Thallium	0.261	L09060486-19	MS1	99.9	
			Uranium, total	1.64	L09060486-19	MS1	104	
			Vanadium	22.3 J+	L09060486-19	MS1	107	
			Zinc	135	L09060486-19	MS1	105	
			Antimony	<0.370	L09060486-20	SD1	88.5	4
			Arsenic	4.50	L09060486-20	SD1	94.5	8
			Boron	2.86 J	L09060486-20	SD1	77.9	2
			Cadmium	2.13	L09060486-20	SD1	101	3
			Chromium	22.7 J+	L09060486-20	SD1	127	50
			Chromium, Hexavalent	<0.995	L09060486-20	SD1	157	9
			Cobalt	9.86	L09060486-20	SD1	97.2	3
			Copper, total	18.9	L09060486-20	SD1	95.4	16
			Manganese	1230	L09060486-20	SD1	-701	120
			Mercury	0.0221 J	L09060486-20	SD1	114	2
			Molybdenum	<1.11	L09060486-20	SD1	93.7	5
			Nickel	26.2 J-	L09060486-20	SD1	94.9	28
			Selenium	2.86	L09060486-20	SD1	90.7	1
			Silver	0.260	L09060486-20	SD1	99.5	1
			Thallium	0.261	L09060486-20	SD1	102	2
			Uranium, total	1.64	L09060486-20	SD1	105	1
			Vanadium	22.3 J+	L09060486-20	SD1	144	29
			Zinc	135	L09060486-20	SD1	79.3	28

TABLE 2-10

RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES

Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
0906-MWD087-05-SS	Soil	L09060525-01	Antimony	5.13	L09060525-36	MS1	98.9	
			Arsenic	21.8	L09060525-36	MS1	100	
			Boron	17.7 J	L09060525-36	MS1	113	
			Cadmium	27.0 J+	L09060525-36	MS1	136	
			Chromium	268	L09060525-36	MS1	643	
			Chromium, Hexavalent	<0.500	L09060525-36	MS1	91.5	
			Cobalt	4.56	L09060525-36	MS1	114	
			Copper, total	127	L09060525-36	MS1	166	
			Manganese	136	L09060525-36	MS1	167	
			Mercury	0.366	L09060525-36	MS1	93.4	
			Molybdenum	20.9	L09060525-36	MS1	92.6	
			Nickel	234	L09060525-36	MS1	77.6	
			Selenium	32.5 J+	L09060525-36	MS1	137	
			Silver	4.75	L09060525-36	MS1	110	
			Thallium	0.957	L09060525-36	MS1	97.0	
			Uranium, total	34.5 J+	L09060525-36	MS1	140	
			Vanadium	167	L09060525-36	MS1	66.1	
			Zinc	825	L09060525-36	MS1	-36.1	
			Antimony	5.13	L09060525-37	SD1	98.9	0
			Arsenic	21.8	L09060525-37	SD1	82.8	19
			Boron	17.7 J	L09060525-37	SD1	105	7
			Cadmium	27.0 J+	L09060525-37	SD1	120	13
			Chromium	268	L09060525-37	SD1	558	14
			Chromium, Hexavalent	<0.500	L09060525-37	SD1	94.0	3
			Cobalt	4.56	L09060525-37	SD1	104	9
			Copper, total	127	L09060525-37	SD1	128	26
			Manganese	136	L09060525-37	SD1	255	42
			Mercury	0.366	L09060525-37	SD1	90.9	3
			Molybdenum	20.9	L09060525-37	SD1	94.4	2
			Nickel	234	L09060525-37	SD1	174	77
			Selenium	32.5 J+	L09060525-37	SD1	109	23
			Silver	4.75	L09060525-37	SD1	93.4	16
			Thallium	0.957	L09060525-37	SD1	94.4	3
			Uranium, total	34.5 J+	L09060525-37	SD1	124	12
			Vanadium	167	L09060525-37	SD1	115	54
			Zinc	825	L09060525-37	SD1	102	419
0906-MWD088-04-SS	Soil	L09060525-26	Antimony	6.07	L09060525-38	MS1	107	

TABLE 2-10

RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES
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Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Arsenic	33.0 J+	L09060525-38	MS1	150	
			Boron	11.5 J	L09060525-38	MS1	98.5	
			Cadmium	29.2 J+	L09060525-38	MS1	124	
			Chromium	330	L09060525-38	MS1	480	
			Chromium, Hexavalent	<0.497 UJ	L09060525-38	MS1	89.1	
			Cobalt	7.23	L09060525-38	MS1	99.4	
			Copper, total	108	L09060525-38	MS1	182	
			Manganese	202 J	L09060525-38	MS1	277	
			Mercury	0.446	L09060525-38	MS1	77.8	
			Molybdenum	21.2	L09060525-38	MS1	105	
			Nickel	260	L09060525-38	MS1	327	
			Selenium	35.3 J+	L09060525-38	MS1	186	
			Silver	3.11	L09060525-38	MS1	100	
			Thallium	1.10	L09060525-38	MS1	97.2	
			Uranium, total	32.4	L09060525-38	MS1	99.4	
			Vanadium	205	L09060525-38	MS1	453	
			Zinc	1010	L09060525-38	MS1	256	
			Antimony	6.07	L09060525-39	SD1	98.2	9
			Arsenic	33.0 J+	L09060525-39	SD1	142	5
			Boron	11.5 J	L09060525-39	SD1	102	3
			Cadmium	29.2 J+	L09060525-39	SD1	129	4
			Chromium	330	L09060525-39	SD1	658	31
			Chromium, Hexavalent	<0.497 UJ	L09060525-39	SD1	91.5	3
			Cobalt	7.23	L09060525-39	SD1	109	9
			Copper, total	108	L09060525-39	SD1	189	4
			Manganese	202 J	L09060525-39	SD1	132	71
			Mercury	0.446	L09060525-39	SD1	80.0	3
			Molybdenum	21.2	L09060525-39	SD1	91.6	14
			Nickel	260	L09060525-39	SD1	271	19
			Selenium	35.3 J+	L09060525-39	SD1	139	29
			Silver	3.11	L09060525-39	SD1	107	7
			Thallium	1.10	L09060525-39	SD1	101	4
			Uranium, total	32.4	L09060525-39	SD1	125	23
			Vanadium	205	L09060525-39	SD1	407	11
			Zinc	1010	L09060525-39	SD1	25.0	164
0906-MWD085-09-SS	Soil	L09060553-13	Antimony	9.15	L09060553-15	MS1	83.7	
			Arsenic	40.7	L09060553-15	MS1	126	

TABLE 2-10

RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES
(Page 4 of 52)

Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Boron	27.5	L09060553-15	MS1	98.6	
			Cadmium	25.9	L09060553-15	MS1	116	
			Chromium	499 J	L09060553-15	MS1	3020	
			Chromium, Hexavalent	<0.249	L09060553-15	MS1	102	
			Cobalt	5.90	L09060553-15	MS1	111	
			Copper, total	136	L09060553-15	MS1	186	
			Manganese	175	L09060553-15	MS1	365	
			Mercury	0.465	L09060553-15	MS1	96.9	
			Molybdenum	21.2 J-	L09060553-15	MS1	73.7	
			Nickel	282	L09060553-15	MS1	290	
			Selenium	91.8	L09060553-15	MS1	366	
			Silver	4.60	L09060553-15	MS1	105	
			Thallium	1.08	L09060553-15	MS1	100	
			Uranium, total	39.3	L09060553-15	MS1	142	
			Vanadium	251	L09060553-15	MS1	592	
			Zinc	841 J	L09060553-15	MS1	-227	
			Antimony	9.15	L09060553-16	SD1	78.3	7
			Arsenic	40.7	L09060553-16	SD1	83.5	41
			Boron	27.5	L09060553-16	SD1	98.0	1
			Cadmium	25.9	L09060553-16	SD1	117	1
			Chromium	499 J	L09060553-16	SD1	564	137
			Chromium, Hexavalent	<0.249	L09060553-16	SD1	104	2
			Cobalt	5.90	L09060553-16	SD1	106	5
			Copper, total	136	L09060553-16	SD1	96.8	63
			Manganese	175	L09060553-16	SD1	341	7
			Mercury	0.465	L09060553-16	SD1	86.6	11
			Molybdenum	21.2 J-	L09060553-16	SD1	71.1	4
			Nickel	282	L09060553-16	SD1	226	25
			Selenium	91.8	L09060553-16	SD1	169	74
			Silver	4.60	L09060553-16	SD1	100	5
			Thallium	1.08	L09060553-16	SD1	100	0
			Uranium, total	39.3	L09060553-16	SD1	124	14
			Vanadium	251	L09060553-16	SD1	139	124
			Zinc	841 J	L09060553-16	SD1	-239	5
0906-MHR002-01-SS	Soil	L09060595-12	Antimony	2.83 J	L09060595-13	MS1	95.6	
			Arsenic	14.4	L09060595-13	MS1	86.8	
			Boron	12.2 J	L09060595-13	MS1	99.1	

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES
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Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Cadmium	19.4 J+	L09060595-13	MS1	136	
			Chromium	141	L09060595-13	MS1	-15.9	
			Chromium, Hexavalent	<0.249	L09060595-13	MS1	99.0	
			Cobalt	7.04 J-	L09060595-13	MS1	74.6	
			Copper, total	68.4	L09060595-13	MS1	67.9	
			Manganese	410	L09060595-13	MS1	453	
			Mercury	0.192 J-	L09060595-13	MS1	89.4	
			Molybdenum	11.9	L09060595-13	MS1	95.2	
			Nickel	139	L09060595-13	MS1	10.0	
			Selenium	21.1 J	L09060595-13	MS1	78.3	
			Silver	2.36	L09060595-13	MS1	95.3	
			Thallium	0.839	L09060595-13	MS1	95.7	
			Uranium, total	23.3 J+	L09060595-13	MS1	149	
			Vanadium	110	L09060595-13	MS1	145	
			Zinc	536 J	L09060595-13	MS1	53.9	
			Antimony	2.83 J	L09060595-14	SD1	92.4	3
			Arsenic	14.4	L09060595-14	SD1	81.6	6
			Boron	12.2 J	L09060595-14	SD1	97.9	1
			Cadmium	19.4 J+	L09060595-14	SD1	106	25
			Chromium	141	L09060595-14	SD1	-163	164
			Chromium, Hexavalent	<0.249	L09060595-14	SD1	100	1
			Cobalt	7.04 J-	L09060595-14	SD1	85.1	13
			Copper, total	68.4	L09060595-14	SD1	31.9	72
			Manganese	410	L09060595-14	SD1	-25.4	224
			Mercury	0.192 J-	L09060595-14	SD1	67.8	27
			Molybdenum	11.9	L09060595-14	SD1	91.3	4
			Nickel	139	L09060595-14	SD1	32.0	105
			Selenium	21.1 J	L09060595-14	SD1	77.3	1
			Silver	2.36	L09060595-14	SD1	91.7	4
			Thallium	0.839	L09060595-14	SD1	94.2	2
			Uranium, total	23.3 J+	L09060595-14	SD1	92.1	47
			Vanadium	110	L09060595-14	SD1	41.7	111
			Zinc	536 J	L09060595-14	SD1	34.3	44
0906-MBH002-01-SS	Soil	L09060596-01	Antimony	0.530 J	L09060596-02	MS1	89.6	
			Arsenic	8.10	L09060596-02	MS1	95.4	
			Boron	22.3 J-	L09060596-02	MS1	68.7	
			Cadmium	0.881	L09060596-02	MS1	96.4	

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES

Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Chromium	20.7 J-	L09060596-02	MS1	73.0	
			Chromium, Hexavalent	<0.249	L09060596-02	MS1	100	
			Cobalt	10.7	L09060596-02	MS1	89.3	
			Copper, total	24.0	L09060596-02	MS1	75.1	
			Manganese	2120	L09060596-02	MS1	492	
			Mercury	0.0261 J	L09060596-02	MS1	94.4	
			Molybdenum	<1.14	L09060596-02	MS1	97.0	
			Nickel	23.8 J-	L09060596-02	MS1	73.9	
			Selenium	0.643 J	L09060596-02	MS1	87.9	
			Silver	<0.242	L09060596-02	MS1	101	
			Thallium	0.154	L09060596-02	MS1	96.5	
			Uranium, total	<0.484	L09060596-02	MS1	108	
			Vanadium	26.2	L09060596-02	MS1	99.3	
			Zinc	63.1 J	L09060596-02	MS1	87.0	
			Antimony	0.530 J	L09060596-03	SD1	90.7	1
			Arsenic	8.10	L09060596-03	SD1	91.5	4
			Boron	22.3 J-	L09060596-03	SD1	83.3	19
			Cadmium	0.881	L09060596-03	SD1	98.0	2
			Chromium	20.7 J-	L09060596-03	SD1	64.9	12
			Chromium, Hexavalent	<0.249	L09060596-03	SD1	101	1
			Cobalt	10.7	L09060596-03	SD1	90.3	1
			Copper, total	24.0	L09060596-03	SD1	76.9	2
			Manganese	2120	L09060596-03	SD1	26.8	179
			Mercury	0.0261 J	L09060596-03	SD1	95.3	1
			Molybdenum	<1.14	L09060596-03	SD1	97.4	0
			Nickel	23.8 J-	L09060596-03	SD1	74.0	0
			Selenium	0.643 J	L09060596-03	SD1	86.8	1
			Silver	<0.242	L09060596-03	SD1	100	1
			Thallium	0.154	L09060596-03	SD1	94.1	3
			Uranium, total	<0.484	L09060596-03	SD1	109	1
			Vanadium	26.2	L09060596-03	SD1	97.7	2
			Zinc	63.1 J	L09060596-03	SD1	104	18
0906-MWD092-06-SS	Soil	L09060624-12	Antimony	7.89	WG306389-04	MS1	84.9	
			Boron	19.7 J+	WG306389-04	MS1	96.1	
			Manganese	74.1	WG306389-04	MS1	131	
			Molybdenum	16.5	WG306389-04	MS1	77.9	
			Zinc	759	WG306389-04	MS1	131	

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES
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Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Antimony	7.89	WG306389-05	SD1	88.3	4
			Boron	19.7 J+	WG306389-05	SD1	139	36
			Manganese	74.1	WG306389-05	SD1	295	77
			Molybdenum	16.5	WG306389-05	SD1	81.5	5
			Zinc	759	WG306389-05	SD1	208	45
0906-MTA001-05-SS	Soil	L09060624-22	Antimony	<0.358	L09060624-23	MS1	88.7	
			Arsenic	5.20	L09060624-23	MS1	101	
			Boron	<1.79 UJ	L09060624-23	MS1	55.2	
			Cadmium	0.497	L09060624-23	MS1	99.3	
			Chromium	23.1 J+	L09060624-23	MS1	221	
			Chromium, Hexavalent	<0.250	L09060624-23	MS1	96.4	
			Cobalt	7.42	L09060624-23	MS1	104	
			Copper, total	12.5	L09060624-23	MS1	118	
			Manganese	506	L09060624-23	MS1	182	
			Mercury	0.0186 J	L09060624-23	MS1	96.2	
			Molybdenum	<1.08	L09060624-23	MS1	90.7	
			Nickel	22.8	L09060624-23	MS1	112	
			Selenium	0.733 J	L09060624-23	MS1	85.6	
			Silver	0.182 J	L09060624-23	MS1	99.2	
			Thallium	0.241	L09060624-23	MS1	97.0	
			Uranium, total	1.25	L09060624-23	MS1	104	
			Vanadium	22.5 J+	L09060624-23	MS1	245	
			Zinc	38.3 J	L09060624-23	MS1	169	
			Antimony	<0.358	L09060624-24	SD1	87.7	1
			Arsenic	5.20	L09060624-24	SD1	98.0	3
			Boron	<1.79 UJ	L09060624-24	SD1	65.8	18
			Cadmium	0.497	L09060624-24	SD1	100	1
			Chromium	23.1 J+	L09060624-24	SD1	109	68
			Chromium, Hexavalent	<0.250	L09060624-24	SD1	97.6	1
			Cobalt	7.42	L09060624-24	SD1	104	0
			Copper, total	12.5	L09060624-24	SD1	102	15
			Manganese	506	L09060624-24	SD1	190	4
			Mercury	0.0186 J	L09060624-24	SD1	95.8	0
			Molybdenum	<1.08	L09060624-24	SD1	92.9	2
			Nickel	22.8	L09060624-24	SD1	88.4	24
			Selenium	0.733 J	L09060624-24	SD1	77.8	10
			Silver	0.182 J	L09060624-24	SD1	101	2

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES

Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Thallium	0.241	L09060624-24	SD1	95.6	1
			Uranium, total	1.25	L09060624-24	SD1	105	1
			Vanadium	22.5 J+	L09060624-24	SD1	167	38
			Zinc	38.3 J	L09060624-24	SD1	217	25
0906-MWD092-01-SS	Soil	L09060625-02	Antimony	<0.380	L09060625-03	MS1	96.0	
			Arsenic	7.84	L09060625-03	MS1	103	
			Boron	9.57	L09060625-03	MS1	110	
			Cadmium	24.0	L09060625-03	MS1	110	
			Chromium	100	L09060625-03	MS1	934	
			Chromium, Hexavalent	<0.498	L09060625-03	MS1	101	
			Cobalt	5.12	L09060625-03	MS1	110	
			Copper, total	38.5 J+	L09060625-03	MS1	139	
			Manganese	333	L09060625-03	MS1	106	
			Mercury	0.0799 J	L09060625-03	MS1	92.8	
			Molybdenum	4.92	L09060625-03	MS1	96.5	
			Nickel	82.1	L09060625-03	MS1	200	
			Selenium	10.4 J	L09060625-03	MS1	97.8	
			Silver	1.10	L09060625-03	MS1	102	
			Thallium	0.964	L09060625-03	MS1	103	
			Uranium, total	24.2 J+	L09060625-03	MS1	133	
			Vanadium	111	L09060625-03	MS1	703	
			Zinc	457 J	L09060625-03	MS1	172	
			Antimony	<0.380	L09060625-04	SD1	94.9	1
			Arsenic	7.84	L09060625-04	SD1	97.5	5
			Boron	9.57	L09060625-04	SD1	81.6	30
			Cadmium	24.0	L09060625-04	SD1	85.2	25
			Chromium	100	L09060625-04	SD1	679	32
			Chromium, Hexavalent	<0.498	L09060625-04	SD1	96.8	4
			Cobalt	5.12	L09060625-04	SD1	113	3
			Copper, total	38.5 J+	L09060625-04	SD1	129	7
			Manganese	333	L09060625-04	SD1	-151	1142
			Mercury	0.0799 J	L09060625-04	SD1	96.3	4
			Molybdenum	4.92	L09060625-04	SD1	95.1	1
			Nickel	82.1	L09060625-04	SD1	168	17
			Selenium	10.4 J	L09060625-04	SD1	85.7	13
			Silver	1.10	L09060625-04	SD1	83.5	20
			Thallium	0.964	L09060625-04	SD1	103	0

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES

Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Uranium, total	24.2 J+	L09060625-04	SD1	94.9	33
			Vanadium	111	L09060625-04	SD1	607	15
			Zinc	457 J	L09060625-04	SD1	-10.2	225
0906-MAR001-05-SS	Soil	L09060625-30	Antimony	0.980	L09060625-31	MS1	92.5	
			Arsenic	7.53	L09060625-31	MS1	93.6	
			Boron	8.31	L09060625-31	MS1	101	
			Cadmium	17.7	L09060625-31	MS1	91.9	
			Chromium	60.9	L09060625-31	MS1	166	
			Chromium, Hexavalent	<0.246	L09060625-31	MS1	103	
			Cobalt	4.35	L09060625-31	MS1	92.2	
			Copper, total	27.3	L09060625-31	MS1	102	
			Manganese	217	L09060625-31	MS1	83.0	
			Mercury	0.110 J	L09060625-31	MS1	86.9	
			Molybdenum	3.68	L09060625-31	MS1	91.7	
			Nickel	117	L09060625-31	MS1	52.2	
			Selenium	9.75	L09060625-31	MS1	82.2	
			Silver	0.517	L09060625-31	MS1	92.5	
			Thallium	1.07	L09060625-31	MS1	96.3	
			Uranium, total	14.6	L09060625-31	MS1	102	
			Vanadium	71.1	L09060625-31	MS1	148	
			Zinc	587	L09060625-31	MS1	1090	
			Antimony	0.980	L09060625-32	SD1	89.4	3
			Arsenic	7.53	L09060625-32	SD1	102	9
			Boron	8.31	L09060625-32	SD1	81.6	21
			Cadmium	17.7	L09060625-32	SD1	95.4	4
			Chromium	60.9	L09060625-32	SD1	74.0	77
			Chromium, Hexavalent	<0.246	L09060625-32	SD1	102	1
			Cobalt	4.35	L09060625-32	SD1	89.3	3
			Copper, total	27.3	L09060625-32	SD1	102	0
			Manganese	217	L09060625-32	SD1	46.4	57
			Mercury	0.110 J	L09060625-32	SD1	80.3	8
			Molybdenum	3.68	L09060625-32	SD1	86.6	6
			Nickel	117	L09060625-32	SD1	60.2	14
			Selenium	9.75	L09060625-32	SD1	87.7	6
			Silver	0.517	L09060625-32	SD1	89.0	4
			Thallium	1.07	L09060625-32	SD1	95.7	1
			Uranium, total	14.6	L09060625-32	SD1	98.8	3

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES
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Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Vanadium	71.1	L09060625-32	SD1	132	11
			Zinc	587	L09060625-32	SD1	158	149
0906-MMP036-04-SS	Soil	L09060677-02	Antimony	9.55	L09060677-03	MS1	100	
			Arsenic	37.3	L09060677-03	MS1	90.1	
			Boron	<9.41	L09060677-03	MS1	119	
			Cadmium	140	L09060677-03	MS1	126	
			Chromium	416	L09060677-03	MS1	630	
			Chromium, Hexavalent	<0.249 UJ	L09060677-03	MS1	89.8	
			Cobalt	6.85	L09060677-03	MS1	90.4	
			Copper, total	168	L09060677-03	MS1	61.9	
			Manganese	403	L09060677-03	MS1	-13.6	
			Mercury	0.892 J	L09060677-03	MS1	-34.1	
			Molybdenum	48.7	L09060677-03	MS1	87.6	
			Nickel	282	L09060677-03	MS1	-39.8	
			Selenium	31.7 J	L09060677-03	MS1	110	
			Silver	11.7	L09060677-03	MS1	101	
			Thallium	3.60	L09060677-03	MS1	83.9	
			Uranium, total	47.2	L09060677-03	MS1	113	
			Vanadium	598	L09060677-03	MS1	256	
			Zinc	1260	L09060677-03	MS1	-85.0	
			Antimony	9.55	L09060677-04	SD1	101	1
			Arsenic	37.3	L09060677-04	SD1	99.2	10
			Boron	<9.41	L09060677-04	SD1	148	22
			Cadmium	140	L09060677-04	SD1	110	14
			Chromium	416	L09060677-04	SD1	146	125
			Chromium, Hexavalent	<0.249 UJ	L09060677-04	SD1	88.6	1
			Cobalt	6.85	L09060677-04	SD1	82.5	9
			Copper, total	168	L09060677-04	SD1	-73.9	2263
			Manganese	403	L09060677-04	SD1	-224	177
			Mercury	0.892 J	L09060677-04	SD1	-153	127
			Molybdenum	48.7	L09060677-04	SD1	92.3	5
			Nickel	282	L09060677-04	SD1	122	394
			Selenium	31.7 J	L09060677-04	SD1	56.6	64
			Silver	11.7	L09060677-04	SD1	95.0	6
			Thallium	3.60	L09060677-04	SD1	94.9	12
			Uranium, total	47.2	L09060677-04	SD1	103	9
			Vanadium	598	L09060677-04	SD1	440	53

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES
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Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Zinc	1260	L09060677-04	SD1	-82.9	3
0906-MBE001-AH2-SS	Soil	L09060677-22	Antimony	0.504 J	L09060677-23	MS1	75.8	
			Arsenic	7.05	L09060677-23	MS1	82.5	
			Boron	9.86 J-	L09060677-23	MS1	68.1	
			Cadmium	8.90	L09060677-23	MS1	98.4	
			Chromium	44.8	L09060677-23	MS1	108	
			Chromium, Hexavalent	<0.250 UJ	L09060677-23	MS1	88.6	
			Cobalt	8.28	L09060677-23	MS1	97.2	
			Copper, total	21.2	L09060677-23	MS1	79.4	
			Manganese	564	L09060677-23	MS1	282	
			Mercury	0.0252 J	L09060677-23	MS1	100	
			Molybdenum	1.62 J	L09060677-23	MS1	78.7	
			Nickel	28.4	L09060677-23	MS1	75.6	
			Selenium	2.00 J	L09060677-23	MS1	79.3	
			Silver	0.251	L09060677-23	MS1	92.6	
			Thallium	0.293	L09060677-23	MS1	93.7	
			Uranium, total	9.21	L09060677-23	MS1	104	
			Vanadium	36.8 J+	L09060677-23	MS1	105	
			Zinc	130 J	L09060677-23	MS1	17.6	
			Antimony	0.504 J	L09060677-24	SD1	81.3	7
			Arsenic	7.05	L09060677-24	SD1	90.1	9
			Boron	9.86 J-	L09060677-24	SD1	76.9	12
			Cadmium	8.90	L09060677-24	SD1	93.0	6
			Chromium	44.8	L09060677-24	SD1	208	63
			Chromium, Hexavalent	<0.250 UJ	L09060677-24	SD1	91.0	3
			Cobalt	8.28	L09060677-24	SD1	95.8	1
			Copper, total	21.2	L09060677-24	SD1	96.8	20
			Manganese	564	L09060677-24	SD1	100	95
			Mercury	0.0252 J	L09060677-24	SD1	100	0
			Molybdenum	1.62 J	L09060677-24	SD1	84.0	7
			Nickel	28.4	L09060677-24	SD1	105	33
			Selenium	2.00 J	L09060677-24	SD1	80.3	1
			Silver	0.251	L09060677-24	SD1	82.3	12
			Thallium	0.293	L09060677-24	SD1	93.3	0
			Uranium, total	9.21	L09060677-24	SD1	115	10
			Vanadium	36.8 J+	L09060677-24	SD1	206	65
			Zinc	130 J	L09060677-24	SD1	51.8	99

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES
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Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
0906-MWD083-03-SS	Soil	L09060679-01	Antimony	<0.376	L09060679-02	MS1	96.9	
			Arsenic	11.5	L09060679-02	MS1	94.1	
			Boron	2.07 J-	L09060679-02	MS1	70.2	
			Cadmium	6.22	L09060679-02	MS1	95.9	
			Chromium	59.7	L09060679-02	MS1	169	
			Chromium, Hexavalent	<0.500	L09060679-02	MS1	96.3	
			Cobalt	8.75	L09060679-02	MS1	103	
			Copper, total	32.7 J+	L09060679-02	MS1	132	
			Manganese	1280	L09060679-02	MS1	-700	
			Mercury	0.189 J-	L09060679-02	MS1	13.0	
			Molybdenum	4.24	L09060679-02	MS1	95.0	
			Nickel	115	L09060679-02	MS1	188	
			Selenium	6.34 J	L09060679-02	MS1	84.0	
			Silver	0.388 J+	L09060679-02	MS1	93.6	
			Thallium	0.674	L09060679-02	MS1	99.3	
			Uranium, total	9.82	L09060679-02	MS1	125	
			Vanadium	44.4	L09060679-02	MS1	176	
			Zinc	370	L09060679-02	MS1	71.2	
			Antimony	<0.376	L09060679-03	SD1	94.8	2
			Arsenic	11.5	L09060679-03	SD1	94.6	1
			Boron	2.07 J-	L09060679-03	SD1	84.4	18
			Cadmium	6.22	L09060679-03	SD1	96.1	0
			Chromium	59.7	L09060679-03	SD1	263	44
			Chromium, Hexavalent	<0.500	L09060679-03	SD1	101	5
			Cobalt	8.75	L09060679-03	SD1	112	8
			Copper, total	32.7 J+	L09060679-03	SD1	130	2
			Manganese	1280	L09060679-03	SD1	-174	120
			Mercury	0.189 J-	L09060679-03	SD1	15.5	18
			Molybdenum	4.24	L09060679-03	SD1	93.4	2
			Nickel	115	L09060679-03	SD1	239	24
			Selenium	6.34 J	L09060679-03	SD1	81.4	3
			Silver	0.388 J+	L09060679-03	SD1	91.9	2
			Thallium	0.674	L09060679-03	SD1	96.9	2
			Uranium, total	9.82	L09060679-03	SD1	110	13
			Vanadium	44.4	L09060679-03	SD1	197	11
			Zinc	370	L09060679-03	SD1	99.0	33
0906-MBE001-06-SS	Soil	L09060679-26	Antimony	<0.383	L09060679-28	MS1	92.6	

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES
(Page 13 of 52)

Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Arsenic	3.77 J	L09060679-28	MS1	98.2	
			Boron	8.17 J	L09060679-28	MS1	73.6	
			Cadmium	1.14	L09060679-28	MS1	94.3	
			Chromium	16.8 J	L09060679-28	MS1	133	
			Chromium, Hexavalent	<0.247	L09060679-28	MS1	99.5	
			Cobalt	8.76	L09060679-28	MS1	104	
			Copper, total	16.7	L09060679-28	MS1	110	
			Manganese	1350 J	L09060679-28	MS1	-610	
			Mercury	0.0249 J	L09060679-28	MS1	95.9	
			Molybdenum	<1.15	L09060679-28	MS1	93.9	
			Nickel	21.7	L09060679-28	MS1	109	
			Selenium	0.935 J	L09060679-28	MS1	85.8	
			Silver	0.128 J	L09060679-28	MS1	89.5	
			Thallium	0.176	L09060679-28	MS1	98.3	
			Uranium, total	1.05	L09060679-28	MS1	105	
			Vanadium	18.5 J+	L09060679-28	MS1	159	
			Zinc	111	L09060679-28	MS1	64.0	
			Antimony	<0.383	L09060679-29	SD1	91.2	2
			Arsenic	3.77 J	L09060679-29	SD1	97.2	1
			Boron	8.17 J	L09060679-29	SD1	72.9	1
			Cadmium	1.14	L09060679-29	SD1	92.3	2
			Chromium	16.8 J	L09060679-29	SD1	142	7
			Chromium, Hexavalent	<0.247	L09060679-29	SD1	101	1
			Cobalt	8.76	L09060679-29	SD1	105	1
			Copper, total	16.7	L09060679-29	SD1	114	4
			Manganese	1350 J	L09060679-29	SD1	-432	34
			Mercury	0.0249 J	L09060679-29	SD1	92.2	4
			Molybdenum	<1.15	L09060679-29	SD1	92.3	2
			Nickel	21.7	L09060679-29	SD1	110	1
			Selenium	0.935 J	L09060679-29	SD1	85.3	1
			Silver	0.128 J	L09060679-29	SD1	91.0	2
			Thallium	0.176	L09060679-29	SD1	96.8	2
			Uranium, total	1.05	L09060679-29	SD1	103	2
			Vanadium	18.5 J+	L09060679-29	SD1	171	7
			Zinc	111	L09060679-29	SD1	50.3	24
0906-MWD080-05-SS	Soil	L09060713-01	Antimony	8.12	L09060713-02	MS1	101	
			Arsenic	44.4 J	L09060713-02	MS1	80.2	

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES
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Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Boron	<9.58	L09060713-02	MS1	151	
			Cadmium	17.8	L09060713-02	MS1	124	
			Chromium	481 J	L09060713-02	MS1	-863	
			Chromium, Hexavalent	<0.500	L09060713-02	MS1	98.3	
			Cobalt	7.36	L09060713-02	MS1	95.1	
			Copper, total	118	L09060713-02	MS1	38.7	
			Manganese	297 J	L09060713-02	MS1	-91.2	
			Mercury	0.444 J-	L09060713-02	MS1	24.8	
			Molybdenum	33.5	L09060713-02	MS1	109	
			Nickel	359	L09060713-02	MS1	61.1	
			Selenium	106 J	L09060713-02	MS1	132	
			Silver	5.11	L09060713-02	MS1	99.1	
			Thallium	0.763	L09060713-02	MS1	94.7	
			Uranium, total	29.9	L09060713-02	MS1	86.1	
			Vanadium	164	L09060713-02	MS1	10.2	
			Zinc	1270	L09060713-02	MS1	172	
			Antimony	8.12	L09060713-03	SD1	102	1
			Arsenic	44.4 J	L09060713-03	SD1	75.6	6
			Boron	<9.58	L09060713-03	SD1	137	10
			Cadmium	17.8	L09060713-03	SD1	98.3	23
			Chromium	481 J	L09060713-03	SD1	835	12129
			Chromium, Hexavalent	<0.500	L09060713-03	SD1	98.3	0
			Cobalt	7.36	L09060713-03	SD1	90.8	5
			Copper, total	118	L09060713-03	SD1	75.3	64
			Manganese	297 J	L09060713-03	SD1	428	308
			Mercury	0.444 J-	L09060713-03	SD1	41.0	49
			Molybdenum	33.5	L09060713-03	SD1	114	4
			Nickel	359	L09060713-03	SD1	414	149
			Selenium	106 J	L09060713-03	SD1	29.5	127
			Silver	5.11	L09060713-03	SD1	92.4	7
			Thallium	0.763	L09060713-03	SD1	94.0	1
			Uranium, total	29.9	L09060713-03	SD1	112	26
			Vanadium	164	L09060713-03	SD1	141	173
			Zinc	1270	L09060713-03	SD1	354	69
0906-MMP036-02-SS	Soil	L09060713-27	Antimony	2.05	L09060713-28	MS1	94.4	
			Arsenic	10.6	L09060713-28	MS1	94.3	
			Boron	12.4	L09060713-28	MS1	83.7	

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES
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Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Cadmium	34.0 J+	L09060713-28	MS1	120	
			Chromium	101	L09060713-28	MS1	99.6	
			Chromium, Hexavalent	<0.250 UJ	L09060713-28	MS1	93.3	
			Cobalt	4.08	L09060713-28	MS1	99.3	
			Copper, total	27.1	L09060713-28	MS1	91.6	
			Manganese	255	L09060713-28	MS1	-87.3	
			Mercury	0.0720 J	L09060713-28	MS1	94.8	
			Molybdenum	10.6	L09060713-28	MS1	80.6	
			Nickel	116	L09060713-28	MS1	112	
			Selenium	5.84	L09060713-28	MS1	78.2	
			Silver	0.977 J-	L09060713-28	MS1	92.6	
			Thallium	1.70	L09060713-28	MS1	98.5	
			Uranium, total	31.7 J-	L09060713-28	MS1	72.0	
			Vanadium	321	L09060713-28	MS1	94.1	
			Zinc	597	L09060713-28	MS1	110	
			Antimony	2.05	L09060713-29	SD1	93.8	1
			Arsenic	10.6	L09060713-29	SD1	90.7	4
			Boron	12.4	L09060713-29	SD1	76.3	9
			Cadmium	34.0 J+	L09060713-29	SD1	131	9
			Chromium	101	L09060713-29	SD1	420	123
			Chromium, Hexavalent	<0.250 UJ	L09060713-29	SD1	89.8	4
			Cobalt	4.08	L09060713-29	SD1	97.0	2
			Copper, total	27.1	L09060713-29	SD1	102	11
			Manganese	255	L09060713-29	SD1	-521	143
			Mercury	0.0720 J	L09060713-29	SD1	98.2	4
			Molybdenum	10.6	L09060713-29	SD1	80.8	0
			Nickel	116	L09060713-29	SD1	133	17
			Selenium	5.84	L09060713-29	SD1	82.0	5
			Silver	0.977 J-	L09060713-29	SD1	67.4	32
			Thallium	1.70	L09060713-29	SD1	103	4
			Uranium, total	31.7 J-	L09060713-29	SD1	65.9	9
			Vanadium	321	L09060713-29	SD1	811	158
			Zinc	597	L09060713-29	SD1	-38.6	416
0906-MWD082-02-SS	Soil	L09070209-04	Antimony	10.9	L09070209-05	MS1	97.3	
			Arsenic	34.7 J	L09070209-05	MS1	197	
			Boron	10.0 J	L09070209-05	MS1	104	
			Cadmium	14.6 J+	L09070209-05	MS1	115	

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES

Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Chromium	326	L09070209-05	MS1	97.0	
			Chromium	326	L09070209-05	MS1	684	
			Cobalt	8.04	L09070209-05	MS1	84.6	
			Copper, total	102	L09070209-05	MS1	229	
			Manganese	405 J	L09070209-05	MS1	-514	
			Mercury	0.523 J+	L09070209-05	MS1	117	
			Molybdenum	25.4	L09070209-05	MS1	98.0	
			Nickel	387	L09070209-05	MS1	389	
			Selenium	31.0 J	L09070209-05	MS1	143	
			Silver	3.94	L09070209-05	MS1	98.9	
			Thallium	0.568	L09070209-05	MS1	93.0	
			Uranium, total	24.8 J+	L09070209-05	MS1	109	
			Vanadium	132	L09070209-05	MS1	327	
			Zinc	1550	L09070209-05	MS1	-132	
			Antimony	10.9	L09070209-06	SD1	98.5	1
			Arsenic	34.7 J	L09070209-06	SD1	193	2
			Boron	10.0 J	L09070209-06	SD1	106	2
			Cadmium	14.6 J+	L09070209-06	SD1	127	10
			Chromium	326	L09070209-06	SD1	1560	177
			Chromium	326	L09070209-06	SD1	98.1	150
			Cobalt	8.04	L09070209-06	SD1	100	17
			Copper, total	102	L09070209-06	SD1	271	17
			Manganese	405 J	L09070209-06	SD1	-548	6
			Mercury	0.523 J+	L09070209-06	SD1	135	14
			Molybdenum	25.4	L09070209-06	SD1	94.5	4
			Nickel	387	L09070209-06	SD1	400	3
			Selenium	31.0 J	L09070209-06	SD1	207	37
			Silver	3.94	L09070209-06	SD1	105	6
			Thallium	0.568	L09070209-06	SD1	96.1	3
			Uranium, total	24.8 J+	L09070209-06	SD1	140	25
			Vanadium	132	L09070209-06	SD1	562	53
			Zinc	1550	L09070209-06	SD1	-215	48
0906-MMP035-10-SS	Soil	L09070209-26	Antimony	6.82	L09070209-27	MS1	95.5	
			Arsenic	23.9 J+	L09070209-27	MS1	115	
			Boron	30.2	L09070209-27	MS1	78.3	
			Cadmium	30.6	L09070209-27	MS1	82.9	
			Chromium	287	L09070209-27	MS1	883	

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES
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Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Chromium, Hexavalent	<0.250	L09070209-27	MS1	97.0	
			Cobalt	7.87	L09070209-27	MS1	79.7	
			Copper, total	82.2	L09070209-27	MS1	98.2	
			Manganese	258	L09070209-27	MS1	-85.4	
			Mercury	0.409 J+	L09070209-27	MS1	117	
			Molybdenum	31.7	L09070209-27	MS1	103	
			Nickel	301	L09070209-27	MS1	281	
			Selenium	60.5	L09070209-27	MS1	165	
			Silver	4.55	L09070209-27	MS1	89.3	
			Thallium	0.778	L09070209-27	MS1	82.9	
			Uranium, total	29.5	L09070209-27	MS1	101	
			Vanadium	203	L09070209-27	MS1	399	
			Zinc	1050	L09070209-27	MS1	258	
			Antimony	6.82	L09070209-28	SD1	90.6	5
			Arsenic	23.9 J+	L09070209-28	SD1	132	14
			Boron	30.2	L09070209-28	SD1	93.3	17
			Cadmium	30.6	L09070209-28	SD1	96.2	15
			Chromium	287	L09070209-28	SD1	95.9	161
			Chromium	287	L09070209-28	SD1	2140	183
			Cobalt	7.87	L09070209-28	SD1	87.4	9
			Copper, total	82.2	L09070209-28	SD1	171	54
			Manganese	258	L09070209-28	SD1	903	242
			Mercury	0.409 J+	L09070209-28	SD1	130	11
			Molybdenum	31.7	L09070209-28	SD1	92.8	10
			Nickel	301	L09070209-28	SD1	515	59
			Selenium	60.5	L09070209-28	SD1	162	2
			Silver	4.55	L09070209-28	SD1	98.3	10
			Thallium	0.778	L09070209-28	SD1	95.7	14
			Uranium, total	29.5	L09070209-28	SD1	99.6	1
			Vanadium	203	L09070209-28	SD1	883	76
			Zinc	1050	L09070209-28	SD1	230	11
0906-MHR001-04-SS	Soil	L09070239-01	Antimony	0.827 J+	L09070239-02	MS1	98.6	
			Arsenic	5.19	L09070239-02	MS1	84.1	
			Boron	4.41 J-	L09070239-02	MS1	77.8	
			Cadmium	4.87	L09070239-02	MS1	94.0	
			Chromium	26.4	L09070239-02	MS1	109	
			Chromium, Hexavalent	<0.241	L09070239-02	MS1	96.1	

TABLE 2-10

RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES

Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Cobalt	11.0	L09070239-02	MS1	95.4	
			Copper, total	23.8	L09070239-02	MS1	97.4	
			Manganese	3620	L09070239-02	MS1	-2970	
			Mercury	0.0334 J	L09070239-02	MS1	110	
			Molybdenum	<1.12	L09070239-02	MS1	97.0	
			Nickel	37.2 J-	L09070239-02	MS1	83.5	
			Selenium	1.34 J-	L09070239-02	MS1	82.7	
			Silver	0.362	L09070239-02	MS1	92.2	
			Thallium	0.193	L09070239-02	MS1	91.5	
			Uranium, total	4.42	L09070239-02	MS1	106	
			Vanadium	34.0 J+	L09070239-02	MS1	135	
			Zinc	154	L09070239-02	MS1	88.4	
			Antimony	0.827 J+	L09070239-03	SD1	93.2	6
			Arsenic	5.19	L09070239-03	SD1	82.2	2
			Boron	4.41 J-	L09070239-03	SD1	74.8	4
			Cadmium	4.87	L09070239-03	SD1	95.2	1
			Chromium	26.4	L09070239-03	SD1	76.7	35
			Chromium, Hexavalent	<0.241	L09070239-03	SD1	97.2	1
			Cobalt	11.0	L09070239-03	SD1	94.6	1
			Copper, total	23.8	L09070239-03	SD1	85.3	13
			Manganese	3620	L09070239-03	SD1	-2890	3
			Mercury	0.0334 J	L09070239-03	SD1	108	2
			Molybdenum	<1.12	L09070239-03	SD1	91.9	5
			Nickel	37.2 J-	L09070239-03	SD1	73.6	13
			Selenium	1.34 J-	L09070239-03	SD1	72.7	13
			Silver	0.362	L09070239-03	SD1	92.9	1
			Thallium	0.193	L09070239-03	SD1	92.6	1
			Uranium, total	4.42	L09070239-03	SD1	113	6
			Vanadium	34.0 J+	L09070239-03	SD1	97.0	33
			Zinc	154	L09070239-03	SD1	18.6	130
0906-MBB001-10-SS	Soil	L09070265-02	Antimony	0.477 J	L09070265-03	MS1	93.0	
			Arsenic	3.66	L09070265-03	MS1	91.5	
			Boron	11.2	L09070265-03	MS1	78.3	
			Cadmium	3.39	L09070265-03	MS1	90.7	
			Chromium	11.6	L09070265-03	MS1	112	
			Chromium, Hexavalent	<0.248	L09070265-03	MS1	92.2	
			Cobalt	3.89	L09070265-03	MS1	96.1	

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES

Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Copper, total	10.9	L09070265-03	MS1	99.8	
			Manganese	360	L09070265-03	MS1	-34.8	
			Mercury	0.0272 J	L09070265-03	MS1	119	
			Molybdenum	<1.10	L09070265-03	MS1	96.4	
			Nickel	20.2	L09070265-03	MS1	109	
			Selenium	0.485	L09070265-03	MS1	83.4	
			Silver	0.0848 J	L09070265-03	MS1	89.5	
			Thallium	0.172	L09070265-03	MS1	90.6	
			Uranium, total	0.689	L09070265-03	MS1	97.4	
			Vanadium	17.9 J+	L09070265-03	MS1	131	
			Zinc	148	L09070265-03	MS1	45.5	
			Antimony	0.477 J	L09070265-04	SD1	93.9	1
			Arsenic	3.66	L09070265-04	SD1	84.5	8
			Boron	11.2	L09070265-04	SD1	91.2	15
			Cadmium	3.39	L09070265-04	SD1	91.7	1
			Chromium	11.6	L09070265-04	SD1	88.2	24
			Chromium, Hexavalent	<0.248	L09070265-04	SD1	93.4	1
			Cobalt	3.89	L09070265-04	SD1	94.0	2
			Copper, total	10.9	L09070265-04	SD1	90.0	10
			Manganese	360	L09070265-04	SD1	50.0	1116
			Mercury	0.0272 J	L09070265-04	SD1	120	1
			Molybdenum	<1.10	L09070265-04	SD1	98.2	2
			Nickel	20.2	L09070265-04	SD1	92.4	16
			Selenium	0.485	L09070265-04	SD1	80.0	4
			Silver	0.0848 J	L09070265-04	SD1	91.2	2
			Thallium	0.172	L09070265-04	SD1	92.8	2
			Uranium, total	0.689	L09070265-04	SD1	96.7	1
			Vanadium	17.9 J+	L09070265-04	SD1	98.4	28
			Zinc	148	L09070265-04	SD1	114	86
0906-MBB001-01-SS	Soil	L09070277-01	Antimony	<0.372	L09070277-07	MS1	94.1	
			Arsenic	2.96	L09070277-07	MS1	83.7	
			Boron	3.93	L09070277-07	MS1	85.4	
			Cadmium	1.40	L09070277-07	MS1	94.2	
			Chromium	13.1	L09070277-07	MS1	88.3	
			Chromium, Hexavalent	<0.246	L09070277-07	MS1	94.5	
			Cobalt	5.27	L09070277-07	MS1	93.3	
			Copper, total	9.98	L09070277-07	MS1	97.1	

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES
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Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Manganese	437	L09070277-07	MS1	196	
			Mercury	0.0231 J	L09070277-07	MS1	113	
			Molybdenum	<1.12	L09070277-07	MS1	94.0	
			Nickel	13.0	L09070277-07	MS1	93.3	
			Selenium	0.304	L09070277-07	MS1	81.9	
			Silver	0.0916 J	L09070277-07	MS1	87.4	
			Thallium	0.165	L09070277-07	MS1	92.4	
			Uranium, total	0.782	L09070277-07	MS1	99.0	
			Vanadium	14.8	L09070277-07	MS1	101	
			Zinc	82.2	L09070277-07	MS1	108	
			Antimony	<0.372	L09070277-08	SD1	94.5	0
			Arsenic	2.96	L09070277-08	SD1	79.5	5
			Boron	3.93	L09070277-08	SD1	83.8	2
			Cadmium	1.40	L09070277-08	SD1	91.1	3
			Chromium	13.1	L09070277-08	SD1	77.2	13
			Chromium, Hexavalent	<0.246	L09070277-08	SD1	93.4	1
			Cobalt	5.27	L09070277-08	SD1	85.1	9
			Copper, total	9.98	L09070277-08	SD1	86.0	12
			Manganese	437	L09070277-08	SD1	57.6	109
			Mercury	0.0231 J	L09070277-08	SD1	113	0
			Molybdenum	<1.12	L09070277-08	SD1	94.6	1
			Nickel	13.0	L09070277-08	SD1	75.6	21
			Selenium	0.304	L09070277-08	SD1	78.8	4
			Silver	0.0916 J	L09070277-08	SD1	88.3	1
			Thallium	0.165	L09070277-08	SD1	90.2	2
			Uranium, total	0.782	L09070277-08	SD1	94.9	4
			Vanadium	14.8	L09070277-08	SD1	87.9	14
			Zinc	82.2	L09070277-08	SD1	103	5
0906-MWD086-08-GF	Plant	L09060487-17	Antimony	<0.500	L09060487-20	MS1	95.1	
			Arsenic	0.610	L09060487-20	MS1	94.7	
			Boron	8.74	L09060487-20	MS1	96.8	
			Cadmium	0.702	L09060487-20	MS1	92.8	
			Chromium	1.85	L09060487-20	MS1	107	
			Cobalt	<0.123	L09060487-20	MS1	101	
			Copper, total	5.21	L09060487-20	MS1	102	
			Manganese	22.3	L09060487-20	MS1	105	
			Mercury	<0.0157	L09060487-20	MS1	99.5	

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES

Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Molybdenum	13.3	L09060487-20	MS1	95.0	
			Nickel	2.68	L09060487-20	MS1	102	
			Selenium	46.0	L09060487-20	MS1	149	
			Silver	<0.0492	L09060487-20	MS1	98.1	
			Thallium	0.103	L09060487-20	MS1	97.4	
			Uranium, total	<0.0984	L09060487-20	MS1	106	
			Vanadium	0.386 J	L09060487-20	MS1	106	
			Zinc	46.8	L09060487-20	MS1	101	
			Antimony	<0.500	L09060487-21	SD1	91.1	4
			Arsenic	0.610	L09060487-21	SD1	93.8	1
			Boron	8.74	L09060487-21	SD1	91.6	6
			Cadmium	0.702	L09060487-21	SD1	94.6	2
			Chromium	1.85	L09060487-21	SD1	106	1
			Cobalt	<0.123	L09060487-21	SD1	102	1
			Copper, total	5.21	L09060487-21	SD1	105	3
			Manganese	22.3	L09060487-21	SD1	92.0	13
			Mercury	<0.0157	L09060487-21	SD1	92.0	8
			Molybdenum	13.3	L09060487-21	SD1	88.6	7
			Nickel	2.68	L09060487-21	SD1	103	1
			Selenium	46.0	L09060487-21	SD1	159	6
			Silver	<0.0492	L09060487-21	SD1	98.4	0
			Thallium	0.103	L09060487-21	SD1	98.2	1
			Uranium, total	<0.0984	L09060487-21	SD1	105	1
			Vanadium	0.386 J	L09060487-21	SD1	105	1
			Zinc	46.8	L09060487-21	SD1	85.5	17
0906-MWD087-05-GF	Plant	L09060522-01	Antimony	<0.498	L09060522-50	MS1	95.1	
			Arsenic	0.126 J	L09060522-50	MS1	99.1	
			Boron	7.89	L09060522-50	MS1	92.4	
			Cadmium	0.654	L09060522-50	MS1	95.1	
			Chromium	3.26	L09060522-50	MS1	91.3	
			Cobalt	<0.124	L09060522-50	MS1	98.4	
			Copper, total	6.75	L09060522-50	MS1	104	
			Manganese	19.0	L09060522-50	MS1	102	
			Mercury	0.00962 J	L09060522-50	MS1	106	
			Molybdenum	22.2	L09060522-50	MS1	99.9	
			Nickel	2.74	L09060522-50	MS1	96.1	
			Selenium	1.26	L09060522-50	MS1	93.0	

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES
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Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Silver	<0.0497	L09060522-50	MS1	99.7	
			Thallium	0.0587	L09060522-50	MS1	101	
			Uranium, total	<0.0994	L09060522-50	MS1	112	
			Vanadium	0.595	L09060522-50	MS1	98.0	
			Zinc	47.8	L09060522-50	MS1	110	
			Antimony	<0.498	L09060522-51	SD1	91.8	4
			Arsenic	0.126 J	L09060522-51	SD1	95.1	4
			Boron	7.89	L09060522-51	SD1	104	12
			Cadmium	0.654	L09060522-51	SD1	93.6	2
			Chromium	3.26	L09060522-51	SD1	85.2	7
			Cobalt	<0.124	L09060522-51	SD1	95.3	3
			Copper, total	6.75	L09060522-51	SD1	97.1	7
			Manganese	19.0	L09060522-51	SD1	96.2	6
			Mercury	0.00962 J	L09060522-51	SD1	87.0	20
			Molybdenum	22.2	L09060522-51	SD1	90.4	10
			Nickel	2.74	L09060522-51	SD1	91.0	5
			Selenium	1.26	L09060522-51	SD1	88.0	6
			Silver	<0.0497	L09060522-51	SD1	97.7	2
			Thallium	0.0587	L09060522-51	SD1	98.0	3
			Uranium, total	<0.0994	L09060522-51	SD1	109	3
			Vanadium	0.595	L09060522-51	SD1	92.7	6
			Zinc	47.8	L09060522-51	SD1	106	4
0906-MWD085-03-GS	Plant	L09060522-12	Antimony	<0.493	L09060522-52	MS1	90.4	
			Arsenic	<0.0735	L09060522-52	MS1	92.8	
			Boron	8.95	L09060522-52	MS1	76.4	
			Cadmium	1.22	L09060522-52	MS1	87.4	
			Chromium	1.76	L09060522-52	MS1	98.7	
			Cobalt	<0.123	L09060522-52	MS1	91.6	
			Copper, total	6.36	L09060522-52	MS1	91.9	
			Manganese	54.6	L09060522-52	MS1	85.4	
			Mercury	0.0160 J	L09060522-52	MS1	84.4	
			Molybdenum	20.7	L09060522-52	MS1	95.3	
			Nickel	2.69	L09060522-52	MS1	90.2	
			Selenium	1.21	L09060522-52	MS1	86.5	
			Silver	<0.0490	L09060522-52	MS1	94.2	
			Thallium	0.215	L09060522-52	MS1	94.5	
			Uranium, total	<0.0980	L09060522-52	MS1	99.3	

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES
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Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Vanadium	0.309 J	L09060522-52	MS1	94.0	
			Zinc	60.2	L09060522-52	MS1	97.1	
			Antimony	<0.493	L09060522-53	SD1	94.3	4
			Arsenic	<0.0735	L09060522-53	SD1	94.3	2
			Boron	8.95	L09060522-53	SD1	97.0	24
			Cadmium	1.22	L09060522-53	SD1	88.0	1
			Chromium	1.76	L09060522-53	SD1	97.2	2
			Cobalt	<0.123	L09060522-53	SD1	93.3	2
			Copper, total	6.36	L09060522-53	SD1	93.7	2
			Manganese	54.6	L09060522-53	SD1	129	41
			Mercury	0.0160 J	L09060522-53	SD1	85.4	1
			Molybdenum	20.7	L09060522-53	SD1	107	12
			Nickel	2.69	L09060522-53	SD1	91.2	1
			Selenium	1.21	L09060522-53	SD1	88.0	2
			Silver	<0.0490	L09060522-53	SD1	93.9	0
			Thallium	0.215	L09060522-53	SD1	95.3	1
			Uranium, total	<0.0980	L09060522-53	SD1	100	1
			Vanadium	0.309 J	L09060522-53	SD1	93.6	0
			Zinc	60.2	L09060522-53	SD1	118	19
0906-MWD088-07-GF	Plant	L09060522-47	Antimony	<0.497	L09060522-54	MS1	93.7	
			Arsenic	0.172 J	L09060522-54	MS1	158	
			Boron	7.48	L09060522-54	MS1	90.1	
			Cadmium	1.18	L09060522-54	MS1	96.4	
			Chromium	3.38	L09060522-54	MS1	98.5	
			Cobalt	<0.122	L09060522-54	MS1	97.8	
			Copper, total	5.37	L09060522-54	MS1	103	
			Manganese	20.5	L09060522-54	MS1	88.6	
			Mercury	<0.0156	L09060522-54	MS1	110	
			Molybdenum	6.33	L09060522-54	MS1	97.9	
			Nickel	4.16	L09060522-54	MS1	95.7	
			Selenium	1.44	L09060522-54	MS1	92.1	
			Silver	<0.0487	L09060522-54	MS1	98.1	
			Thallium	0.236	L09060522-54	MS1	99.8	
			Uranium, total	<0.0975	L09060522-54	MS1	109	
			Vanadium	0.741	L09060522-54	MS1	95.9	
			Zinc	61.1	L09060522-54	MS1	82.3	
			Antimony	<0.497	L09060522-55	SD1	90.1	4

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES

Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Arsenic	0.172 J	L09060522-55	SD1	99.0	46
			Boron	7.48	L09060522-55	SD1	85.8	5
			Cadmium	1.18	L09060522-55	SD1	92.9	4
			Chromium	3.38	L09060522-55	SD1	96.8	2
			Cobalt	<0.122	L09060522-55	SD1	97.8	0
			Copper, total	5.37	L09060522-55	SD1	102	1
			Manganese	20.5	L09060522-55	SD1	87.0	2
			Mercury	<0.0156	L09060522-55	SD1	109	1
			Molybdenum	6.33	L09060522-55	SD1	94.8	3
			Nickel	4.16	L09060522-55	SD1	96.9	1
			Selenium	1.44	L09060522-55	SD1	94.3	2
			Silver	<0.0487	L09060522-55	SD1	95.4	3
			Thallium	0.236	L09060522-55	SD1	99.6	0
			Uranium, total	<0.0975	L09060522-55	SD1	108	1
			Vanadium	0.741	L09060522-55	SD1	96.3	0
			Zinc	61.1	L09060522-55	SD1	93.6	13
0906-MWD081-02-GF	Plant	L09060552-01	Antimony	<0.495	L09060552-29	MS1	84.1	
			Arsenic	0.457 J+/B	L09060552-29	MS1	98.3	
			Boron	18.1	L09060552-29	MS1	76.5	
			Cadmium	2.99	L09060552-29	MS1	95.5	
			Chromium	9.77	L09060552-29	MS1	95.6	
			Cobalt	0.220 J	L09060552-29	MS1	98.3	
			Copper, total	7.13	L09060552-29	MS1	98.9	
			Manganese	85.4	L09060552-29	MS1	80.8	
			Mercury	<0.00916 UJ	L09060552-29	MS1	107	
			Molybdenum	8.70	L09060552-29	MS1	102	
			Nickel	5.72	L09060552-29	MS1	96.1	
			Selenium	8.20 J	L09060552-29	MS1	106	
			Silver	0.0680 J	L09060552-29	MS1	87.5	
			Thallium	0.204	L09060552-29	MS1	92.5	
			Uranium, total	0.679	L09060552-29	MS1	98.8	
			Vanadium	6.69	L09060552-29	MS1	112	
			Zinc	75.8 J-	L09060552-29	MS1	76.4	
			Antimony	<0.495	L09060552-30	SD1	83.1	1
			Arsenic	0.457 J+/B	L09060552-30	SD1	93.5	5
			Boron	18.1	L09060552-30	SD1	76.3	0
			Cadmium	2.99	L09060552-30	SD1	91.2	5

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES
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Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Chromium	9.77	L09060552-30	SD1	115	18
			Cobalt	0.220 J	L09060552-30	SD1	96.7	2
			Copper, total	7.13	L09060552-30	SD1	94.2	5
			Manganese	85.4	L09060552-30	SD1	42.7	62
			Mercury	<0.00916 UJ	L09060552-30	SD1	69.1	43
			Molybdenum	8.70	L09060552-30	SD1	97.8	4
			Nickel	5.72	L09060552-30	SD1	97.0	1
			Selenium	8.20 J	L09060552-30	SD1	92.7	13
			Silver	0.0680 J	L09060552-30	SD1	90.7	4
			Thallium	0.204	L09060552-30	SD1	92.1	0
			Uranium, total	0.679	L09060552-30	SD1	98.0	1
			Vanadium	6.69	L09060552-30	SD1	119	6
			Zinc	75.8 J-	L09060552-30	SD1	71.5	7
0906-MWD085-02-GS	Plant	L09060552-24	Antimony	<0.470	L09060552-31	MS1	84.2	
			Arsenic	<0.0741	L09060552-31	MS1	98.8	
			Boron	<2.35	L09060552-31	MS1	86.5	
			Cadmium	0.587 J	L09060552-31	MS1	92.9	
			Chromium	3.97	L09060552-31	MS1	108	
			Cobalt	<0.124	L09060552-31	MS1	100	
			Copper, total	5.42	L09060552-31	MS1	96.4	
			Manganese	28.5	L09060552-31	MS1	94.6	
			Mercury	0.0471 J-	L09060552-31	MS1	59.2	
			Molybdenum	15.7	L09060552-31	MS1	94.2	
			Nickel	1.26	L09060552-31	MS1	98.7	
			Selenium	0.717	L09060552-31	MS1	96.1	
			Silver	<0.0494 UJ	L09060552-31	MS1	71.3	
			Thallium	0.158	L09060552-31	MS1	97.9	
			Uranium, total	<0.0988	L09060552-31	MS1	106	
			Vanadium	1.14	L09060552-31	MS1	105	
			Zinc	35.9	L09060552-31	MS1	83.8	
			Antimony	<0.470	L09060552-32	SD1	82.3	2
			Arsenic	<0.0741	L09060552-32	SD1	98.6	0
			Boron	<2.35	L09060552-32	SD1	84.2	3
			Cadmium	0.587 J	L09060552-32	SD1	89.9	3
			Chromium	3.97	L09060552-32	SD1	101	7
			Cobalt	<0.124	L09060552-32	SD1	98.6	1
			Copper, total	5.42	L09060552-32	SD1	97.1	1

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES

Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Manganese	28.5	L09060552-32	SD1	97.5	3
			Mercury	0.0471 J-	L09060552-32	SD1	52.6	12
			Molybdenum	15.7	L09060552-32	SD1	92.5	2
			Nickel	1.26	L09060552-32	SD1	98.2	1
			Selenium	0.717	L09060552-32	SD1	96.5	0
			Silver	<0.0494 UJ	L09060552-32	SD1	56.2	24
			Thallium	0.158	L09060552-32	SD1	97.3	1
			Uranium, total	<0.0988	L09060552-32	SD1	105	1
			Vanadium	1.14	L09060552-32	SD1	102	3
			Zinc	35.9	L09060552-32	SD1	80.3	4
0906-MHR002-01-GF	Plant	L09060592-01	Antimony	<0.497	L09060592-02	MS1	96.0	
			Arsenic	0.125 J	L09060592-02	MS1	173	
			Boron	17.6	L09060592-02	MS1	95.6	
			Cadmium	1.81	L09060592-02	MS1	95.0	
			Chromium	3.75	L09060592-02	MS1	95.3	
			Cobalt	<0.122	L09060592-02	MS1	96.0	
			Copper, total	6.65	L09060592-02	MS1	104	
			Manganese	26.8	L09060592-02	MS1	79.4	
			Mercury	0.0304 J	L09060592-02	MS1	117	
			Molybdenum	8.72	L09060592-02	MS1	99.8	
			Nickel	4.31	L09060592-02	MS1	95.1	
			Selenium	3.07	L09060592-02	MS1	100	
			Silver	0.0782 J	L09060592-02	MS1	97.1	
			Thallium	0.189	L09060592-02	MS1	99.0	
			Uranium, total	<0.0977	L09060592-02	MS1	106	
			Vanadium	1.11	L09060592-02	MS1	114	
			Zinc	42.4	L09060592-02	MS1	84.2	
			Antimony	<0.497	L09060592-03	SD1	94.3	2
			Arsenic	0.125 J	L09060592-03	SD1	102	52
			Boron	17.6	L09060592-03	SD1	95.0	1
			Cadmium	1.81	L09060592-03	SD1	92.3	3
			Chromium	3.75	L09060592-03	SD1	99.9	5
			Cobalt	<0.122	L09060592-03	SD1	96.0	0
			Copper, total	6.65	L09060592-03	SD1	99.0	5
			Manganese	26.8	L09060592-03	SD1	82.8	4
			Mercury	0.0304 J	L09060592-03	SD1	93.4	22
			Molybdenum	8.72	L09060592-03	SD1	97.9	2

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES
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Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Nickel	4.31	L09060592-03	SD1	95.3	0
			Selenium	3.07	L09060592-03	SD1	104	4
			Silver	0.0782 J	L09060592-03	SD1	95.0	2
			Thallium	0.189	L09060592-03	SD1	99.6	1
			Uranium, total	<0.0977	L09060592-03	SD1	108	2
			Vanadium	1.11	L09060592-03	SD1	116	2
			Zinc	42.4	L09060592-03	SD1	86.2	2
0906-MBH002-08-GS	Plant	L09060592-31	Antimony	<0.499	L09060592-32	MS1	93.6	
			Arsenic	6.67 J-	L09060592-32	MS1	31.3	
			Boron	3.70 J	L09060592-32	MS1	97.4	
			Cadmium	0.0289 J	L09060592-32	MS1	91.8	
			Chromium	2.17	L09060592-32	MS1	96.6	
			Cobalt	<0.123	L09060592-32	MS1	94.2	
			Copper, total	4.90	L09060592-32	MS1	99.3	
			Manganese	63.9	L09060592-32	MS1	93.6	
			Mercury	<0.00980	L09060592-32	MS1	96.6	
			Molybdenum	2.54 J	L09060592-32	MS1	94.5	
			Nickel	0.570 J	L09060592-32	MS1	95.3	
			Selenium	0.362 J+	L09060592-32	MS1	97.0	
			Silver	0.118 J	L09060592-32	MS1	97.5	
			Thallium	<0.00980	L09060592-32	MS1	98.4	
			Uranium, total	<0.0980	L09060592-32	MS1	103	
			Vanadium	0.432 J	L09060592-32	MS1	94.4	
			Zinc	20.5	L09060592-32	MS1	96.1	
			Antimony	<0.499	L09060592-33	SD1	92.9	1
			Arsenic	6.67 J-	L09060592-33	SD1	32.2	3
			Boron	3.70 J	L09060592-33	SD1	96.3	1
			Cadmium	0.0289 J	L09060592-33	SD1	93.6	2
			Chromium	2.17	L09060592-33	SD1	98.6	2
			Cobalt	<0.123	L09060592-33	SD1	94.6	0
			Copper, total	4.90	L09060592-33	SD1	99.8	1
			Manganese	63.9	L09060592-33	SD1	101	8
			Mercury	<0.00980	L09060592-33	SD1	120	22
			Molybdenum	2.54 J	L09060592-33	SD1	94.2	0
			Nickel	0.570 J	L09060592-33	SD1	93.6	2
			Selenium	0.362 J+	L09060592-33	SD1	97.4	0
			Silver	0.118 J	L09060592-33	SD1	97.1	0

TABLE 2-10

RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES

Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Thallium	<0.00980	L09060592-33	SD1	96.7	2
			Uranium, total	<0.0980	L09060592-33	SD1	102	1
			Vanadium	0.432 J	L09060592-33	SD1	94.0	0
			Zinc	20.5	L09060592-33	SD1	98.4	2
0906-MWD081-06-GF	Plant	L09060594-16	Antimony	<0.484	L09060594-17	MS1	92.8	
			Arsenic	0.386	L09060594-17	MS1	105	
			Boron	16.3	L09060594-17	MS1	91.6	
			Cadmium	1.89	L09060594-17	MS1	96.0	
			Chromium	3.56 J	L09060594-17	MS1	105	
			Cobalt	<0.123	L09060594-17	MS1	98.5	
			Copper, total	7.43	L09060594-17	MS1	103	
			Manganese	12.8	L09060594-17	MS1	90.5	
			Mercury	0.0483 J	L09060594-17	MS1	94.9	
			Molybdenum	8.49	L09060594-17	MS1	90.9	
			Nickel	10.8	L09060594-17	MS1	110	
			Selenium	18.6 J+	L09060594-17	MS1	133	
			Silver	<0.0490	L09060594-17	MS1	93.9	
			Thallium	0.189	L09060594-17	MS1	101	
			Uranium, total	<0.0980	L09060594-17	MS1	110	
			Vanadium	0.922	L09060594-17	MS1	99.3	
			Zinc	93.3	L09060594-17	MS1	82.6	
			Antimony	<0.484	L09060594-18	SD1	94.2	1
			Arsenic	0.386	L09060594-18	SD1	108	3
			Boron	16.3	L09060594-18	SD1	91.6	0
			Cadmium	1.89	L09060594-18	SD1	93.5	3
			Chromium	3.56 J	L09060594-18	SD1	100	5
			Cobalt	<0.123	L09060594-18	SD1	97.3	1
			Copper, total	7.43	L09060594-18	SD1	99.9	3
			Manganese	12.8	L09060594-18	SD1	91.0	1
			Mercury	0.0483 J	L09060594-18	SD1	107	12
			Molybdenum	8.49	L09060594-18	SD1	91.7	1
			Nickel	10.8	L09060594-18	SD1	98.8	11
			Selenium	18.6 J+	L09060594-18	SD1	137	3
			Silver	<0.0490	L09060594-18	SD1	81.9	14
			Thallium	0.189	L09060594-18	SD1	99.6	1
			Uranium, total	<0.0980	L09060594-18	SD1	107	3
			Vanadium	0.922	L09060594-18	SD1	96.4	3

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES
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Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Zinc	93.3	L09060594-18	SD1	86.4	4
0906-MWD083-09-GF	Plant	L09060594-27	Antimony	<0.487	L09060594-28	MS1	87.8	
			Arsenic	0.868	L09060594-28	MS1	97.4	
			Boron	3.69 J	L09060594-28	MS1	86.7	
			Cadmium	0.661	L09060594-28	MS1	94.2	
			Chromium	2.70	L09060594-28	MS1	98.2	
			Cobalt	<0.116	L09060594-28	MS1	96.6	
			Copper, total	4.35	L09060594-28	MS1	101	
			Manganese	25.9	L09060594-28	MS1	93.7	
			Mercury	<0.0185	L09060594-28	MS1	97.5	
			Molybdenum	3.62	L09060594-28	MS1	101	
			Nickel	0.926	L09060594-28	MS1	95.7	
			Selenium	54.4	L09060594-28	MS1	171	
			Silver	<0.0462 UJ	L09060594-28	MS1	72.6	
			Thallium	0.0186	L09060594-28	MS1	99.9	
			Uranium, total	<0.0924	L09060594-28	MS1	107	
			Vanadium	0.554	L09060594-28	MS1	95.2	
			Zinc	36.6	L09060594-28	MS1	89.3	
			Antimony	<0.487	L09060594-29	SD1	90.0	2
			Arsenic	0.868	L09060594-29	SD1	94.4	3
			Boron	3.69 J	L09060594-29	SD1	88.4	2
			Cadmium	0.661	L09060594-29	SD1	93.2	1
			Chromium	2.70	L09060594-29	SD1	93.3	5
			Cobalt	<0.116	L09060594-29	SD1	95.9	1
			Copper, total	4.35	L09060594-29	SD1	100	1
			Manganese	25.9	L09060594-29	SD1	99.6	6
0906-MWD083-09-GF	Plant	L09060594-27	Mercury	<0.0185	L09060594-29	SD1	83.8	15
			Molybdenum	3.62	L09060594-29	SD1	98.7	2
			Nickel	0.926	L09060594-29	SD1	95.2	1
			Selenium	54.4	L09060594-29	SD1	142	19
			Silver	<0.0462 UJ	L09060594-29	SD1	89.9	21
			Thallium	0.0186	L09060594-29	SD1	101	1
			Uranium, total	<0.0924	L09060594-29	SD1	106	1
			Vanadium	0.554	L09060594-29	SD1	93.1	2
			Zinc	36.6	L09060594-29	SD1	91.8	3
0906-MWD092-07-GF-1	Plant	L09060636-01	Antimony	<0.492	L09060636-02	MS1	89.0	
			Arsenic	0.460	L09060636-02	MS1	98.8	

TABLE 2-10

RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES

Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Boron	3.99 J	L09060636-02	MS1	87.2	
			Cadmium	2.58	L09060636-02	MS1	98.8	
			Chromium	5.73	L09060636-02	MS1	102	
			Cobalt	<0.123	L09060636-02	MS1	105	
			Copper, total	8.28	L09060636-02	MS1	98.6	
			Manganese	51.5	L09060636-02	MS1	84.7	
			Mercury	<0.0196	L09060636-02	MS1	102	
			Molybdenum	4.46	L09060636-02	MS1	98.0	
			Nickel	5.43	L09060636-02	MS1	102	
			Selenium	46.4	L09060636-02	MS1	172	
			Silver	0.0851 J-	L09060636-02	MS1	64.8	
			Thallium	0.0631	L09060636-02	MS1	98.7	
			Uranium, total	0.306 J	L09060636-02	MS1	107	
			Vanadium	2.37	L09060636-02	MS1	117	
			Zinc	40.3	L09060636-02	MS1	90.2	
			Antimony	<0.492	L09060636-03	SD1	88.8	0
			Arsenic	0.460	L09060636-03	SD1	94.3	5
			Boron	3.99 J	L09060636-03	SD1	87.0	0
			Cadmium	2.58	L09060636-03	SD1	94.6	4
			Chromium	5.73	L09060636-03	SD1	97.2	5
			Cobalt	<0.123	L09060636-03	SD1	101	4
			Copper, total	8.28	L09060636-03	SD1	90.3	9
			Manganese	51.5	L09060636-03	SD1	96.4	13
			Mercury	<0.0196	L09060636-03	SD1	103	1
			Molybdenum	4.46	L09060636-03	SD1	98.6	1
			Nickel	5.43	L09060636-03	SD1	94.0	8
			Selenium	46.4	L09060636-03	SD1	92.5	60
			Silver	0.0851 J-	L09060636-03	SD1	68.0	5
			Thallium	0.0631	L09060636-03	SD1	96.8	2
			Uranium, total	0.306 J	L09060636-03	SD1	106	1
			Vanadium	2.37	L09060636-03	SD1	112	4
			Zinc	40.3	L09060636-03	SD1	96.5	7
0906-MWD091N-06-GS	Plant	L09060637-11	Antimony	<0.495	L09060637-12	MS1	98.4	
			Arsenic	<0.0738	L09060637-12	MS1	95.6	
			Boron	3.54 J	L09060637-12	MS1	100	
			Cadmium	0.585	L09060637-12	MS1	95.3	
			Chromium	2.82	L09060637-12	MS1	104	

TABLE 2-10

RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES

Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Cobalt	<0.123	L09060637-12	MS1	99.3	
			Copper, total	4.88	L09060637-12	MS1	96.9	
			Manganese	40.8	L09060637-12	MS1	86.9	
			Mercury	<0.0197	L09060637-12	MS1	114	
			Molybdenum	6.37	L09060637-12	MS1	96.0	
			Nickel	1.66	L09060637-12	MS1	96.0	
			Selenium	6.19	L09060637-12	MS1	96.7	
			Silver	<0.0492	L09060637-12	MS1	97.8	
			Thallium	0.0861	L09060637-12	MS1	95.5	
			Uranium, total	<0.0984	L09060637-12	MS1	100	
			Vanadium	0.559	L09060637-12	MS1	117	
			Zinc	30.4	L09060637-12	MS1	96.0	
			Antimony	<0.495	L09060637-13	SD1	98.6	0
			Arsenic	<0.0738	L09060637-13	SD1	91.9	4
			Boron	3.54 J	L09060637-13	SD1	102	2
			Cadmium	0.585	L09060637-13	SD1	88.6	7
			Chromium	2.82	L09060637-13	SD1	99.4	5
			Cobalt	<0.123	L09060637-13	SD1	95.7	4
			Copper, total	4.88	L09060637-13	SD1	90.0	7
			Manganese	40.8	L09060637-13	SD1	92.7	6
			Mercury	<0.0197	L09060637-13	SD1	111	3
			Molybdenum	6.37	L09060637-13	SD1	96.3	0
			Nickel	1.66	L09060637-13	SD1	91.3	5
			Selenium	6.19	L09060637-13	SD1	91.4	6
			Silver	<0.0492	L09060637-13	SD1	90.5	8
			Thallium	0.0861	L09060637-13	SD1	91.5	4
			Uranium, total	<0.0984	L09060637-13	SD1	93.8	6
			Vanadium	0.559	L09060637-13	SD1	112	4
			Zinc	30.4	L09060637-13	SD1	97.8	2
			Antimony	<0.485	L09060638-02	MS1	95.1	
0906-MWD091S-04-GF	Plant	L09060638-01	Arsenic	0.109 J	L09060638-02	MS1	93.6	
			Boron	12.2	L09060638-02	MS1	99.6	
			Cadmium	0.563	L09060638-02	MS1	89.6	
			Chromium	4.48	L09060638-02	MS1	90.8	
			Cobalt	<0.121	L09060638-02	MS1	96.1	
			Copper, total	4.81	L09060638-02	MS1	93.5	
			Manganese	48.6	L09060638-02	MS1	122	

TABLE 2-10

RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES

Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Mercury	0.0104 J-	L09060638-02	MS1	74.8	
			Molybdenum	3.87	L09060638-02	MS1	95.1	
			Nickel	2.27	L09060638-02	MS1	94.4	
			Selenium	0.996 J	L09060638-02	MS1	88.3	
			Silver	<0.0483	L09060638-02	MS1	87.5	
			Thallium	0.0266	L09060638-02	MS1	95.0	
			Uranium, total	0.139 J	L09060638-02	MS1	98.6	
			Vanadium	2.15	L09060638-02	MS1	98.8	
			Zinc	31.5	L09060638-02	MS1	94.6	
			Antimony	<0.485	L09060638-03	SD1	93.2	2
			Arsenic	0.109 J	L09060638-03	SD1	167	56
			Boron	12.2	L09060638-03	SD1	98.4	1
			Cadmium	0.563	L09060638-03	SD1	86.8	3
			Chromium	4.48	L09060638-03	SD1	83.0	9
			Cobalt	<0.121	L09060638-03	SD1	92.3	4
			Copper, total	4.81	L09060638-03	SD1	90.4	3
			Manganese	48.6	L09060638-03	SD1	118	3
			Mercury	0.0104 J-	L09060638-03	SD1	88.8	17
			Molybdenum	3.87	L09060638-03	SD1	93.4	2
			Nickel	2.27	L09060638-03	SD1	89.9	5
			Selenium	0.996 J	L09060638-03	SD1	88.0	0
			Silver	<0.0483	L09060638-03	SD1	83.2	5
			Thallium	0.0266	L09060638-03	SD1	88.9	7
			Uranium, total	0.139 J	L09060638-03	SD1	89.8	9
			Vanadium	2.15	L09060638-03	SD1	91.3	8
			Zinc	31.5	L09060638-03	SD1	94.5	0
0906-MWD084-09-GF	Plant	L09060686-03	Antimony	<0.480	L09060686-04	MS1	87.2	
			Arsenic	0.376	L09060686-04	MS1	95.3	
			Boron	6.29	L09060686-04	MS1	86.4	
			Cadmium	1.28	L09060686-04	MS1	88.9	
			Chromium	1.99	L09060686-04	MS1	98.5	
			Cobalt	<0.119	L09060686-04	MS1	92.5	
			Copper, total	6.58	L09060686-04	MS1	91.7	
			Manganese	23.5	L09060686-04	MS1	93.6	
			Mercury	<0.00952 UJ	L09060686-04	MS1	54.1	
			Molybdenum	10.3	L09060686-04	MS1	98.2	
			Nickel	3.13	L09060686-04	MS1	92.5	

TABLE 2-10

RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES

Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Selenium	146 J	L09060686-04	MS1	68.5	
			Silver	<0.0476	L09060686-04	MS1	89.7	
			Thallium	0.0600	L09060686-04	MS1	92.7	
			Uranium, total	<0.0952	L09060686-04	MS1	96.4	
			Vanadium	0.471 J	L09060686-04	MS1	95.8	
			Zinc	59.7	L09060686-04	MS1	94.1	
			Antimony	<0.480	L09060686-05	SD1	87.2	0
			Arsenic	0.376	L09060686-05	SD1	95.2	0
			Boron	6.29	L09060686-05	SD1	86.7	0
			Cadmium	1.28	L09060686-05	SD1	90.4	2
			Chromium	1.99	L09060686-05	SD1	95.4	3
			Cobalt	<0.119	L09060686-05	SD1	92.6	0
			Copper, total	6.58	L09060686-05	SD1	98.2	7
			Manganese	23.5	L09060686-05	SD1	96.3	3
			Mercury	<0.00952 UJ	L09060686-05	SD1	91.9	52
			Molybdenum	10.3	L09060686-05	SD1	99.0	1
			Nickel	3.13	L09060686-05	SD1	91.1	2
			Selenium	146 J	L09060686-05	SD1	284	122
			Silver	<0.0476	L09060686-05	SD1	85.5	5
			Thallium	0.0600	L09060686-05	SD1	92.7	0
			Uranium, total	<0.0952	L09060686-05	SD1	96.1	0
			Vanadium	0.471 J	L09060686-05	SD1	95.1	1
			Zinc	59.7	L09060686-05	SD1	94.3	0
0906-MBE001-05-GF	Plant	L09060686-42	Antimony	<0.497	L09060686-43	MS1	88.7	
			Arsenic	<0.145 UJ	L09060686-43	MS1	175	
			Boron	14.9	L09060686-43	MS1	82.3	
			Cadmium	0.145	L09060686-43	MS1	99.4	
			Chromium	1.57	L09060686-43	MS1	104	
			Cobalt	<0.125	L09060686-43	MS1	104	
			Copper, total	10.3	L09060686-43	MS1	99.0	
			Manganese	55.8	L09060686-43	MS1	92.5	
			Mercury	<0.00998 UJ	L09060686-43	MS1	74.1	
			Molybdenum	<1.49	L09060686-43	MS1	104	
			Nickel	1.45	L09060686-43	MS1	102	
			Selenium	0.359	L09060686-43	MS1	94.2	
			Silver	<0.0499 UJ	L09060686-43	MS1	69.1	
			Thallium	<0.00998	L09060686-43	MS1	102	

TABLE 2-10

RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES

Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Uranium, total	<0.0998	L09060686-43	MS1	115	
			Vanadium	0.554	L09060686-43	MS1	115	
			Zinc	37.6	L09060686-43	MS1	90.8	
			Antimony	<0.497	L09060686-44	SD1	91.1	3
			Arsenic	<0.145 UJ	L09060686-44	SD1	168	4
			Boron	14.9	L09060686-44	SD1	87.0	6
			Cadmium	0.145	L09060686-44	SD1	99.0	0
			Chromium	1.57	L09060686-44	SD1	113	8
			Cobalt	<0.125	L09060686-44	SD1	101	3
			Copper, total	10.3	L09060686-44	SD1	100	1
			Manganese	55.8	L09060686-44	SD1	105	13
			Mercury	<0.00998 UJ	L09060686-44	SD1	72.8	2
			Molybdenum	<1.49	L09060686-44	SD1	107	3
			Nickel	1.45	L09060686-44	SD1	98.3	4
			Selenium	0.359	L09060686-44	SD1	98.7	5
			Silver	<0.0499 UJ	L09060686-44	SD1	99.1	36
			Thallium	<0.00998	L09060686-44	SD1	102	0
			Uranium, total	<0.0998	L09060686-44	SD1	113	2
			Vanadium	0.554	L09060686-44	SD1	117	2
			Zinc	37.6	L09060686-44	SD1	98.4	8
0906-MWD092-04-GS	Plant	L09060692-02	Antimony	<0.479	L09060692-03	MS1	84.0	
			Arsenic	<0.0737	L09060692-03	MS1	183	
			Boron	2.61 J	L09060692-03	MS1	84.2	
			Cadmium	1.54	L09060692-03	MS1	98.1	
			Chromium	3.17	L09060692-03	MS1	107	
			Cobalt	<0.123	L09060692-03	MS1	104	
			Copper, total	7.62	L09060692-03	MS1	108	
			Manganese	23.9	L09060692-03	MS1	84.2	
			Mercury	<0.0196	L09060692-03	MS1	119	
			Molybdenum	10.1	L09060692-03	MS1	94.8	
			Nickel	7.55	L09060692-03	MS1	102	
			Selenium	25.5	L09060692-03	MS1	121	
			Silver	<0.0491	L09060692-03	MS1	100	
			Thallium	0.122	L09060692-03	MS1	98.6	
			Uranium, total	<0.0982	L09060692-03	MS1	109	
			Vanadium	0.889	L09060692-03	MS1	109	
			Zinc	49.0 J-	L09060692-03	MS1	72.9	

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES
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Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Antimony	<0.479	L09060692-04	SD1	89.2	6
			Arsenic	<0.0737	L09060692-04	SD1	181	1
			Boron	2.61 J	L09060692-04	SD1	96.6	14
			Cadmium	1.54	L09060692-04	SD1	94.1	4
			Chromium	3.17	L09060692-04	SD1	102	5
			Cobalt	<0.123	L09060692-04	SD1	100	4
			Copper, total	7.62	L09060692-04	SD1	100	8
			Manganese	23.9	L09060692-04	SD1	99.6	17
			Mercury	<0.0196	L09060692-04	SD1	121	2
			Molybdenum	10.1	L09060692-04	SD1	101	6
			Nickel	7.55	L09060692-04	SD1	95.2	7
			Selenium	25.5	L09060692-04	SD1	115	5
			Silver	<0.0491	L09060692-04	SD1	95.8	4
			Thallium	0.122	L09060692-04	SD1	95.5	3
			Uranium, total	<0.0982	L09060692-04	SD1	107	2
			Vanadium	0.889	L09060692-04	SD1	106	3
			Zinc	49.0 J-	L09060692-04	SD1	94.5	26
0906-MBE001-04-GF	Plant	L09060692-35	Antimony	<0.493	L09060692-36	MS1	91.5	
			Arsenic	0.150 J	L09060692-36	MS1	88.8	
			Boron	24.2	L09060692-36	MS1	87.8	
			Cadmium	1.22	L09060692-36	MS1	89.2	
			Chromium	1.56	L09060692-36	MS1	107	
			Cobalt	<0.112	L09060692-36	MS1	92.4	
			Copper, total	10.9	L09060692-36	MS1	104	
			Manganese	56.7	L09060692-36	MS1	91.5	
			Mercury	<0.0179	L09060692-36	MS1	117	
			Molybdenum	1.98 J	L09060692-36	MS1	98.4	
			Nickel	2.21	L09060692-36	MS1	94.8	
			Selenium	0.636	L09060692-36	MS1	81.9	
			Silver	<0.0447 UJ	L09060692-36	MS1	53.8	
			Thallium	<0.00894	L09060692-36	MS1	90.6	
			Uranium, total	<0.0894	L09060692-36	MS1	99.0	
			Vanadium	0.488	L09060692-36	MS1	105	
			Zinc	44.1	L09060692-36	MS1	84.5	
			Antimony	<0.493	L09060692-37	SD1	96.1	5
			Arsenic	0.150 J	L09060692-37	SD1	88.4	0
			Boron	24.2	L09060692-37	SD1	101	14

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES
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Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Cadmium	1.22	L09060692-37	SD1	93.9	5
			Chromium	1.56	L09060692-37	SD1	110	3
			Cobalt	<0.112	L09060692-37	SD1	95.3	3
			Copper, total	10.9	L09060692-37	SD1	103	1
			Manganese	56.7	L09060692-37	SD1	169	60
			Mercury	<0.0179	L09060692-37	SD1	116	1
			Molybdenum	1.98 J	L09060692-37	SD1	106	7
			Nickel	2.21	L09060692-37	SD1	95.3	1
			Selenium	0.636	L09060692-37	SD1	81.5	0
			Silver	<0.0447 UJ	L09060692-37	SD1	66.1	21
			Thallium	<0.00894	L09060692-37	SD1	93.3	3
			Uranium, total	<0.0894	L09060692-37	SD1	105	6
			Vanadium	0.488	L09060692-37	SD1	106	1
			Zinc	44.1	L09060692-37	SD1	116	31
0906-MBE001-AL02-GF	Plant	L09060694-01	Antimony	<0.499	L09060694-02	MS1	97.0	
			Arsenic	0.108 J	L09060694-02	MS1	100	
			Boron	26.3	L09060694-02	MS1	92.4	
			Cadmium	1.58	L09060694-02	MS1	94.1	
			Chromium	2.76	L09060694-02	MS1	112	
			Cobalt	0.137 J	L09060694-02	MS1	102	
			Copper, total	7.91	L09060694-02	MS1	96.2	
			Manganese	46.9 J-	L09060694-02	MS1	72.3	
			Mercury	0.0198 R	L09060694-02	MS1	96.9	
			Molybdenum	<1.50	L09060694-02	MS1	101	
			Nickel	3.01	L09060694-02	MS1	99.8	
			Selenium	0.419	L09060694-02	MS1	93.8	
			Silver	<0.0494	L09060694-02	MS1	92.8	
			Thallium	<0.00988	L09060694-02	MS1	101	
			Uranium, total	0.108 J	L09060694-02	MS1	104	
			Vanadium	0.954	L09060694-02	MS1	111	
			Zinc	47.3	L09060694-02	MS1	84.3	
			Antimony	<0.499	L09060694-03	SD1	96.0	1
			Arsenic	0.108 J	L09060694-03	SD1	98.4	2
			Boron	26.3	L09060694-03	SD1	91.9	1
			Cadmium	1.58	L09060694-03	SD1	96.3	2
			Chromium	2.76	L09060694-03	SD1	111	1
			Cobalt	0.137 J	L09060694-03	SD1	102	0

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES

Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Copper, total	7.91	L09060694-03	SD1	104	8
			Manganese	46.9 J-	L09060694-03	SD1	58.6	21
			Mercury	0.0198 R	L09060694-03	SD1	87.5	10
			Molybdenum	<1.50	L09060694-03	SD1	100	1
			Nickel	3.01	L09060694-03	SD1	101	1
			Selenium	0.419	L09060694-03	SD1	88.3	6
			Silver	<0.0494	L09060694-03	SD1	92.7	0
			Thallium	<0.00988	L09060694-03	SD1	103	2
			Uranium, total	0.108 J	L09060694-03	SD1	107	3
			Vanadium	0.954	L09060694-03	SD1	111	0
			Zinc	47.3	L09060694-03	SD1	78.3	7
0906-MBE001-01-FB	Plant	L09060694-11	Antimony	<0.484	L09060694-12	MS1	105	
			Arsenic	0.0765 J	L09060694-12	MS1	212	
			Boron	19.3	L09060694-12	MS1	102	
			Cadmium	0.0252 J	L09060694-12	MS1	99.2	
			Chromium	1.45	L09060694-12	MS1	113	
			Cobalt	<0.123	L09060694-12	MS1	102	
			Copper, total	6.70	L09060694-12	MS1	109	
			Manganese	73.0	L09060694-12	MS1	139	
			Mercury	0.0197 R	L09060694-12	MS1	95.0	
			Molybdenum	<1.45	L09060694-12	MS1	105	
			Nickel	1.47	L09060694-12	MS1	101	
			Selenium	0.456	L09060694-12	MS1	93.1	
			Silver	<0.0492	L09060694-12	MS1	94.1	
			Thallium	<0.00984	L09060694-12	MS1	99.4	
			Uranium, total	<0.0984	L09060694-12	MS1	106	
			Vanadium	0.446 J	L09060694-12	MS1	110	
			Zinc	27.2	L09060694-12	MS1	111	
			Antimony	<0.484	L09060694-13	SD1	106	1
			Arsenic	0.0765 J	L09060694-13	SD1	96.2	75
			Boron	19.3	L09060694-13	SD1	104	2
			Cadmium	0.0252 J	L09060694-13	SD1	98.4	1
			Chromium	1.45	L09060694-13	SD1	111	2
			Cobalt	<0.123	L09060694-13	SD1	104	2
			Copper, total	6.70	L09060694-13	SD1	111	2
			Manganese	73.0	L09060694-13	SD1	137	1
			Mercury	0.0197 R	L09060694-13	SD1	88.7	7

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES

Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Molybdenum	<1.45	L09060694-13	SD1	106	1
			Nickel	1.47	L09060694-13	SD1	105	4
			Selenium	0.456	L09060694-13	SD1	87.4	6
			Silver	<0.0492	L09060694-13	SD1	94.8	1
			Thallium	<0.00984	L09060694-13	SD1	104	5
			Uranium, total	<0.0984	L09060694-13	SD1	109	3
			Vanadium	0.446 J	L09060694-13	SD1	110	0
			Zinc	27.2	L09060694-13	SD1	111	0
			Antimony	<0.477	L09060714-02	MS1	89.9	
0906-MWD080-05-GF	Plant	L09060714-01	Arsenic	0.559	L09060714-02	MS1	88.9	
			Boron	4.71 J	L09060714-02	MS1	94.0	
			Cadmium	0.591	L09060714-02	MS1	90.8	
			Chromium	2.05	L09060714-02	MS1	96.8	
			Cobalt	<0.123	L09060714-02	MS1	94.5	
			Copper, total	6.85	L09060714-02	MS1	92.3	
			Manganese	33.9	L09060714-02	MS1	101	
			Mercury	<0.0196 UJ	L09060714-02	MS1	60.8	
			Molybdenum	13.1	L09060714-02	MS1	92.4	
			Nickel	5.16	L09060714-02	MS1	92.2	
			Selenium	77.2	L09060714-02	MS1	162	
			Silver	<0.0491	L09060714-02	MS1	88.1	
			Thallium	0.105	L09060714-02	MS1	92.5	
			Uranium, total	<0.0982	L09060714-02	MS1	99.9	
			Vanadium	0.405 J	L09060714-02	MS1	101	
			Zinc	84.3 J-	L09060714-02	MS1	81.0	
			Antimony	<0.477	L09060714-03	SD1	87.2	3
			Arsenic	0.559	L09060714-03	SD1	92.0	3
			Boron	4.71 J	L09060714-03	SD1	89.2	5
			Cadmium	0.591	L09060714-03	SD1	90.7	0
			Chromium	2.05	L09060714-03	SD1	101	4
			Cobalt	<0.123	L09060714-03	SD1	96.6	2
			Copper, total	6.85	L09060714-03	SD1	95.0	3
			Manganese	33.9	L09060714-03	SD1	86.0	16
			Mercury	<0.0196 UJ	L09060714-03	SD1	58.3	4
			Molybdenum	13.1	L09060714-03	SD1	88.0	5
			Nickel	5.16	L09060714-03	SD1	94.8	3
			Selenium	77.2	L09060714-03	SD1	223	32

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES
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Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Silver	<0.0491	L09060714-03	SD1	77.0	13
			Thallium	0.105	L09060714-03	SD1	94.5	2
			Uranium, total	<0.0982	L09060714-03	SD1	105	5
			Vanadium	0.405 J	L09060714-03	SD1	103	2
			Zinc	84.3 J-	L09060714-03	SD1	61.2	28
0906-MWD088-09-GS	Plant	L09060714-27	Antimony	<0.493	L09060714-28	MS1	93.7	
			Arsenic	0.220 J	L09060714-28	MS1	95.8	
			Boron	<2.46	L09060714-28	MS1	101	
			Cadmium	0.444	L09060714-28	MS1	95.0	
			Chromium	2.38	L09060714-28	MS1	103	
			Cobalt	<0.125	L09060714-28	MS1	94.9	
			Copper, total	4.26	L09060714-28	MS1	94.7	
			Manganese	34.9	L09060714-28	MS1	116	
			Mercury	<0.0200 UJ	L09060714-28	MS1	48.4	
			Molybdenum	1.53 J	L09060714-28	MS1	94.9	
			Nickel	0.705 J	L09060714-28	MS1	92.6	
			Selenium	2.22	L09060714-28	MS1	95.6	
			Silver	<0.0500	L09060714-28	MS1	92.1	
			Thallium	<0.0100	L09060714-28	MS1	92.6	
			Uranium, total	<0.100	L09060714-28	MS1	101	
			Vanadium	0.417 J	L09060714-28	MS1	104	
			Zinc	17.3	L09060714-28	MS1	94.5	
			Antimony	<0.493	L09060714-29	SD1	91.0	3
			Arsenic	0.220 J	L09060714-29	SD1	94.2	2
			Boron	<2.46	L09060714-29	SD1	97.5	4
			Cadmium	0.444	L09060714-29	SD1	93.5	2
			Chromium	2.38	L09060714-29	SD1	102	1
			Cobalt	<0.125	L09060714-29	SD1	94.5	0
			Copper, total	4.26	L09060714-29	SD1	94.1	1
			Manganese	34.9	L09060714-29	SD1	116	0
			Mercury	<0.0200 UJ	L09060714-29	SD1	50.9	5
			Molybdenum	1.53 J	L09060714-29	SD1	92.7	2
			Nickel	0.705 J	L09060714-29	SD1	93.7	1
			Selenium	2.22	L09060714-29	SD1	87.0	9
			Silver	<0.0500	L09060714-29	SD1	90.1	2
			Thallium	<0.0100	L09060714-29	SD1	94.0	2
			Uranium, total	<0.100	L09060714-29	SD1	102	1

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES
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Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Vanadium	0.417 J	L09060714-29	SD1	104	0
			Zinc	17.3	L09060714-29	SD1	92.5	2
0906-MWD080-06-FB	Plant	L09060714-36	Arsenic	2.43	WG307325-04	MS1	87.1	
			Cadmium	0.591	WG307325-04	MS1	93.5	
			Chromium	1.57	WG307325-04	MS1	101	
			Cobalt	<0.125	WG307325-04	MS1	98.3	
			Copper, total	14.5 J-	WG307325-04	MS1	-4.24	
			Mercury	0.128 J-	WG307326-04	MS1	37.3	
			Nickel	13.2	WG307325-04	MS1	101	
			Selenium	234 J	WG307325-04	MS1	83.2	
			Silver	<0.0499	WG307325-04	MS1	82.8	
			Thallium	0.116	WG307325-04	MS1	96.2	
			Uranium, total	<0.0998	WG307325-04	MS1	102	
			Vanadium	0.374 J	WG307325-04	MS1	99.7	
			Arsenic	2.43	WG307325-05	SD1	94.5	8
			Cadmium	0.591	WG307325-05	SD1	88.2	6
			Chromium	1.57	WG307325-05	SD1	99.6	1
			Cobalt	<0.125	WG307325-05	SD1	93.3	5
			Copper, total	14.5 J-	WG307325-05	SD1	-11.5	92
			Mercury	0.128 J-	WG307326-05	SD1	68.2	59
			Nickel	13.2	WG307325-05	SD1	90.7	11
			Selenium	234 J	WG307325-05	SD1	263	104
			Silver	<0.0499	WG307325-05	SD1	87.3	5
			Thallium	0.116	WG307325-05	SD1	92.3	4
			Uranium, total	<0.0998	WG307325-05	SD1	97.8	4
			Vanadium	0.374 J	WG307325-05	SD1	96.1	4
0906-MWD091N-02-GF	Plant	L09070011-09	Antimony	<0.498	L09070011-11	MS1	89.6	
			Arsenic	0.318 J	L09070011-11	MS1	94.2	
			Boron	2.65 J	L09070011-11	MS1	91.0	
			Cadmium	0.500	L09070011-11	MS1	96.7	
			Chromium	2.38	L09070011-11	MS1	105	
			Cobalt	<0.125	L09070011-11	MS1	105	
			Copper, total	8.65 J+	L09070011-11	MS1	103	
			Manganese	25.5	L09070011-11	MS1	81.6	
			Mercury	0.0200 R	L09070011-11	MS1	96.3	
			Molybdenum	11.2	L09070011-11	MS1	85.5	
			Nickel	1.74	L09070011-11	MS1	105	

TABLE 2-10

RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES

Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Selenium	23.9 J	L09070011-11	MS1	51.5	
			Silver	<0.0499	L09070011-11	MS1	100	
			Thallium	0.122	L09070011-11	MS1	99.1	
			Uranium, total	<0.0998	L09070011-11	MS1	108	
			Vanadium	0.403 J	L09070011-11	MS1	108	
			Zinc	33.2	L09070011-11	MS1	82.4	
			Antimony	<0.498	L09070011-12	SD1	93.8	5
			Arsenic	0.318 J	L09070011-12	SD1	203	73
			Boron	2.65 J	L09070011-12	SD1	97.1	6
			Cadmium	0.500	L09070011-12	SD1	96.8	0
			Chromium	2.38	L09070011-12	SD1	108	3
			Cobalt	<0.125	L09070011-12	SD1	106	1
			Copper, total	8.65 J+	L09070011-12	SD1	173	51
			Manganese	25.5	L09070011-12	SD1	118	36
			Mercury	0.0200 R	L09070011-12	SD1	96.9	1
			Molybdenum	11.2	L09070011-12	SD1	95.7	11
			Nickel	1.74	L09070011-12	SD1	108	3
			Selenium	23.9 J	L09070011-12	SD1	71.3	32
			Silver	<0.0499	L09070011-12	SD1	100	0
			Thallium	0.122	L09070011-12	SD1	99.4	0
			Uranium, total	<0.0998	L09070011-12	SD1	109	1
			Vanadium	0.403 J	L09070011-12	SD1	111	3
			Zinc	33.2	L09070011-12	SD1	102	21
0906-MWD080-08-GF	Plant	L09070210-01	Antimony	<0.499	L09070210-02	MS1	98.9	
			Arsenic	0.476 J	L09070210-02	MS1	86.6	
			Boron	8.47	L09070210-02	MS1	94.7	
			Cadmium	0.549	L09070210-02	MS1	91.0	
			Chromium	1.00	L09070210-02	MS1	105	
			Cobalt	<0.124	L09070210-02	MS1	97.9	
			Copper, total	3.47	L09070210-02	MS1	98.1	
			Manganese	31.6	L09070210-02	MS1	98.0	
			Mercury	0.0395 J-	L09070210-02	MS1	56.3	
			Molybdenum	8.90	L09070210-02	MS1	97.1	
			Nickel	1.73	L09070210-02	MS1	99.4	
			Selenium	24.2 J	L09070210-02	MS1	136	
			Silver	<0.0496	L09070210-02	MS1	90.3	
			Thallium	0.117	L09070210-02	MS1	89.8	

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES

Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Uranium, total	<0.0992	L09070210-02	MS1	99.5	
			Vanadium	0.201 J	L09070210-02	MS1	103	
			Zinc	49.7	L09070210-02	MS1	86.4	
			Antimony	<0.499	L09070210-03	SD1	96.9	2
			Arsenic	0.476 J	L09070210-03	SD1	163	61
			Boron	8.47	L09070210-03	SD1	93.9	1
			Cadmium	0.549	L09070210-03	SD1	88.9	2
			Chromium	1.00	L09070210-03	SD1	104	1
			Cobalt	<0.124	L09070210-03	SD1	94.9	3
			Copper, total	3.47	L09070210-03	SD1	109	11
			Manganese	31.6	L09070210-03	SD1	95.7	2
			Mercury	0.0395 J-	L09070210-03	SD1	80.0	35
			Molybdenum	8.90	L09070210-03	SD1	95.1	2
			Nickel	1.73	L09070210-03	SD1	96.6	3
			Selenium	24.2 J	L09070210-03	SD1	117	15
			Silver	<0.0496	L09070210-03	SD1	89.7	1
			Thallium	0.117	L09070210-03	SD1	89.3	1
			Uranium, total	<0.0992	L09070210-03	SD1	97.5	2
			Vanadium	0.201 J	L09070210-03	SD1	101	2
			Zinc	49.7	L09070210-03	SD1	109	23
0906-MWD082-01-GS	Plant	L09070210-29	Antimony	<0.488	L09070210-30	MS1	99.2	
			Arsenic	0.176 J	L09070210-30	MS1	89.5	
			Boron	10.3	L09070210-30	MS1	88.7	
			Cadmium	0.905	L09070210-30	MS1	90.8	
			Chromium	2.24	L09070210-30	MS1	107	
			Cobalt	<0.124	L09070210-30	MS1	96.5	
			Copper, total	7.00	L09070210-30	MS1	94.4	
			Manganese	27.0 J-	L09070210-30	MS1	70.8	
			Mercury	<0.0199	L09070210-30	MS1	91.9	
			Molybdenum	22.9	L09070210-30	MS1	98.1	
			Nickel	5.91	L09070210-30	MS1	93.4	
			Selenium	2.42 J	L09070210-30	MS1	83.2	
			Silver	<0.0497	L09070210-30	MS1	92.5	
			Thallium	<0.00994	L09070210-30	MS1	89.2	
			Uranium, total	<0.0994	L09070210-30	MS1	94.6	
			Vanadium	0.613	L09070210-30	MS1	102	
			Zinc	56.6 J-	L09070210-30	MS1	73.0	

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES
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Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Antimony	<0.488	L09070210-31	SD1	98.5	1
			Arsenic	0.176 J	L09070210-31	SD1	88.8	1
			Boron	10.3	L09070210-31	SD1	87.4	1
			Cadmium	0.905	L09070210-31	SD1	88.3	3
			Chromium	2.24	L09070210-31	SD1	102	5
			Cobalt	<0.124	L09070210-31	SD1	98.4	2
			Copper, total	7.00	L09070210-31	SD1	90.3	4
			Manganese	27.0 J-	L09070210-31	SD1	74.1	5
			Mercury	<0.0199	L09070210-31	SD1	90.6	1
			Molybdenum	22.9	L09070210-31	SD1	96.9	1
			Nickel	5.91	L09070210-31	SD1	89.5	4
			Selenium	2.42 J	L09070210-31	SD1	83.8	1
			Silver	<0.0497	L09070210-31	SD1	94.2	2
			Thallium	<0.00994	L09070210-31	SD1	92.6	4
			Uranium, total	<0.0994	L09070210-31	SD1	94.8	0
			Vanadium	0.613	L09070210-31	SD1	101	1
			Zinc	56.6 J-	L09070210-31	SD1	78.0	7
0906-MHR001-04-GS	Plant	L09070242-01	Antimony	<0.497	L09070242-02	MS1	91.6	
			Arsenic	0.0819 J	L09070242-02	MS1	87.2	
			Boron	4.96 J	L09070242-02	MS1	104	
			Cadmium	0.0825 J	L09070242-02	MS1	91.7	
			Chromium	1.42	L09070242-02	MS1	101	
			Cobalt	<0.125	L09070242-02	MS1	98.4	
			Copper, total	4.81	L09070242-02	MS1	97.5	
			Manganese	64.1	L09070242-02	MS1	90.9	
			Mercury	<0.0199	L09070242-02	MS1	76.9	
			Molybdenum	<1.49	L09070242-02	MS1	106	
			Nickel	0.623 J	L09070242-02	MS1	97.9	
			Selenium	0.493	L09070242-02	MS1	80.6	
			Silver	<0.0498	L09070242-02	MS1	94.7	
			Thallium	<0.00996	L09070242-02	MS1	91.1	
			Uranium, total	<0.0996	L09070242-02	MS1	97.8	
			Vanadium	0.341 J	L09070242-02	MS1	99.8	
			Zinc	23.2	L09070242-02	MS1	97.3	
			Antimony	<0.497	L09070242-03	SD1	95.3	4
			Arsenic	0.0819 J	L09070242-03	SD1	90.1	3
			Boron	4.96 J	L09070242-03	SD1	116	11

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES
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Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Cadmium	0.0825 J	L09070242-03	SD1	90.2	2
			Chromium	1.42	L09070242-03	SD1	102	1
			Cobalt	<0.125	L09070242-03	SD1	97.7	1
			Copper, total	4.81	L09070242-03	SD1	101	4
			Manganese	64.1	L09070242-03	SD1	79.4	14
			Mercury	<0.0199	L09070242-03	SD1	95.0	21
			Molybdenum	<1.49	L09070242-03	SD1	110	4
			Nickel	0.623 J	L09070242-03	SD1	98.0	0
			Selenium	0.493	L09070242-03	SD1	83.9	4
			Silver	<0.0498	L09070242-03	SD1	94.8	0
			Thallium	<0.00996	L09070242-03	SD1	92.9	2
			Uranium, total	<0.0996	L09070242-03	SD1	98.2	0
			Vanadium	0.341 J	L09070242-03	SD1	100	0
			Zinc	23.2	L09070242-03	SD1	101	4
0906-MMP035-04-GF	Plant	L09070242-27	Antimony	<0.489	L09070242-28	MS1	91.5	
			Arsenic	0.376	L09070242-28	MS1	98.1	
			Boron	6.66	L09070242-28	MS1	112	
			Cadmium	0.898	L09070242-28	MS1	98.3	
			Chromium	1.17	L09070242-28	MS1	112	
			Cobalt	<0.123	L09070242-28	MS1	102	
			Copper, total	3.56	L09070242-28	MS1	103	
			Manganese	29.9 J-	L09070242-28	MS1	76.7	
			Mercury	<0.0186	L09070242-28	MS1	93.1	
			Molybdenum	11.2	L09070242-28	MS1	99.5	
			Nickel	1.86	L09070242-28	MS1	105	
			Selenium	27.6 J	L09070242-28	MS1	143	
			Silver	<0.0492	L09070242-28	MS1	98.1	
			Thallium	0.0518	L09070242-28	MS1	97.8	
			Uranium, total	<0.0984	L09070242-28	MS1	107	
			Vanadium	0.286 J	L09070242-28	MS1	107	
			Zinc	55.1	L09070242-28	MS1	97.2	
			Antimony	<0.489	L09070242-29	SD1	90.9	1
			Arsenic	0.376	L09070242-29	SD1	96.7	1
			Boron	6.66	L09070242-29	SD1	91.5	20
			Cadmium	0.898	L09070242-29	SD1	98.1	0
			Chromium	1.17	L09070242-29	SD1	110	2
			Cobalt	<0.123	L09070242-29	SD1	102	0

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES
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Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Copper, total	3.56	L09070242-29	SD1	105	2
			Manganese	29.9 J-	L09070242-29	SD1	70.1	9
			Mercury	<0.0186	L09070242-29	SD1	84.4	10
			Molybdenum	11.2	L09070242-29	SD1	103	3
			Nickel	1.86	L09070242-29	SD1	101	4
			Selenium	27.6 J	L09070242-29	SD1	74.9	63
			Silver	<0.0492	L09070242-29	SD1	97.1	1
			Thallium	0.0518	L09070242-29	SD1	102	4
			Uranium, total	<0.0984	L09070242-29	SD1	109	2
			Vanadium	0.286 J	L09070242-29	SD1	106	1
			Zinc	55.1	L09070242-29	SD1	89.2	9
0906-MBB001-10-GS	Plant	L09070256-03	Antimony	<0.996	L09070256-04	MS1	91.9	
			Arsenic	<0.0750	L09070256-04	MS1	91.0	
			Boron	<4.98 UJ	L09070256-04	MS1	96.4	
			Cadmium	0.380	L09070256-04	MS1	93.4	
			Chromium	1.09	L09070256-04	MS1	101	
			Cobalt	<0.125	L09070256-04	MS1	95.1	
			Copper, total	5.96	L09070256-04	MS1	97.6	
			Manganese	41.9	L09070256-04	MS1	103	
			Molybdenum	240 J-	L09070256-04	MS1	101	
			Nickel	0.605 J	L09070256-04	MS1	94.3	
			Selenium	0.308 J	L09070256-04	MS1	86.1	
			Silver	<0.0500	L09070256-04	MS1	95.0	
			Thallium	<0.0100	L09070256-04	MS1	95.7	
			Uranium, total	<0.100	L09070256-04	MS1	108	
			Vanadium	0.220 J	L09070256-04	MS1	99.6	
			Zinc	39.4	L09070256-04	MS1	103	
			Antimony	<0.996	L09070256-05	SD1	93.2	1
			Arsenic	<0.0750	L09070256-05	SD1	89.7	1
			Boron	<4.98 UJ	L09070256-05	SD1	116	18
			Cadmium	0.380	L09070256-05	SD1	93.0	0
			Chromium	1.09	L09070256-05	SD1	97.7	3
			Cobalt	<0.125	L09070256-05	SD1	94.6	1
			Copper, total	5.96	L09070256-05	SD1	102	4
			Manganese	41.9	L09070256-05	SD1	100	3
			Molybdenum	240 J-	L09070256-05	SD1	51.3	65
			Nickel	0.605 J	L09070256-05	SD1	95.1	1

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES
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Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Selenium	0.308 J	L09070256-05	SD1	82.5	4
			Silver	<0.0500	L09070256-05	SD1	95.4	0
			Thallium	<0.0100	L09070256-05	SD1	97.7	2
			Uranium, total	<0.100	L09070256-05	SD1	108	0
			Vanadium	0.220 J	L09070256-05	SD1	96.3	3
			Zinc	39.4	L09070256-05	SD1	100	3
0906-MBB001-01-GS	Plant	L09070262-01	Antimony	<0.499	L09070262-02	MS1	90.8	
			Arsenic	<0.0747 UJ	L09070262-02	MS1	92.3	
			Boron	4.23 J	L09070262-02	MS1	91.1	
			Cadmium	0.110 J	L09070262-02	MS1	96.5	
			Chromium	1.49	L09070262-02	MS1	105	
			Cobalt	<0.125	L09070262-02	MS1	99.2	
			Copper, total	6.23	L09070262-02	MS1	87.3	
			Manganese	46.9 J-	L09070262-02	MS1	74.3	
			Mercury	<0.0199	L09070262-02	MS1	144	
			Molybdenum	3.30	L09070262-02	MS1	103	
			Nickel	0.571 J	L09070262-02	MS1	98.7	
			Selenium	0.285	L09070262-02	MS1	86.8	
			Silver	<0.0498	L09070262-02	MS1	96.1	
			Thallium	<0.00996	L09070262-02	MS1	98.3	
			Uranium, total	<0.0996	L09070262-02	MS1	108	
			Vanadium	0.356 J	L09070262-02	MS1	104	
			Zinc	21.8	L09070262-02	MS1	93.5	
			Antimony	<0.499	L09070262-03	SD1	89.0	2
			Arsenic	<0.0747 UJ	L09070262-03	SD1	229	85
			Boron	4.23 J	L09070262-03	SD1	90.1	1
			Cadmium	0.110 J	L09070262-03	SD1	91.5	5
			Chromium	1.49	L09070262-03	SD1	106	1
			Cobalt	<0.125	L09070262-03	SD1	97.8	1
			Copper, total	6.23	L09070262-03	SD1	87.9	1
			Manganese	46.9 J-	L09070262-03	SD1	91.4	21
			Mercury	<0.0199	L09070262-03	SD1	122	17
			Molybdenum	3.30	L09070262-03	SD1	97.8	5
			Nickel	0.571 J	L09070262-03	SD1	97.5	1
			Selenium	0.285	L09070262-03	SD1	86.9	0
			Silver	<0.0498	L09070262-03	SD1	82.1	16
			Thallium	<0.00996	L09070262-03	SD1	94.2	4

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES

Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Uranium, total	<0.0996	L09070262-03	SD1	106	2
			Vanadium	0.356 J	L09070262-03	SD1	103	1
			Zinc	21.8	L09070262-03	SD1	93.7	0
0906-MBB001-07-GF-2	Plant	L09070262-25	Antimony	<0.495	L09070262-26	MS1	92.8	
			Arsenic	<0.0749 UJ	L09070262-26	MS1	92.2	
			Boron	19.8	L09070262-26	MS1	75.9	
			Cadmium	0.374	L09070262-26	MS1	93.2	
			Chromium	1.31	L09070262-26	MS1	104	
			Cobalt	<0.125	L09070262-26	MS1	95.9	
			Copper, total	5.68	L09070262-26	MS1	98.9	
			Manganese	47.5	L09070262-26	MS1	85.5	
			Mercury	<0.00998	L09070262-26	MS1	124	
			Molybdenum	1.75 J	L09070262-26	MS1	99.5	
			Nickel	0.798 J	L09070262-26	MS1	96.3	
			Selenium	0.205	L09070262-26	MS1	86.0	
			Silver	<0.0499	L09070262-26	MS1	96.7	
			Thallium	<0.00998	L09070262-26	MS1	95.3	
			Uranium, total	<0.0998	L09070262-26	MS1	108	
			Vanadium	0.358 J	L09070262-26	MS1	102	
			Zinc	30.9 J	L09070262-26	MS1	95.7	
			Antimony	<0.495	L09070262-27	SD1	94.2	1
			Arsenic	<0.0749 UJ	L09070262-27	SD1	216	80
			Boron	19.8	L09070262-27	SD1	76.0	0
			Cadmium	0.374	L09070262-27	SD1	96.8	4
			Chromium	1.31	L09070262-27	SD1	103	1
			Cobalt	<0.125	L09070262-27	SD1	98.9	3
			Copper, total	5.68	L09070262-27	SD1	100	1
			Manganese	47.5	L09070262-27	SD1	75.0	13
			Mercury	<0.00998	L09070262-27	SD1	123	1
			Molybdenum	1.75 J	L09070262-27	SD1	102	2
			Nickel	0.798 J	L09070262-27	SD1	97.0	1
			Selenium	0.205	L09070262-27	SD1	88.1	2
			Silver	<0.0499	L09070262-27	SD1	97.9	1
			Thallium	<0.00998	L09070262-27	SD1	99.3	4
			Uranium, total	<0.0998	L09070262-27	SD1	112	4
			Vanadium	0.358 J	L09070262-27	SD1	102	0
			Zinc	30.9 J	L09070262-27	SD1	94.1	2

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES
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Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
Fall 2009 Vegetation Sampling Event								
0908-MBH002-08-FB	Plant	L09080646-01	Antimony	<0.491	L09080646-02	MS1	98.0	
			Arsenic	0.198 J	L09080646-02	MS1	99.5	
			Boron	22.8	L09080646-02	MS1	94.9	
			Cadmium	0.0937 J	L09080646-02	MS1	99.2	
			Chromium	1.28	L09080646-02	MS1	120	
			Cobalt	<0.124	L09080646-02	MS1	108	
			Copper, total	4.53	L09080646-02	MS1	114	
			Manganese	59.0	L09080646-02	MS1	38.7	
			Mercury	<0.00992 UJ	L09080646-02	MS1	73.1	
			Molybdenum	<1.47	L09080646-02	MS1	107	
			Nickel	0.602 J	L09080646-02	MS1	107	
			Selenium	0.832	L09080646-02	MS1	93.1	
			Silver	<0.0496	L09080646-02	MS1	103	
			Thallium	<0.00992	L09080646-02	MS1	98.9	
			Uranium, total	<0.0992	L09080646-02	MS1	107	
			Vanadium	0.376 J	L09080646-02	MS1	114	
			Zinc	16.3 J-	L09080646-02	MS1	73.9	
			Antimony	<0.491	L09080646-03	SD1	101	3
			Arsenic	0.198 J	L09080646-03	SD1	96.3	3
			Boron	22.8	L09080646-03	SD1	96.7	2
			Cadmium	0.0937 J	L09080646-03	SD1	95.2	4
			Chromium	1.28	L09080646-03	SD1	113	6
			Cobalt	<0.124	L09080646-03	SD1	103	5
			Copper, total	4.53	L09080646-03	SD1	106	7
			Manganese	59.0	L09080646-03	SD1	55.2	35
			Mercury	<0.00992 UJ	L09080646-03	SD1	65.9	10
			Molybdenum	<1.47	L09080646-03	SD1	111	4
			Nickel	0.602 J	L09080646-03	SD1	100	7
			Selenium	0.832	L09080646-03	SD1	87.4	6
			Silver	<0.0496	L09080646-03	SD1	102	1
			Thallium	<0.00992	L09080646-03	SD1	99.3	0
			Uranium, total	<0.0992	L09080646-03	SD1	106	1
			Vanadium	0.376 J	L09080646-03	SD1	110	4
			Zinc	16.3 J-	L09080646-03	SD1	81.3	10
0908-MWD091N-10-FB	Plant	L09080647-04	Antimony	<0.496	L09080647-05	MS1	102	

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RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES
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Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Arsenic	<0.0738	L09080647-05	MS1	91.7	
			Boron	25.0	L09080647-05	MS1	101	
			Cadmium	1.04	L09080647-05	MS1	95.3	
			Chromium	1.78	L09080647-05	MS1	116	
			Cobalt	<0.123	L09080647-05	MS1	105	
			Copper, total	4.49	L09080647-05	MS1	104	
			Manganese	24.7	L09080647-05	MS1	104	
			Mercury	<0.00984 UJ	L09080647-05	MS1	109	
			Molybdenum	5.35	L09080647-05	MS1	104	
			Nickel	2.90	L09080647-05	MS1	98.7	
			Selenium	13.7 J	L09080647-05	MS1	72.6	
			Silver	<0.0492	L09080647-05	MS1	103	
			Thallium	0.0547	L09080647-05	MS1	102	
			Uranium, total	<0.0984	L09080647-05	MS1	110	
			Vanadium	0.880	L09080647-05	MS1	115	
			Zinc	44.6	L09080647-05	MS1	96.7	
			Antimony	<0.496	L09080647-06	SD1	104	2
			Arsenic	<0.0738	L09080647-06	SD1	96.7	5
			Boron	25.0	L09080647-06	SD1	99.4	2
			Cadmium	1.04	L09080647-06	SD1	99.0	4
			Chromium	1.78	L09080647-06	SD1	118	2
			Cobalt	<0.123	L09080647-06	SD1	110	5
			Copper, total	4.49	L09080647-06	SD1	109	5
			Manganese	24.7	L09080647-06	SD1	94.3	10
			Mercury	<0.00984 UJ	L09080647-06	SD1	59.1	59
			Molybdenum	5.35	L09080647-06	SD1	104	0
			Nickel	2.90	L09080647-06	SD1	106	7
			Selenium	13.7 J	L09080647-06	SD1	81.7	12
			Silver	<0.0492	L09080647-06	SD1	106	3
			Thallium	0.0547	L09080647-06	SD1	106	4
			Uranium, total	<0.0984	L09080647-06	SD1	115	4
			Vanadium	0.880	L09080647-06	SD1	119	3
			Zinc	44.6	L09080647-06	SD1	97.3	1
0908-MWD092-04-FB	Plant	L09080647-15	Antimony	<0.493	L09080647-16	MS1	97.0	
			Arsenic	10.6 J-	L09080647-16	MS1	39.2	
			Boron	16.0	L09080647-16	MS1	97.0	
			Cadmium	2.80 J	L09080647-16	MS1	91.2	

TABLE 2-10

RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES
(Page 50 of 52)

Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Chromium	3.84	L09080647-16	MS1	96.9	
			Cobalt	<0.118	L09080647-16	MS1	103	
			Copper, total	3.46	L09080647-16	MS1	102	
			Manganese	14.8	L09080647-16	MS1	94.6	
			Mercury	<0.0189	L09080647-16	MS1	103	
			Molybdenum	11.7	L09080647-16	MS1	106	
			Nickel	16.7 J-	L09080647-16	MS1	103	
			Selenium	120	L09080647-16	MS1	-39.3	
			Silver	<0.0473	L09080647-16	MS1	94.4	
			Thallium	0.0582	L09080647-16	MS1	94.0	
			Uranium, total	<0.0947	L09080647-16	MS1	105	
			Vanadium	1.13	L09080647-16	MS1	102	
			Zinc	56.3	L09080647-16	MS1	115	
			Antimony	<0.493	L09080647-17	SD1	93.5	4
			Arsenic	10.6 J-	L09080647-17	SD1	44.3	12
			Boron	16.0	L09080647-17	SD1	109	12
			Cadmium	2.80 J	L09080647-17	SD1	78.7	15
			Chromium	3.84	L09080647-17	SD1	86.9	11
			Cobalt	<0.118	L09080647-17	SD1	94.6	9
			Copper, total	3.46	L09080647-17	SD1	86.8	16
			Manganese	14.8	L09080647-17	SD1	98.6	4
			Mercury	<0.0189	L09080647-17	SD1	110	7
			Molybdenum	11.7	L09080647-17	SD1	97.5	8
			Nickel	16.7 J-	L09080647-17	SD1	67.2	42
			Selenium	120	L09080647-17	SD1	62.1	889
			Silver	<0.0473	L09080647-17	SD1	87.6	7
			Thallium	0.0582	L09080647-17	SD1	87.9	7
			Uranium, total	<0.0947	L09080647-17	SD1	91.1	14
			Vanadium	1.13	L09080647-17	SD1	95.9	6
			Zinc	56.3	L09080647-17	SD1	102	12
0908-MWD088-09-FB	Plant	L09080648-02	Antimony	<0.494	L09080648-03	MS1	96.7	
			Arsenic	0.328	L09080648-03	MS1	86.3	
			Boron	22.4	L09080648-03	MS1	91.9	
			Cadmium	0.840	L09080648-03	MS1	86.4	
			Chromium	3.94	L09080648-03	MS1	105	

TABLE 2-10

RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES

Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Cobalt	<0.125	L09080648-03	MS1	100	
			Copper, total	7.90	L09080648-03	MS1	98.3	
			Manganese	11.1	L09080648-03	MS1	100	
			Mercury	<0.0200	L09080648-03	MS1	95.0	
			Molybdenum	1.71 J	L09080648-03	MS1	104	
			Nickel	2.60	L09080648-03	MS1	100	
			Selenium	3.29	L09080648-03	MS1	81.9	
			Silver	<0.0500	L09080648-03	MS1	88.1	
			Thallium	0.135	L09080648-03	MS1	89.6	
			Uranium, total	0.286 J	L09080648-03	MS1	98.1	
			Vanadium	2.69	L09080648-03	MS1	102	
			Zinc	33.6	L09080648-03	MS1	96.6	
			Antimony	<0.494	L09080648-04	SD1	98.3	2
			Arsenic	0.328	L09080648-04	SD1	90.5	5
			Boron	22.4	L09080648-04	SD1	95.0	3
			Cadmium	0.840	L09080648-04	SD1	89.2	3
			Chromium	3.94	L09080648-04	SD1	120	13
			Cobalt	<0.125	L09080648-04	SD1	105	5
			Copper, total	7.90	L09080648-04	SD1	105	7
			Manganese	11.1	L09080648-04	SD1	97.0	3
			Mercury	<0.0200	L09080648-04	SD1	88.1	8
			Molybdenum	1.71 J	L09080648-04	SD1	106	2
			Nickel	2.60	L09080648-04	SD1	107	7
			Selenium	3.29	L09080648-04	SD1	87.4	6
			Silver	<0.0500	L09080648-04	SD1	92.4	5
			Thallium	0.135	L09080648-04	SD1	95.8	7
			Uranium, total	0.286 J	L09080648-04	SD1	104	6
			Vanadium	2.69	L09080648-04	SD1	116	13
			Zinc	33.6	L09080648-04	SD1	95.3	1
0908-MBB001-01-FB	Plant	L09080648-30	Antimony	<0.497	L09080648-31	MS1	96.1	
			Arsenic	0.143 J	L09080648-31	MS1	97.7	
			Boron	50.9	L09080648-31	MS1	91.2	
			Cadmium	0.337	L09080648-31	MS1	95.0	
			Chromium	2.50	L09080648-31	MS1	119	
			Cobalt	<0.120	L09080648-31	MS1	102	
			Copper, total	12.4	L09080648-31	MS1	117	
			Manganese	75.5	L09080648-31	MS1	89.6	

TABLE 2-10

RESULTS OF MS/MSD FOR SOIL AND VEGETATION SAMPLES

Field Sample Identification	Sample Matrix	Laboratory Identification	Analyte	Result (mg/kg, dw)	MS/MSD Identification	MS/MSD	%R	RPD
			Mercury	0.0292 J-	L09080648-31	MS1	43.0	
			Molybdenum	5.08	L09080648-31	MS1	100	
			Nickel	1.57	L09080648-31	MS1	97.8	
			Selenium	0.549 J+	L09080648-31	MS1	94.2	
			Silver	<0.0482	L09080648-31	MS1	96.3	
			Thallium	<0.00963	L09080648-31	MS1	99.8	
			Uranium, total	<0.0963	L09080648-31	MS1	109	
			Vanadium	0.787	L09080648-31	MS1	116	
			Zinc	39.9	L09080648-31	MS1	94.8	
			Antimony	<0.497	L09080648-32	SD1	97.2	1
			Arsenic	0.143 J	L09080648-32	SD1	146	40
			Boron	50.9	L09080648-32	SD1	113	21
			Cadmium	0.337	L09080648-32	SD1	95.1	0
			Chromium	2.50	L09080648-32	SD1	111	7
			Cobalt	<0.120	L09080648-32	SD1	101	1
			Copper, total	12.4	L09080648-32	SD1	99.1	17
			Manganese	75.5	L09080648-32	SD1	194	74
			Mercury	0.0292 J-	L09080648-32	SD1	29.9	36
			Molybdenum	5.08	L09080648-32	SD1	104	4
			Nickel	1.57	L09080648-32	SD1	96.8	1
			Selenium	0.549 J+	L09080648-32	SD1	88.5	6
			Silver	<0.0482	L09080648-32	SD1	96.5	0
			Thallium	<0.00963	L09080648-32	SD1	102	2
			Uranium, total	<0.0963	L09080648-32	SD1	110	1
			Vanadium	0.787	L09080648-32	SD1	111	4
			Zinc	39.9	L09080648-32	SD1	125	27

% R - percent recovery
mg/kg, dw - milligrams per kilogram, dry weight
MS/MSD - matrix spike/matrix spike duplicate
MS1 - matrix spike
RPD - relative percent difference
SD1 - matrix spike duplicate

TABLE 3-1
RELATIVE ABUNDANCE OF COVER MATERIAL

Area	Mine	ID	Topsoil Cover	Brown Shale	Cherty Shale	Black Shale	Other
Waste Rock Dump	Ballard	MWD080	-	dominant	rare	uncommon	LM -rare
	Ballard	MWD081	-	dominant	-	abundant	-
	Ballard	MWD082	-	dominant	uncommon	common	-
	Ballard	MWD083	-	common	common	abundant	-
	Ballard	MWD084	-	common	uncommon	abundant	-
	Ballard	MWD093	-	common	common	abundant	-
	Henry	MWD085	-	dominant	-	rare	LM -rare
	Henry	MWD086	-	dominant	-	rare	LM -rare
	Henry	MWD087	-	dominant	-	rare	LM -rare
	Henry	MWD088	-	dominant	-	rare	LM -rare
	Henry	MWD090	-	dominant	-	rare	LM -rare
	Enoch Valley	MWD091N	dominant	uncommon	-	-	LM -rare
	Enoch Valley	MWD091S	dominant	-	-	-	LM -rare
	Enoch Valley	MWD092	dominant	uncommon	-	-	LM -rare
Partially Backfilled Pit	Ballard	MMP035	-	abundant	rare	common	LM-common
	Ballard	MMP036	-	abundant	rare	common	LM-common
Historic Ore Haul Road	Ballard	MHR001	-	-	common	-	LM-dominant
	Henry	MHR002	-	-	-	-	LM-dominant
Historic Facility	Ballard	MBS001	-	-	-	-	SG-dominant
Active Facility	Enoch Valley	MAR001	-	-	-	-	LM-dominant
	Enoch Valley	MTA001	-	-	-	-	OR-dominant
Background	Ballard	MBB001	dominant	-	-	-	LM-uncommon
	Henry	MBH002	dominant	-	-	-	LM-common
	Enoch Valley	MBE001	dominant	-	-	-	DW-common

Notes:
DW = Dinwoody Fm.
LM = limestone
OR = ore
SG = slag

Relative abundance as percent of total area:
Dominant = 50 to 100%
Abundant = 25 to 50%
Common = 10 to 25%
Uncommon = 5 to 10%
Rare = 0 to 5%

TABLE 3-2
RELATIVE ABUNDANCE OF GRASSES

Common Name	Scientific Name	Symbol	Ballard	Henry	Enoch Valley
bluebunch wheatgrass	*Pseudoroegneria spicata*	PSSP6	rare	rare	uncommon
bottlebrush, squirreltail	*Elymus elymoides*	ELEL5	uncommon	-	-
bulbous bluegrass	*Poa bulbosa*	POBU	uncommon	uncommon	-
cheatgrass	*Bromus tectorum*	BRTE	uncommon	uncommon	rare
crested wheatgrass	*Agropyron cristatum*	AGCR	common	-	-
foxtail barley	*Hordeum jubatum*	HOJU	rare	-	-
Great Basin wildrye	*Elymus cinereus*	LECI4	common	rare	common
Idaho fescue	*Festuca idahoensis*	FEID	rare	rare	-
Indian ricegrass	*Achnatherum hymenoides*	ACHY	rare	-	-
intermediate wheatgrass	*Thinopyrum intermedium*	THIN6	rare	rare	rare
Kentucky bluegrass	*Poa pratensis*	POPR	-	uncommon	uncommon
mountain brome	*Bromus marginatus*	BRMA4	-	uncommon	uncommon
orchardgrass	*Dactylis glomerata*	DAGL	abundant	abundant	dominant
rough fescue	*Festuca campestris*	FECA4	-	uncommon	-
Sandberg bluegrass	*Poa secunda*	POSE	uncommon	uncommon	-
sedge	*Carex sp.*	CAREX	rare	rare	rare
sheep fescue	*Festuca ovina*	FEOV	uncommon	rare	common
slender wheatgrass	*Elymus trachycaulus*	ELTRT	-	-	common
smooth brome	*Bromus inermis*	BRIN2	dominant	dominant	abundant
Timothy	*Phleum pratense*	PHPR3	uncommon	rare	common
western wheatgrass	*Pascopyrum smithii*	PASM	abundant	common	abundant

Notes:
Shaded cell = dominant or abundant
Relative abundance as percent of total mine area:
Dominant = 50 to 100%
Abundant = 25 to 50%
Common = 10 to 25%
Uncommon = 5 to 10%
Rare = 0 to 5%

TABLE 3-3 RELATIVE ABUNDANCE OF FORBS					
Common Name	**Scientific Name**	**Symbol**	**Ballard**	**Henry**	**Enoch Valley**
alfalfa	*Medicago sativa*	MESA	dominant	dominant	abundant
arrowleaf balsamroot	*Balsamorhiza sagittata*	BASA3	-	uncommon	uncommon
Asian forget-me-not	*Myosotis asiatica*	MYAS2	-	rare	-
ballhead waterleaf	*Hydrophyllum capitatum*	HYCA4	uncommon	rare	uncommon
Baltic rush	*Juncus balticus*	JUBA	-	rare	-
Brandegee's onion	*Allium brandegeei*	ALBR	-	-	rare
broadleaf cattail	*typha latifolia*	TYLA	-	rare	-
cinquefoil	*Potentilla sp.*		uncommon	-	-
clasping pepperweed	*Lepidium perfoliatum*	LEPE2	uncommon	rare	-
common mullein	*Verbascum thapsus*	VETH	uncommon	uncommon	uncommon
creeping barberry	*Mahonia repens*	MARE11	rare	rare	-
dandelion	*Taraxacum officinale*	TAOF	common	uncommon	common
Drummond's rockcress	*Arabis drummondii*	ARDR	-	rare	-
fernleaf biscuitroot	*Lomatium dissectum*	LODI	uncommon	rare	-
fewleaved dock	*Rumex paucifolius*	RUPA6	rare	-	-
flatspine stickseed	*Lappula occidentalis*	LAOC3	uncommon	uncommon	uncommon
foothill deathcamas	*Zigadenus paniculatus*	ZIPA2	-	uncommon	-
fragrant bedstraw	*Galium triflorum*	GATR3	-	rare	-
Great Basin lupine	*Lupinus ×alpestris*	LUAL5	common	common	common
hairy clematis	*Clematis hirsutissima*	CLHI	rare	-	-
Holboell's rockcress	*Arabis holboellii*	ARHO2	-	rare	-
hounds tongue	*Cynoglossum officinale*	CYOF	uncommon	uncommon	-
lambsquarters	*Chenopodium album*	CHAL7	-	uncommon	-
leopard lily	*Fritillaria atropurpurea*	FRAT	rare	-	-
Lewis flax	*Linum lewisii*	LILE3	-	uncommon	common
littleleaf pussytoes	*Antennaria microphylla*	ANMI3	rare	-	-
longleaf phlox	*Phlox longifolia*	PHLO2	uncommon	uncommon	-
low larkspur	*Delphinium nuttallianum*	DENU2	uncommon	uncommon	uncommon
manyflower stickseed	*Hackelia floribunda*	HAFL2	rare	rare	rare
milk-vetch	*Astragalus sp.*	--	uncommon	uncommon	rare
mountain hollyhock	*Iliamna rivularis*	ILRI	rare	-	-
mountain rush	*Juncus arcticus*	JUAR2	-	rare	-
mule’s ears	*Wyethia amplexicaulis*	WYAM	uncommon	rare	common
northern bedstraw	*Galium boreale*	GABO2	rare	rare	-
northern suncup	*Camissonia subacaulis*	CASU18	-	rare	-
Nuttall's violet	*Viola nuttallii*	VINU2	-	rare	-
oblongleaf bluebells	*Mertensia oblongifolia*	MEOB	rare	-	-
onion	*Allium*	--	-	-	rare
pale agoseris	*Agoseris glauca*	AGGL	-	uncommon	-
pennycress	*Thlaspi arvense*	THAR5	rare	-	-
penstemon	*Penstemon sp.*	--	rare	rare	rare
prickly lettuce	*Lactuca serriola*	LASE	uncommon	-	-

TABLE 3-3
RELATIVE ABUNDANCE OF FORBS

Common Name	Scientific Name	Symbol	Ballard	Henry	Enoch Valley
Rocky Mountain penstemon	*Penstemon strictus*	PEST2	-	uncommon	uncommon
sagebrush false dandelion	*Nothocalais troximoides*	NOTR2	uncommon	rare	-
sainfoin	*Onobrychis viciifolia*	ONVI	-	uncommon	common
scarlet gilia	*Ipomopsis aggregata*	IPAG	-	-	rare
scarlet Indian paintbrush	*Castilleja miniata*	CAMI12	rare	rare	-
shepherd's-purse	*Capsella bursa-pastoris*	CABU2	rare	rare	-
silverleaf phacelia	*Phacelia hastata*	PHHA	uncommon	rare	rare
slenderleaf collomia	*Collomia linearis*	COLI2	-	common	-
slimleaf goosefoot	*Chenopodium leptophyllum*	CHLE4	-	uncommon	-
small burnet	*Sanguisorba minor*	SAMI3	-	-	uncommon
smallflower woodland-star	*Lithophragma parviflorum*	LIPA5	uncommon	rare	uncommon
sticky geranium	*Geranium viscosissimum*	GEVI2	uncommon	uncommon	uncommon
stinging nettle	*Urtica dioica*	URDI	uncommon	uncommon	uncommon
sulfur buckwheat	*Eriogonum umbellatum*	ERUM	common	-	-
sulphur Indian paintbrush	*Castilleja sulphurea*	CASU12	-	rare	-
tapertip hawksbeard	*Crepis acuminata*	CRAC2	-	common	-
tapertip onion	*Allium acuminatum*	ALAC4	rare	rare	-
tumblemustard	*Sisymbrium altissimum*	SIAL2	uncommon	uncommon	-
western groundsel	*Senecio integerrimus*	SEIN2	uncommon	uncommon	-
western stoneseed	*Lithospermum ruderale*	LIRU4	rare	-	-
western tansymustard	*Descurainia pinnata*	DEPI	uncommon	uncommon	-
western yarrow	*Achillea millefolium*	ACMI2	common	common	uncommon
white sagebrush	*Artemisia ludoviciana*	ARLU	rare	uncommon	rare
whitetop	*Cardaria draba*	CADR	rare	-	-
willowherb	*Epilobium halleanum*	EPHA	rare	-	-
yellow alyssum	*Alyssum alyssoides*	ALAL3	rare	-	-
yellow fritillary	*Fritillaria pudica*	FRPU2	rare	-	-
yellow salsify	*Tragopogon dubius*	TRDU	common	uncommon	uncommon
yellow sweetclover	*Melilotus officinalis*	MEOF	rare	-	-

Notes:
Bolded common name = culturally significant plant
Shaded cell = dominant or abundant

Relative abundance as percent of total mine area:
Dominant = 50 to 100%
Abundant = 25 to 50%
Common = 10 to 25%
Uncommon = 5 to 10%
Rare = 0 to 5%

TABLE 3-4
RELATIVE ABUNDANCE OF SHRUBS

Common Name	Scientific Name	Symbol	Ballard	Henry	Enoch Valley
antelope bitterbrush	*Purshia tridentata*	PUTR2	common	common	common
big sagebrush	*Artemisia tridentata*	ARTR2	common	common	common
blue spruce	*Picea pungens*	PIPU	rare	-	-
chokecherry	*Prunus virginiana*	PRVI	uncommon	-	rare
common juniper	*Juniperus communis*	JUCO6	uncommon	rare	-
cottonwood	*Populus sp.*		rare	-	-
Douglas-fir	*Pseudotsuga menziesii*	PSME	rare	-	-
gooseberry	*Ribes sp.*		-	rare	-
lilac	*Syringa sp.*	SYRIN	rare	-	-
lodgepole pine	*Pinus contorta*	PICO	rare	-	-
mountain snowberry	*Symphoricarpos oreophilus*	SYOR2	common	rare	common
ponderosa pine	*Pinus ponderosa*	PIPO	rare	-	-
quaking aspen	*Populus tremuloides*	POTR5	common	uncommon	common
Rocky Mountain juniper	*Juniperus scopulorum*	JUSC2	uncommon	rare	rare
Rocky Mountain maple	*Acer glabrum*	ACGL	rare	-	-
Russian olive	*Elaeagnus angustifolia*	ELAN	rare	-	-
serviceberry	*Amelanchier alnifolia*	AMAL2	common	rare	uncommon
Siberian peashrub	*Caragana arborescens*	CAAR18	common	-	-
willow	*Salix sp.*		rare	-	-
Wood's rose	*Rosa woodsii*	ROWO	rare	-	rare
yellow rabbitbrush	*Chrysothamnus viscidiflorus*	CHVI8	common	common	-

Notes:
Bolded common name = culturally significant plant
Shaded cell = dominant or abundant
Relative abundance as percent of total mine area:
Dominant = 50 to 100%
Abundant = 25 to 50%
Common = 10 to 25%
Uncommon = 5 to 10%
Rare = 0 to 5%

TABLE 3-5 NUMBER OF SHRUB SPECIES SAMPLED					
Common Name	**Scientific Name**	**Symbol**	**Ballard**	**Henry**	**Enoch Valley**
antelope bitterbrush	*Purshia tridentata*	PUTR2	4	4	3
big sagebrush	*Artemisia tridentata*	ARTR2	1	7	5
chokecherry	*Prunus virginiana*	PRVI	1	0	3
mountain snowberry	*Symphoricarpos oreophilus*	SYAL	7	5	7
quaking aspen	*Populus tremuloides*	POTR5	5	0	1
serviceberry	*Amelanchier alnifolia*	AMAL	5	2	2
Siberian peashrub	*Caragana arborescens*	CAAR	2	0	0
Wood's rose	*Rosa woodsii*	ROWI	0	0	1
yellow Rabbitbrush	*Chrysothamnus viscidiflorus*	CHVI8	0	2	0

TABLE 3-6 NUMBER OF SAMPLES COLLECTED BY MEDIA									
Area	**Mine**	**ID**	**Sampling Method**	**Spring Soil**	**Spring Grass/Forb**	**Spring Grass**	**Spring Forb**	**Fall Forb**	**Shrubs**
Waste Rock Dump	Ballard	MWD080	Random 50x50-ft Quadrats	10	8	2	2	2	3
	Ballard	MWD081	Random 50x50-ft Quadrats	10	9	1	1	1	1
	Ballard	MWD082	Random 50x50-ft Quadrats	10	9	1	0	1	1
	Ballard	MWD083	Random 50x50-ft Quadrats	10	9	1	1	1	0
	Ballard	MWD084	Random 50x50-ft Quadrats	10	9	1	1	1	2
	Ballard	MWD093	Random 50x50-ft Quadrats	10	9	1	0	1	0
	Henry	MWD085	Random 50x50-ft Quadrats	10	8	2	2	2	0
	Henry	MWD086	Random 50x50-ft Quadrats	10	9	1	1	1	0
	Henry	MWD087	Random 50x50-ft Quadrats	10	9	1	1	1	0
	Henry	MWD088	Random 50x50-ft Quadrats	10	8	2	2	2	0
	Henry	MWD090	Random 50x50-ft Quadrats	10	8	2	2	2	0
	Enoch Valley	MWD091N	Random 50x50-ft Quadrats	10	6	4	2	4	0
	Enoch Valley	MWD091S	Random 50x50-ft Quadrats	10	7	3	2	3	0
	Enoch Valley	MWD092	Random 50x50-ft Quadrats	11	7	3	3	3	2
Partially Backfilled Pit	Ballard	MMP035	Random 50x50-ft Quadrats	10	9	1	1	1	4
	Ballard	MMP036	Random 50x50-ft Quadrats	10	9	1	1	1	0
Historic Ore Haul Road	Ballard	MHR001	Random Quadrats 200 ft along shoulder midline	10	9	1	1	1	1
	Henry	MHR002	Random Quadrats 100-ft along shoulder midline	10	8	2	2	2	0
Historic Facility	Ballard	MBS001	Judgmental Grab	5	5	NA	NA	NA	0
Active Facility	Enoch Valley	MAR001	Judgmental Grab	5	2	NA	NA	NA	0
	Enoch Valley	MTA001	Judgmental Grab	5	5	NA	NA	NA	0
Background	Ballard	MBB001	Random 50x50-ft Quadrats	10	6	4	4	4	13
	Henry	MBH002	Random 50x50-ft Quadrats	10	7	3	3	3	20
	Enoch Valley	MBE001	Random 50x50-ft Quadrats	10	7	3	3	3	20

TABLE 3-7
BALLARD MINE
2009 SOIL SAMPLES CONCENTRATION RANGE AND SCREENING LEVEL EXCEEDANCES (mg/kg dw)[1]

	Selenium	Arsenic	Cadmium	Cobalt	Manganese	Vanadium
Soil Screening Level	**390**	**0.39**	**70**	**23**	**1800**	**390**
Background MBB001 (n=10)	**0.25 - 0.49**	**2.55-3.66**	**1.42-3.39**	**3.37-5.51**	**337-462**	**10.7-17.9**
Waste Rock Dumps (n=60)	**0.87 - 209**	**3.51-45.5**	**1.94-99.5**	**2.66-25.6**	**94.4-5180**	**16.9-808**
MWD080 (n=10)	0	10	0	0	0	0
MWD081 (n=10)	0	10	2	1	0	5
MWD082 (n=10)	0	10	0	0	0	0
MWD083 (n=10)	0	10	0	0	1	0
MWD084 (n=10)	0	10	1	0	1	1
MWD093 (n=10)	0	10	0	0	0	1
%n > Screening Level	0	100	5	1.7	3.3	11.7
Partially Backfilled Pits (n=20)	**5.84 - 130**	**10.6-37.3**	**8.0-167**	**2.54-8.19**	**98.8-403**	**57.9-690**
MMP035 (n=10)	0	10	1	0	0	2
MMP036 (n=10)	0	10	4	0	0	4
%n > Screening Level	0	100	25	0	0	30
Historic Ore Haul Road (n=10)	**0.57 - 24.9**	**4.41-17.5**	**1.44-43.6**	**4.76-11.7**	**234-3620**	**12.1-266**
MHR001	**0**	10	**0**	**0**	1	**0**
%n > Screening Level	0	100	0	0	10	0
Historic Facility (n=5)	**17.7 - 35.4**	**8.88-14.4**	**46.9-83.2**	**2.78-4.83**	**123-249**	**289-790**
MBS001	**0**	5	3	**0**	**0**	3
%n > Screening Level	0	100	60	0	0	60

Notes:
n = total number of samples
1 - Triplicate samples are treated as a single sample as described in Section 2.
Shaded cells indicate 25% or more samples exceeded the screening level.

TABLE 3-8 HENRY MINE 2009 SOIL SAMPLES CONCENTRATION RANGE AND SCREENING LEVEL EXCEEDANCES (mg/kg dw)[1]					
	Selenium	**Arsenic**	**Cadmium**	**Manganese**	**Vanadium**
Soil Screening Value	**390**	**0.39**	**70**	**1800**	**390**
Background MBH002 (n=10)	**0.48-1.26**	**6.60-9.01**	**0.572 - 1.15**	**1500-3990**	**22.2-27.1**
Waste Rock Dumps (n=50)	**0.69-318**	**4.0-44.5**	**2.13-48.9**	**68.8-2040**	**22.3-584**
MWD085 (n=10)	0	10	0	0	0
MWD086 (n=10)	0	10	0	1	0
MWD087 (n=10)	0	10	0	0	0
MWD088 (n=10)	0	10	0	0	1
MWD090 (n=10)	0	10	0	1	1
%n > Screening Level	0	100	0	4	4
Historic Ore Haul Road (n=10)	**7.45-57.1**	**7.26-45.5**	**10.4-114**	**148-939**	**77.1-556**
MHR001	**0**	10	1	0	1
%n > Screening Level	0	100	10	0	10

Notes:
n = total number of samples
1 - Triplicate samples are treated as a single sample as described in Section 2.
Shaded cells indicate 25% or more samples exceeded the screening level.

TABLE 3-9 ENOCH VALLEY MINE 2009 SOIL SAMPLES CONCENTRATION RANGE AND SCREENING LEVEL EXCEEDANCES (mg/kg dw)[1]				
	Selenium	**Arsenic**	**Cadmium**	**Vanadium**
Soil Screening Level	**390**	**0.39**	**70**	**390**
Background MBE001 (n=10)	**0.54-6.89**	**3.77-7.65**	**0.54-9.66**	**18.5-52.2**
Waste Rock Dumps (n=30)	**0.53-128**	**4.57-30.2**	**1.48-55.6**	**17.3-324**
MWD091N (n=10)	0	10	0	0
MWD091S (n=10)	0	10	0	0
MWD092 (n=11)	0	11	0	1
%n > Screening Level	0	100	0	3
Active Facilities (n=10)	**0.73-39.7**	**5.2-13.2**	**0.5-72.2**	**21.1-575**
MAR001 (n=5)	0	5	0	0
MTA001 (n=5)	0	5	1	1
%n > Screening Level	0	100	10	10

Notes:
n = total number of samples
1 - Triplicate samples are treated as a single sample as described in Section 2.
Shaded cells indicate 25% or more samples exceeded the screening level.

TABLE 3-10
BALLARD MINE
2009 SPRING GRASS/FORB SAMPLES
CONCENTRATION RANGE AND SCREENING LEVEL EXCEEDANCES (mg/kg dw)[1]

	Selenium	Molybdenum
Soil Screening Level	**5**	**5**
Background MBB001 (n=6)	**0.20-1.77**	**1.74-99.6**
Waste Rock Dumps (n=53)	**0.30-366**	**2.04-101**
MWD080 (n=8)	7	5
MWD081 (n=9)	9	8
MWD082 (n=9)	5	7
MWD083 (n=9)	3	2
MWD084 (n=9)	7	7
MWD093 (n=9)	6	6
%n > Screening Level	70	66
Partially Backfilled Pits (n=18)	**0.37-122**	**1.49U-28.8**
MMP035 (n=9)	9	8
MMP036 (n=9)	4	6
%n > Screening Level	72	78
Historic Ore Haul Road (n=9)	**0.38-69.2**	**1.48U-9.56**
MHR001	2	4
%n > Screening Level	22	44
Historic Facility (n=5)	**4.35-27.5**	**1.96-425**
MBS001	4	3
%n > Screening Level	80	60

Notes:
n = total number of samples
1 - Triplicate samples are treated as a single sample as described in Section 2.
Shaded cells indicate 25% or more samples exceeded the screening level.

TABLE 3-11
HENRY MINE
2009 SPRING GRASS/FORB SAMPLES CONCENTRATION RANGE AND SCREENING LEVEL EXCEEDANCES (mg/kg dw)[1]

	Selenium	Molybdenum
Soil Screening Value	**5**	**5**
Background MBH002 (n=7)	**0.24-1.12**	**1.48-2.63**
Waste Rock Dumps (n=42)	**0.45-146**	**4.74-74.6**
MWD085 (n=8)	2	8
MWD086 (n=9)	5	6
MWD087 (n=9)	1	9
MWD088 (n=8)	0	8
MWD090 (n=8)	5	8
%n > Screening Level	31	74
Historic Ore Haul Road (n=8)	**1.27-8.26**	**1.46U-11.3**
MHR001	1	4
%n > Screening Level	13	50

Notes:
n = total number of samples
1 - Triplicate samples are treated as a single sample as described in Section 2.
Shaded cells indicate 25% or more samples exceeded the screening level.

TABLE 3-12
ENOCH VALLEY MINE
2009 SPRING GRASS/FORB SAMPLES
CONCENTRATION RANGE AND SCREENING LEVEL EXCEEDANCES (mg/kg dw)[1]

	Selenium	Molybdenum
Soil Screening Level	**5**	**5**
Background Range (n=7)	**0.36-0.64**	**1.46U-3.63**
Waste Rock Dumps (n=20)	**0.56-71.1**	**1.48U-33.9**
MWD091N (n=6)	3	4
MWD091S (n=7)	3	5
MWD092 (n=7)	5	6
%n > Screening Level	55	75
Active Facilities (n=7)	**0.39-16.0**	**1.48U-10.6**
MAR001 (n=2)	1	1
MTA001 (n=5)	1	1
%n > Screening Level	29	29

Notes:
n = total number of samples
1 - Triplicate samples are treated as a single sample as described in Section 2.
Shaded cells indicate 25% or more samples exceeded the screening level.

Table 3-13
Summary of COPC Concentrations in Soil (mg/kg-dw)
Ballard Mine Background MBB001

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	10	50%	0.37	0.72	0.42	0.85	0.42	0.25
Arsenic	10	100%	--	--	2.55	3.66	3.09	0.38
Boron	10	100%	--	--	2.74	11.20	4.90	2.56
Cadmium	10	100%	--	--	1.40	3.39	2.01	0.68
Chromium	10	100%	--	--	9.87	16.30	12.61	2.11
Chromium (VI)	10	0%	0.24	0.50	--	--	--	--
Cobalt	10	100%	--	--	3.37	5.51	4.52	0.72
Copper	10	100%	--	--	8.60	11.90	10.26	0.92
Manganese	10	100%	--	--	337	462	409.30	44.69
Mercury	10	100%	--	--	0.02	0.03	0.02	0.00
Molybdenum	10	0%	1.10	1.15	--	--	--	--
Nickel	10	100%	--	--	12.50	20.20	14.58	2.36
Selenium	10	100%	--	--	0.25	0.49	0.37	0.06
Silver	10	100%	--	--	0.07	0.11	0.09	0.01
Thallium	10	100%	--	--	0.12	0.18	0.16	0.02
Uranium	10	100%	--	--	0.64	0.85	0.75	0.08
Vanadium	10	100%	--	--	10.70	17.90	15.05	2.16
Zinc	10	100%	--	--	76.70	148	101.51	22.38

Table 3-14
Summary of COPC Concentrations in Soil (mg/kg-dw)
Henry Mine Background MBH002

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	10	30%	0.37	0.75	0.42	0.53	0.30	0.14
Arsenic	10	100%	--	--	6.60	9.01	7.90	0.76
Boron	10	100%	--	--	1.92	22.30	12.54	6.28
Cadmium	10	100%	--	--	0.57	1.15	0.88	0.17
Chromium	10	100%	--	--	17.20	23.10	21.04	1.66
Chromium (VI)	10	0%	0.25	0.50	--	--	--	--
Cobalt	10	100%	--	--	9.23	13.30	11.58	1.22
Copper	10	100%	--	--	21.20	28.70	23.81	2.23
Manganese	10	100%	--	--	1500	3990	2535.3	681.86
Mercury	10	100%	--	--	0.02	0.04	0.03	0.01
Molybdenum	10	0%	1.10	1.15	--	--	--	--
Nickel	10	100%	--	--	22.80	27.20	25.47	1.43
Selenium	10	100%	--	--	0.48	1.26	0.79	0.22
Silver	10	20%	0.24	0.25	0.10	0.11	0.12	--
Thallium	10	100%	--	--	0.14	0.16	0.15	0.01
Uranium	10	60%	0.48	0.50	0.40	0.63	0.41	0.15
Vanadium	10	100%	--	--	22.20	27.10	24.82	1.97
Zinc	10	100%	--	--	57.70	93.10	72.32	11.38

Table 3-15
Summary of COPC Concentrations in Soil (mg/kg-dw)
Enoch Valley Mine Background MBE001

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	10	20%	0.34	0.38	0.50	0.55	0.25	--
Arsenic	10	100%	--	--	3.77	7.65	5.72	1.16
Boron	10	90%	1.89	1.89	2.47	21.30	9.12	7.26
Cadmium	10	100%	--	--	0.54	9.66	3.91	3.39
Chromium	10	100%	--	--	16.80	44.80	26.65	10.01
Chromium (VI)	10	0%	0.25	0.50	--	--	--	--
Cobalt	10	100%	--	--	7.70	13.10	9.80	1.80
Copper	10	100%	--	--	13.90	30.60	21.79	5.31
Manganese	10	100%	--	--	564	3460	1840.10	878.46
Mercury	10	100%	--	--	0.02	0.07	0.04	0.02
Molybdenum	10	20%	1.03	1.15	1.62	3.45	0.95	--
Nickel	10	100%	--	--	19.60	63.20	29.08	12.63
Selenium	10	100%	--	--	0.54	6.89	1.59	1.92
Silver	10	100%	--	--	0.08	0.42	0.18	0.10
Thallium	10	100%	--	--	0.13	0.48	0.24	0.10
Uranium	10	100%	--	--	0.82	10.20	3.41	3.53
Vanadium	10	100%	--	--	18.50	52.20	28.41	10.00
Zinc	10	100%	--	--	98.50	241	135.95	39.73

Table 3-16
Summary of COPC Concentrations in Soil (mg/kg-dw)
Ballard Mine Waste Rock Dump MWD080

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	10	100%	--	--	3.09	8.51	6.04	1.77
Arsenic	10	100%	--	--	3.84	45.50	26.36	13.37
Boron	10	70%	9.51	9.58	4.19	16.80	9.42	5.53
Cadmium	10	100%	--	--	11.30	38.70	22.26	9.67
Chromium	10	100%	--	--	115	481	277.20	114.08
Chromium (VI)	10	0%	0.05	0.50	--	--	--	--
Cobalt	10	100%	--	--	2.66	9.75	6.91	1.91
Copper,	10	100%	--	--	18.60	118	85.82	30.69
Manganese	10	100%	--	--	94.40	1470	422.24	430.42
Mercury	10	100%	--	--	0.09	0.53	0.37	0.13
Molybdenum	10	100%	--	--	5.44	36.80	21.29	9.54
Nickel	10	100%	--	--	36.40	369	228.34	103.25
Selenium	10	100%	--	--	9.55	209	92.71	70.65
Silver	10	100%	--	--	1.70	5.54	4.01	1.24
Thallium	10	100%	--	--	0.29	1.20	0.78	0.24
Uranium	10	100%	--	--	9.56	38.10	25.34	8.07
Vanadium	10	100%	--	--	64.80	277	148.59	57.80
Zinc	10	100%	--	--	267	1350	929.30	353.09

Table 3-17
Summary of COPC Concentrations in Soil (mg/kg-dw)
Ballard Mine Waste Rock Dump MWD081

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	10	100%	--	--	4.22	7.87	5.64	1.10
Arsenic	10	100%	--	--	15.80	37.10	27.45	7.61
Boron	10	90%	9.61	9.61	12.20	34.70	20.35	9.36
Cadmium	10	100%	--	--	11.90	99.50	47.67	27.92
Chromium	10	100%	--	--	249	594	388.70	90.66
Chromium (VI)	10	0%	0.24	0.50	--	--	--	--
Cobalt	10	100%	--	--	4.21	25.60	8.07	6.31
Copper	10	100%	--	--	68.10	137	96.61	20.28
Manganese	10	100%	--	--	116	1040	292.80	273.37
Mercury	10	100%	--	--	0.25	0.46	0.34	0.06
Molybdenum	10	100%	--	--	16.50	44.10	28.66	8.70
Nickel	10	100%	--	--	157	325	257.20	59.59
Selenium	10	100%	--	--	22.50	141	62.86	37.89
Silver	10	100%	--	--	3.51	9.92	6.45	2.09
Thallium	10	100%	--	--	0.60	2.59	1.46	0.66
Uranium	10	100%	--	--	24.80	75.00	43.07	19.36
Vanadium	10	100%	--	--	103	808	383.90	246.80
Zinc	10	100%	--	--	759	1220	936.40	158.12

Table 3-18
Summary of COPC Concentrations in Soil (mg/kg-dw)
Ballard Mine Waste Rock Dump MWD082

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	10	90%	0.36	0.36	0.75	10.90	4.35	3.86
Arsenic	10	100%	--	--	7.68	35.70	21.59	11.04
Boron	10	80%	3.57	9.42	2.93	19.70	8.04	5.68
Cadmium	10	100%	--	--	4.92	45.60	19.93	13.12
Chromium	10	100%	--	--	34.40	509	211.83	158.71
Chromium (VI)	10	0%	0.24	0.50	--	--	--	--
Cobalt	10	100%	--	--	6.77	13.80	8.91	2.49
Copper	10	100%	--	--	27.60	156	81.24	45.58
Manganese	10	100%	--	--	150	1320	460.40	350.80
Mercury	10	100%	--	--	0.09	0.54	0.31	0.18
Molybdenum	10	100%	--	--	2.61	43.40	20.04	12.61
Nickel	10	100%	--	--	121	453	252.10	122.76
Selenium	10	100%	--	--	3.51	156	35.82	44.61
Silver	10	100%	--	--	0.28	14.40	4.00	4.35
Thallium	10	100%	--	--	0.36	1.33	0.71	0.32
Uranium	10	100%	--	--	5.29	54.80	24.22	14.87
Vanadium	10	100%	--	--	33.50	342	119.25	91.52
Zinc	10	100%	--	--	394	1600	931.20	437.73

Table 3-19
Summary of COPC Concentrations in Soil (mg/kg-dw)
Ballard Mine Waste Rock Dump MWD083

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	10	60%	0.38	0.73	0.62	2.24	0.84	0.70
Arsenic	10	100%	--	--	3.51	16.10	10.86	3.86
Boron	10	90%	1.89	1.89	2.07	34.40	9.62	10.08
Cadmium	10	100%	--	--	1.94	26.20	11.39	7.66
Chromium	10	100%	--	--	17.60	195	76.54	49.87
Chromium (VI)	10	0%	0.25	0.50	--	--	--	--
Cobalt	10	100%	--	--	5.81	15.90	7.88	2.95
Copper	10	100%	--	--	13.80	61.50	38.76	15.02
Manganese	10	100%	--	--	166	5180	959.40	1513.93
Mercury	10	100%	--	--	0.02	0.20	0.12	0.06
Molybdenum	10	90%	1.09	1.09	2.71	13	6.42	4.17
Nickel	10	100%	--	--	17.70	165	106.59	45.91
Selenium	10	100%	--	--	0.87	23.70	9.22	6.30
Silver	10	100%	--	--	0.20	10.50	1.96	3.07
Thallium	10	100%	--	--	0.20	1.21	0.71	0.34
Uranium	10	100%	--	--	1.99	29.90	14.43	8.47
Vanadium	10	100%	--	--	16.90	165	66.92	42.43
Zinc	10	100%	--	--	109	564	365.70	153.72

Table 3-20
Summary of COPC Concentrations in Soil (mg/kg-dw)
Ballard Mine Waste Rock Dump MWD084

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	10	100%	--	--	0.65	6.66	3.20	2.15
Arsenic	10	100%	--	--	7.49	38.50	20.26	10.10
Boron	10	100%	--	--	8.88	30.20	17.80	7.12
Cadmium	10	100%	--	--	6.21	77.80	29.76	20.35
Chromium	10	100%	--	--	43	459	224.97	155.43
Chromium (VI)	10	0%	0.25	0.50	--	--	--	--
Cobalt	10	100%	--	--	4.17	11.20	7.06	2.26
Copper	10	100%	--	--	21.20	129	73.39	36.15
Manganese	10	100%	--	--	214	2310	519.20	636.30
Mercury	10	100%	--	--	0.05	0.42	0.25	0.13
Molybdenum	10	100%	--	--	3.58	30.70	15.79	8.82
Nickel	10	100%	--	--	63	635	229.09	160.62
Selenium	10	100%	--	--	2.67	162	46.02	49.86
Silver	10	100%	--	--	0.85	6.37	3.64	2.14
Thallium	10	100%	--	--	0.30	1.86	0.99	0.42
Uranium	10	100%	--	--	8.13	47.70	25.10	12.89
Vanadium	10	100%	--	--	43.20	478	193.42	130.61
Zinc	10	100%	--	--	223	1570	813.30	413.66

Table 3-21
Summary of COPC Concentrations in Soil (mg/kg-dw)
Ballard Mine Waste Rock Dump MWD093

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	10	100%	--	--	0.86	8.41	5.26	2.90
Arsenic	10	100%	--	--	8.73	32.70	24.33	8.41
Boron	10	80%	1.78	9.43	4.31	19.30	9.01	5.36
Cadmium	10	100%	--	--	7.52	58.40	29.75	16.88
Chromium	10	100%	--	--	78	544	294.70	146.87
Chromium (VI)	10	0%	0.24	0.50	--	--	--	--
Cobalt	10	100%	--	--	5.65	10	7.36	1.28
Copper	10	100%	--	--	35.10	132	94.15	34.35
Manganese	10	100%	--	--	194	321	254.60	38.04
Mercury	10	100%	--	--	0.12	0.47	0.33	0.14
Molybdenum	10	100%	--	--	6.88	42.50	26.88	12.67
Nickel	10	100%	--	--	134	355	253.50	79.99
Selenium	10	100%	--	--	9.46	174	50.90	49.26
Silver	10	100%	--	--	0.77	7.30	3.91	2.20
Thallium	10	100%	--	--	0.41	1.99	1.04	0.45
Uranium	10	100%	--	--	9.86	61.10	29.16	13.66
Vanadium	10	100%	--	--	55.20	473	192.37	122.31
Zinc	10	100%	--	--	398	1350	992.40	326.79

Table 3-22
Summary of COPC Concentrations in Soil (mg/kg-dw)
Ballard Mine Partially Backfilled Pit MMP035

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	10	100%	--	--	2.46	10.40	7.25	2.43
Arsenic	10	100%	--	--	11.30	36.70	23.35	7.94
Boron	10	80%	8.90	9.25	4.43	34.70	19.69	11.55
Cadmium	10	100%	--	--	8.17	105	36.04	28.98
Chromium	10	100%	--	--	86.10	492	329.81	130.05
Chromium (VI)	10	0%	0.24	0.50	--	--	--	--
Cobalt	10	100%	--	--	2.54	7.87	6.19	1.69
Copper	10	100%	--	--	48.60	118.00	82.62	22.72
Manganese	10	100%	--	--	98.80	324.00	231.98	68.65
Mercury	10	100%	--	--	0.17	0.49	0.34	0.10
Molybdenum	10	100%	--	--	7.02	35.90	26.46	10
Nickel	10	100%	--	--	139	349	256.60	68.77
Selenium	10	100%	--	--	22	130	53.41	33.56
Silver	10	100%	--	--	1.18	6.46	4.09	1.88
Thallium	10	100%	--	--	0.45	3.68	1.31	1.08
Uranium	10	100%	--	--	11.00	72.90	32.96	19.08
Vanadium	10	100%	--	--	60.70	690	279.73	211.57
Zinc	10	100%	--	--	481	1610	1122.30	352.85

Table 3-23
Summary of COPC Concentrations in Soil (mg/kg-dw)
Ballard Mine Partially Backfilled Pit MMP036

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	10	100%	--	--	1.06	9.55	4.52	2.95
Arsenic	10	100%	--	--	10.60	37.30	21.69	7.99
Boron	10	60%	1.73	9.58	11.60	30.00	12.39	9.05
Cadmium	10	100%	--	--	8.00	167.00	73.78	50.04
Chromium	10	100%	--	--	70.30	507.00	290.13	150.65
Chromium (VI)	10	0%	0.24	0.50	--	--	--	--
Cobalt	10	100%	--	--	4.03	8.19	5.82	1.52
Copper	10	100%	--	--	27.10	174	100.99	49.51
Manganese	10	100%	--	--	118	403	217.30	80.99
Mercury	10	100%	--	--	0.07	0.89	0.34	0.23
Molybdenum	10	100%	--	--	7.89	48.70	27.64	14.02
Nickel	10	100%	--	--	116	315	200.90	67.86
Selenium	10	100%	--	--	5.84	39.50	21.78	9.94
Silver	10	100%	--	--	0.91	11.70	5.59	4.30
Thallium	10	100%	--	--	0.53	3.60	1.71	0.85
Uranium	10	100%	--	--	13.30	71.60	40.29	15.43
Vanadium	10	100%	--	--	57.90	598	341.59	173.74
Zinc	10	100%	--	--	539	1810	1007.10	407.73

Table 3-24
Summary of COPC Concentrations in Soil (mg/kg-dw)
Ballard Mine Ballard Historic Facility MBS001

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	5	100%	--	--	3.58	7.63	5.29	2.09
Arsenic	5	100%	--	--	8.88	14.40	12.34	2.16
Boron	5	100%	--	--	15.60	29.30	22.36	5.67
Cadmium	5	100%	--	--	46.90	83.20	67.76	15.76
Chromium	5	100%	--	--	169	523	339	135.21
Chromium (VI)	5	0%	0.24	0.49	--	--	--	--
Cobalt	5	100%	--	--	2.78	4.83	3.65	0.79
Copper	5	100%	--	--	55.10	77.50	67.38	9.37
Manganese	5	100%	--	--	123	249	177.40	54.53
Mercury	5	100%	--	--	0.17	0.41	0.25	0.09
Molybdenum	5	100%	--	--	9.00	17.70	13.53	3.94
Nickel	5	100%	--	--	103	161	131.60	24.65
Selenium	5	100%	--	--	17.70	35.40	28.90	8.06
Silver	5	100%	--	--	3.21	5.50	4.20	0.84
Thallium	5	100%	--	--	1.17	2.65	1.98	0.62
Uranium	5	100%	--	--	42.50	87.10	66.46	18.75
Vanadium	5	100%	--	--	289	790	530.40	204.23
Zinc	5	100%	--	--	561	1120	882.80	293.22

Table 3-25
Summary of COPC Concentrations in Soil (mg/kg-dw)
Ballard Mine Historic Haul Road MHR001

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	10	100%	--	--	0.68	7.06	2.09	1.97
Arsenic	10	100%	--	--	4.41	17.50	7.53	4.36
Boron	10	80%	1.74	1.87	2.02	21.20	7.32	8.03
Cadmium	10	100%	--	--	1.44	43.60	15.36	15.11
Chromium	10	100%	--	--	14.40	289	88.88	93.34
Chromium (VI)	10	0%	0.24	0.50	--	--	--	--
Cobalt	10	100%	--	--	4.76	11.70	7.60	2.50
Copper	10	100%	--	--	17.80	72.90	32.66	17.87
Manganese	10	100%	--	--	234	3620	1036.30	1082.64
Mercury	10	100%	--	--	0.03	0.33	0.11	0.09
Molybdenum	10	60%	1.09	1.13	2.36	16.20	4.91	5.96
Nickel	10	100%	--	--	22.50	197	90.40	57.11
Selenium	10	100%	--	--	0.57	24.90	7.40	8.47
Silver	10	100%	--	--	0.10	4.03	1.12	1.28
Thallium	10	100%	--	--	0.18	1.27	0.49	0.38
Uranium	10	100%	--	--	1.10	42.00	13.88	12.98
Vanadium	10	100%	--	--	12.10	266	92.67	97.14
Zinc	10	100%	--	--	84.30	890	364.93	247.44

Table 3-26
Summary of COPC Concentrations in Soil (mg/kg-dw)
Henry Mine Waste Rock Dump MWD085

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	10	90%	0.38	0.38	1.18	9.15	4.95	2.86
Arsenic	10	100%	--	--	4.38	40.70	26.11	12.59
Boron	10	60%	9.09	9.54	9.24	27.50	13.38	9.60
Cadmium	10	100%	--	--	3.74	46.60	31.30	14.98
Chromium	10	100%	--	--	22.20	499	228.44	144.77
Chromium (VI)	10	0%	0.24	0.98	--	--	--	--
Cobalt	10	100%	--	--	5.81	11.90	8.07	1.97
Copper	10	100%	--	--	15.70	147	101.54	47.56
Manganese	10	100%	--	--	175	941	405.20	236.80
Mercury	10	100%	--	--	0.03	0.47	0.29	0.15
Molybdenum	10	90%	1.14	1.14	1.87	26.20	14.00	8.76
Nickel	10	100%	--	--	26.40	282	171.72	85.58
Selenium	10	100%	--	--	1.20	91.80	39.66	27.93
Silver	10	100%	--	--	0.22	4.95	3.15	1.62
Thallium	10	100%	--	--	0.23	2.08	1.27	0.59
Uranium	10	100%	--	--	2.80	42.70	30.87	14.18
Vanadium	10	100%	--	--	24.90	300	172.96	88.57
Zinc	10	100%	--	--	138	1220	745.70	365.98

Table 3-27
Summary of COPC Concentrations in Soil (mg/kg-dw)
Henry Mine Waste Rock Dump MWD086

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	10	70%	0.35	0.37	0.69	5.96	2.60	2.47
Arsenic	10	100%	--	--	4.00	33.40	17.52	11.03
Boron	10	80%	9.23	9.34	2.24	27.40	10.34	9.80
Cadmium	10	100%	--	--	2.13	48.90	19.64	19.01
Chromium	10	100%	--	--	19.90	456	164.16	146.55
Chromium (VI)	10	0%	0.25	1.00	--	--	--	--
Cobalt	10	100%	--	--	6.04	11.80	8.49	2.02
Copper	10	100%	--	--	11.10	148	82.92	51.95
Manganese	10	100%	--	--	222	2040	636.10	575.81
Mercury	10	100%	--	--	0.02	0.50	0.26	0.19
Molybdenum	10	70%	1.05	1.11	5.27	23	9.44	8.08
Nickel	10	100%	--	--	22.50	320	130.14	99.47
Selenium	10	100%	--	--	0.69	59.60	22.06	21.80
Silver	10	90%	0.25	0.25	0.26	6.55	2.43	2.39
Thallium	10	100%	--	--	0.17	1.66	0.78	0.54
Uranium	10	100%	--	--	1.64	48.70	24.37	19.59
Vanadium	10	100%	--	--	22.30	386	119.43	119.64
Zinc	10	100%	--	--	121	1240	591.20	409.93

Table 3-28
Summary of COPC Concentrations in Soil (mg/kg-dw)
Henry Mine Waste Rock Dump MWD087

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	10	100%	--	--	3.29	7.55	4.80	1.20
Arsenic	10	100%	--	--	16	32.10	25.65	4.98
Boron	10	70%	9.33	9.38	14.70	27.30	15.03	7.92
Cadmium	10	100%	--	--	24.80	47.50	33.56	7.60
Chromium	10	100%	--	--	215	383	282.40	67.18
Chromium (VI)	10	0%	0.50	1.00	--	--	--	--
Cobalt	10	100%	--	--	2.98	9.02	6.19	1.68
Copper	10	100%	--	--	93.90	172	126.09	23.13
Manganese	10	100%	--	--	68.80	497	266.08	131.18
Mercury	10	100%	--	--	0.29	0.45	0.39	0.05
Molybdenum	10	100%	--	--	7.08	35.70	24.01	7.92
Nickel	10	100%	--	--	166	350	260.50	49.73
Selenium	10	100%	--	--	12	96.20	35.49	23.47
Silver	10	100%	--	--	2.56	5.73	4.01	0.97
Thallium	10	100%	--	--	0.83	2.31	1.26	0.45
Uranium	10	100%	--	--	23.60	43	34.89	6.31
Vanadium	10	100%	--	--	165	273	207.10	39.67
Zinc	10	100%	--	--	825	1430	1118.00	233.79

Table 3-29
Summary of COPC Concentrations in Soil (mg/kg-dw)
Henry Mine Waste Rock Dump MWD088

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	10	90%	0.36	0.36	1.86	8.18	4.63	2.50
Arsenic	10	100%	--	--	7.92	44.50	25.56	10.56
Boron	10	100%	--	--	1.99	21.70	12.70	6.27
Cadmium	10	100%	--	--	6.33	58.20	28.92	13.37
Chromium	10	100%	--	--	40.30	501	299.43	144.62
Chromium (VI)	10	0%	0.25	1.00	--	--	--	--
Cobalt	10	100%	--	--	5.73	11.10	7.72	1.68
Copper	10	100%	--	--	35	135	102.63	33.38
Manganese	10	100%	--	--	165	1650	426.70	457.54
Mercury	10	100%	--	--	0.07	0.49	0.37	0.13
Molybdenum	10	100%	--	--	1.41	28.40	15.04	9.59
Nickel	10	100%	--	--	41.90	345	207.79	91.57
Selenium	10	100%	--	--	2.62	55.40	27.27	17.69
Silver	10	100%	--	--	0.60	5.53	2.99	1.30
Thallium	10	100%	--	--	0.33	1.91	1.18	0.45
Uranium	10	100%	--	--	6.52	64	32.99	14.33
Vanadium	10	100%	--	--	38.70	584	219.77	149.23
Zinc	10	100%	--	--	199	1320	825.30	338.48

Table 3-30
Summary of COPC Concentrations in Soil (mg/kg-dw)
Henry Mine Waste Rock Dump MWD090

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	10	100%	--	--	0.74	8.85	4.68	2.43
Arsenic	10	100%	--	--	7.89	34.90	21.93	9.13
Boron	10	70%	1.88	9.40	11.30	28.10	12.25	7.71
Cadmium	10	100%	--	--	12.60	45.50	30.71	10.08
Chromium	10	100%	--	--	41.90	519	303.73	163.76
Chromium (VI)	10	0%	0.25	0.50	--	--	--	--
Cobalt	10	100%	--	--	4.21	9.74	7.11	1.57
Copper	10	100%	--	--	26.40	148	102.63	46.11
Manganese	10	100%	--	--	123	1870	518.50	529.63
Mercury	10	100%	--	--	0.07	0.45	0.33	0.15
Molybdenum	10	100%	--	--	4.27	23.80	15.24	7.09
Nickel	10	100%	--	--	88.90	425	239.37	102.99
Selenium	10	100%	--	--	8.45	318	78.25	94.04
Silver	10	100%	--	--	0.73	7.30	4.33	2.35
Thallium	10	100%	--	--	0.74	1.59	1.22	0.26
Uranium	10	100%	--	--	8.55	47.40	33.44	11.77
Vanadium	10	100%	--	--	81.80	412	221.38	99.21
Zinc	10	100%	--	--	403	1610	951.90	350.02

Table 3-31
Summary of COPC Concentrations in Soil (mg/kg-dw)
Henry Mine Haul Road MHR002

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	10	100%	--	--	1.65	8.18	4.03	2.29
Arsenic	10	100%	--	--	7.26	45.50	18.94	12.29
Boron	10	100%	--	--	3.28	39	18.19	10.70
Cadmium	10	100%	--	--	19.40	59.50	33.63	11.13
Chromium	10	100%	--	--	70.20	332	171.30	78.63
Chromium (VI)	10	0%	0.25	0.50	--	--	--	--
Cobalt	10	100%	--	--	3.17	11.70	6.14	2.84
Copper	10	100%	--	--	22.90	168	76.51	50.61
Manganese	10	100%	--	--	148	939	346.50	239.77
Mercury	10	100%	--	--	0.06	0.48	0.22	0.16
Molybdenum	10	100%	--	--	3.87	28.70	11.15	8.86
Nickel	10	100%	--	--	78.50	293	138.85	59.64
Selenium	10	100%	--	--	7.45	57.10	21.39	17.30
Silver	10	100%	--	--	0.91	5.89	2.89	1.62
Thallium	10	100%	--	--	0.84	2.22	1.47	0.47
Uranium	10	100%	--	--	19.10	74.40	38.31	15.36
Vanadium	10	100%	--	--	77.10	556	185.71	137.95
Zinc	10	100%	--	--	407	944	639.30	199.24

Table 3-32
Summary of COPC Concentrations in Soil (mg/kg-dw)
Enoch Valley Mine Waste Rock Dump MWD091N

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	10	90%	0.37	0.37	0.36	6.37	1.98	2.25
Arsenic	10	100%	--	--	5.52	28.10	13.02	9.20
Boron	10	100%	--	--	7.05	22.80	12.16	5.64
Cadmium	10	100%	--	--	1.96	53.40	20.04	18.88
Chromium	10	100%	--	--	27.50	383	127.44	139.56
Chromium (VI)	10	0%	0.25	0.50	--	--	--	--
Cobalt	10	100%	--	--	5.35	7.86	6.70	0.74
Copper	10	100%	--	--	17.50	126	51.42	38.43
Manganese	10	100%	--	--	206	619	382.30	133.56
Mercury	10	100%	--	--	0.02	0.43	0.15	0.15
Molybdenum	10	100%	--	--	1.38	24.70	7.76	8.34
Nickel	10	100%	--	--	34.20	263	120.42	80.47
Selenium	10	100%	--	--	2.01	128	24.41	38.10
Silver	10	100%	--	--	0.16	6.06	1.94	2.15
Thallium	10	100%	--	--	0.29	1.94	0.81	0.53
Uranium	10	100%	--	--	5.22	39.80	17.34	14.12
Vanadium	10	100%	--	--	17.30	238	102.51	92.42
Zinc	10	100%	--	--	132	1100	531.10	375.48

Table 3-33
Summary of COPC Concentrations in Soil (mg/kg-dw)
Enoch Valley Mine Waste Rock Dump MWD091S

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	10	60%	0.36	0.38	0.59	2.71	0.92	0.88
Arsenic	10	100%	--	--	5.39	20.80	11.12	5.16
Boron	10	100%	--	--	3.07	15.50	8.95	3.10
Cadmium	10	100%	--	--	1.87	37.50	21.09	11.84
Chromium	10	100%	--	--	19.40	246	130.84	68.37
Chromium (VI)	10	0%	0.24	0.50	--	--	--	--
Cobalt	10	100%	--	--	5.28	12.90	7.47	2.17
Copper	10	100%	--	--	14.20	89.70	50.41	21.91
Manganese	10	100%	--	--	206	1600	693.40	434.91
Mercury	10	90%	0.01	0.01	0.03	0.27	0.12	0.08
Molybdenum	10	90%	1.14	1.14	2.41	14.90	6.58	4.56
Nickel	10	100%	--	--	21	240	116.62	59.45
Selenium	10	100%	--	--	0.53	46.50	17.26	12.95
Silver	10	100%	--	--	0.12	2.35	1.32	0.75
Thallium	10	100%	--	--	0.21	1.51	0.90	0.44
Uranium	10	100%	--	--	1.75	39	21.03	12.03
Vanadium	10	100%	--	--	26.80	251	138.08	74.87
Zinc	10	100%	--	--	57.80	829	513.98	267.56

Table 3-34
Summary of COPC Concentrations in Soil (mg/kg-dw)
Enoch Valley Mine Waste Rock Dump MWD092

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	11	73%	0.35	0.38	3.29	9.87	4.83	3.56
Arsenic	11	100%	--	--	4.57	30.20	16.76	9.58
Boron	11	91%	8.37	8.37	9.42	33.40	13.90	7.75
Cadmium	11	100%	--	--	1.48	55.60	31.92	18.86
Chromium	11	100%	--	--	20.60	534	281.15	191.94
Chromium (VI)	11	0%	0.24	0.50	--	--	--	--
Cobalt	11	100%	--	--	1.40	8.83	4.73	2.38
Copper	11	100%	--	--	15.50	229	105.61	67.58
Manganese	11	100%	--	--	36	1130	290.52	333.64
Mercury	11	100%	--	--	0.02	0.62	0.32	0.22
Molybdenum	11	82%	1.06	1.14	4.92	25.30	9.39	7.52
Nickel	11	100%	--	--	25.80	241	133.67	74.11
Selenium	11	100%	--	--	1.40	113	31.31	29.86
Silver	11	100%	--	--	0.12	6.18	2.92	2.10
Thallium	11	100%	--	--	0.23	2.03	1.02	0.55
Uranium	11	100%	--	--	1.98	64.80	32.57	19.63
Vanadium	11	100%	--	--	20.20	434	186.83	123.36
Zinc	11	100%	--	--	99	894	498.47	252.11

Table 3-35
Summary of COPC Concentrations in Soil (mg/kg-dw)
Enoch Valley Mine Active Facility MAR001

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	5	100%	--	--	0.98	2.71	1.71	0.67
Arsenic	5	100%	--	--	7.53	8.13	7.89	0.23
Boron	5	100%	--	--	8.31	16.80	12.84	3.85
Cadmium	5	100%	--	--	17.00	36.90	25.34	8.30
Chromium	5	100%	--	--	60.90	168	104.14	41.30
Chromium (VI)	5	0%	0.10	0.48	--	--	--	--
Cobalt	5	100%	--	--	3.02	4.35	3.64	0.56
Copper	5	100%	--	--	26.00	44.60	31.70	7.50
Manganese	5	100%	--	--	191	226	214.80	13.77
Mercury	5	100%	--	--	0.09	0.14	0.12	0.02
Molybdenum	5	100%	--	--	3.68	4.93	4.52	0.54
Nickel	5	100%	--	--	117	149	135	13.49
Selenium	5	100%	--	--	9.73	13.40	10.78	1.52
Silver	5	100%	--	--	0.45	1.40	0.83	0.39
Thallium	5	100%	--	--	1.07	1.98	1.57	0.37
Uranium	5	100%	--	--	12.80	35.80	21.26	9.19
Vanadium	5	100%	--	--	71.10	219	125.18	61.10
Zinc	5	100%	--	--	587	1040	770.80	185.05

Table 3-36
Summary of COPC Concentrations in Soil (mg/kg-dw)
Enoch Valley Mine Active Facility MTA001

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	5	60%	0.36	0.38	1.63	6.24	2.10	2.49
Arsenic	5	100%	--	--	5.20	13.20	7.89	3.18
Boron	5	60%	1.79	1.88	6.57	17.90	7.88	7.52
Cadmium	5	100%	--	--	0.50	72.20	25.81	29.26
Chromium	5	100%	--	--	19.90	362	116.90	141.25
Chromium (VI)	5	0%	0.24	0.50	--	--	--	--
Cobalt	5	100%	--	--	3.98	8.77	6.90	1.97
Copper	5	100%	--	--	12.50	75.20	35.64	23.85
Manganese	5	100%	--	--	284.00	1640	780.8	516.06
Mercury	5	100%	--	--	0.02	0.22	0.09	0.08
Molybdenum	5	60%	1.08	1.13	3.64	11.90	4.17	4.64
Nickel	5	100%	--	--	21.40	163.00	71.10	57.91
Selenium	5	100%	--	--	0.73	39.70	12.99	15.95
Silver	5	100%	--	--	0.18	4.40	1.64	1.72
Thallium	5	100%	--	--	0.24	3.13	1.23	1.18
Uranium	5	100%	--	--	1.25	63.80	26.79	26.04
Vanadium	5	100%	--	--	21.1	575	188.92	227.21
Zinc	5	100%	--	--	38.30	1030	400.56	402.36

Table 3-37
Summary of COPC Concentrations in Spring Grass/Forbs (mg/kg-dw)
Ballard Mine Background MBB001

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	6	0%	0.50	0.50	0.00	0.00	--	--
Arsenic	6	50%	0.07	0.07	0.09	0.37	0.12	0.13
Boron	6	100%	--	--	10.60	16.00	13.77	1.87
Cadmium	6	100%	--	--	0.13	0.54	0.32	0.14
Chromium	6	100%	--	--	1.38	1.80	1.56	0.16
Cobalt	6	0%	0.12	0.13	--	--	--	--
Copper	6	100%	--	--	5.16	5.68	5.42	0.19
Manganese	6	100%	--	--	27.40	45.80	36.48	7.41
Mercury	6	0%	0.01	0.05	--	--	--	--
Molybdenum	6	100%	--	--	1.74	99.60	27.19	40.15
Nickel	6	100%	--	--	0.69	1.38	0.96	0.26
Selenium	6	100%	--	--	0.20	1.77	0.67	0.58
Silver	6	0%	0.05	0.05	--	--	--	--
Thallium	6	0%	0.01	0.01	--	--	--	--
Uranium	6	0%	0.10	0.10	--	--	--	--
Vanadium	6	100%	--	--	0.28	0.48	0.37	0.07
Zinc	6	100%	--	--	23.20	30.40	25.77	2.73

Table 3-38
Summary of COPC Concentrations in Spring Grass/Forbs (mg/kg-dw)
Henry Mine Background MBH002

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	7	0%	0.48	0.50	0.00	0.00	--	--
Arsenic	7	100%	--	--	0.09	0.31	0.16	0.09
Boron	7	100%	--	--	6.18	16.70	10.47	3.38
Cadmium	7	100%	--	--	0.08	0.48	0.18	0.14
Chromium	7	100%	--	--	1.90	4.75	3.02	0.94
Cobalt	7	29%	0.12	0.13	0.15	0.37	0.12	--
Copper	7	100%	--	--	4.34	6.23	5.34	0.70
Manganese	7	100%	--	--	49.50	130.00	81.11	24.78
Mercury	7	14%	0.01	0.02	0.03	0.03	--	--
Molybdenum	7	86%	1.49	1.49	1.48	2.63	1.82	0.60
Nickel	7	100%	--	--	0.64	3.49	1.52	0.98
Selenium	7	100%	--	--	0.24	1.12	0.54	0.35
Silver	7	0%	0.05	0.05	--	--	--	--
Thallium	7	0%	0.01	0.01	--	--	--	--
Uranium	7	0%	0.09	0.10	--	--	--	--
Vanadium	7	100%	--	--	0.51	1.58	0.87	0.37
Zinc	7	100%	--	--	18.80	30.60	24.04	3.50

Table 3-39
Summary of COPC Concentrations in Spring Grass/Forbs (mg/kg-dw)
Enoch Valley Mine Background MBE001

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	7	0%	0.48	0.50	0.00	0.00	--	--
Arsenic	7	71%	0.08	0.15	0.09	12.30	1.86	4.61
Boron	7	100%	--	--	10.80	26.30	19.21	6.09
Cadmium	7	100%	--	--	0.14	2.52	0.91	0.91
Chromium	7	100%	--	--	1.56	3.53	2.47	0.78
Cobalt	7	29%	0.11	0.13	0.14	0.18	0.09	--
Copper	7	100%	--	--	7.91	13.20	9.89	1.91
Manganese	7	100%	--	--	41.00	82.20	54.79	13.33
Mercury	6	0%	0.01	0.02	--	--	--	--
Molybdenum	7	57%	1.46	1.50	1.71	3.63	1.62	1.04
Nickel	7	100%	--	--	1.45	3.54	2.41	0.75
Selenium	7	100%	--	--	0.36	0.64	0.49	0.11
Silver	7	0%	0.04	0.05	--	--	--	--
Thallium	7	0%	0.01	0.01	--	--	--	--
Uranium	7	14%	0.09	0.10	0.11	0.11	--	--
Vanadium	7	100%	--	--	0.49	1.14	0.79	0.25
Zinc	7	100%	--	--	28.50	47.30	38.49	6.13

Table 3-40
Summary of COPC Concentrations in Spring Grass/Forbs (mg/kg-dw)
Ballard Mine Waste Rock Dump MWD080

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	8	0%	0.48	0.50	0.00	0.00	--	--
Arsenic	8	100%	--	--	0.09	0.79	0.39	0.25
Boron	8	100%	--	--	3.46	12.90	6.74	2.96
Cadmium	8	100%	--	--	0.24	1.58	0.73	0.41
Chromium	8	100%	--	--	1.00	3.48	1.73	0.82
Cobalt	8	0%	0.12	0.13	--	--	--	--
Copper	8	100%	--	--	3.38	6.85	4.76	1.38
Manganese	8	100%	--	--	20.80	47.70	33.38	7.81
Mercury	8	13%	0.02	0.05	0.04	0.04	--	--
Molybdenum	8	100%	--	--	4.61	14.60	7.85	3.97
Nickel	8	100%	--	--	1.24	6.78	3.23	2.06
Selenium	8	100%	--	--	3.90	86	39.93	29.62
Silver	8	0%	0.05	0.05	--	--	--	--
Thallium	8	88%	0.01	0.01	0.01	0.13	0.08	0.05
Uranium	8	0%	0.09	0.10	--	--	--	--
Vanadium	8	100%	--	--	0.20	0.91	0.38	0.23
Zinc	8	100%	--	--	32	84.30	51.83	17.46

Table 3-41
Summary of COPC Concentrations in Spring Grass/Forbs (mg/kg-dw)
Ballard Mine Waste Rock Dump MWD081

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	9	0%	0.48	0.98	0.00	0.00	--	--
Arsenic	9	100%	--	--	0.13	0.70	0.34	0.19
Boron	9	89%	2.48	2.48	2.70	18.10	8.40	6.21
Cadmium	9	100%	--	--	0.97	4.54	2.55	1.30
Chromium	9	100%	--	--	2.04	9.77	4.14	2.29
Cobalt	9	11%	0.12	0.13	0.22	0.22	--	--
Copper	9	100%	--	--	4.78	7.43	5.99	1.07
Manganese	9	100%	--	--	12.80	85.40	32.11	23.54
Mercury	9	11%	0.01	0.02	0.05	0.05	--	--
Molybdenum	9	100%	--	--	2.63	19.40	10.29	4.62
Nickel	9	100%	--	--	1.63	14.10	5.87	4.12
Selenium	9	100%	--	--	8.20	38.60	18.92	10.12
Silver	9	22%	0.05	0.05	0.06	0.07	0.03	--
Thallium	9	100%	--	--	0.05	0.25	0.16	0.07
Uranium	9	22%	0.09	0.10	0.15	0.68	0.13	--
Vanadium	9	100%	--	--	0.78	6.69	1.81	1.99
Zinc	9	100%	--	--	34.80	162.00	84.56	38.52

Table 3-42
Summary of COPC Concentrations in Spring Grass/Forbs (mg/kg-dw)
Ballard Mine Waste Rock Dump MWD082

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	9	0%	0.48	0.50	0.00	0.00	--	--
Arsenic	9	78%	0.07	0.07	0.08	14.20	1.84	4.65
Boron	9	100%	--	--	3.19	30.00	12.81	9.60
Cadmium	9	100%	--	--	0.22	2.50	0.79	0.75
Chromium	9	100%	--	--	1.10	12.30	3.64	3.35
Cobalt	9	11%	0.12	0.13	0.28	0.28	--	--
Copper	9	100%	--	--	3.63	10.40	6.92	2.14
Manganese	9	100%	--	--	14.70	51.80	43.04	11.94
Mercury	8	50%	0.02	0.02	0.02	0.03	0.02	0.01
Molybdenum	9	89%	26.80	26.80	3.50	29.50	12.95	7.48
Nickel	9	100%	--	--	1.75	24.30	7.35	8.12
Selenium	9	100%	--	--	0.30	366.00	57.09	118.26
Silver	9	11%	0.05	0.05	0.10	0.10	--	--
Thallium	9	78%	0.01	0.01	0.01	0.57	0.09	0.18
Uranium	9	11%	0.10	0.10	0.34	0.34	--	--
Vanadium	9	100%	--	--	0.19	5.33	1.04	1.63
Zinc	9	100%	--	--	24.60	121.00	65.77	34.98

Table 3-43
Summary of COPC Concentrations in Spring Grass/Forbs (mg/kg-dw)
Ballard Mine Waste Rock Dump MWD083

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	9	0%	0.48	0.50	0.00	0.00	--	--
Arsenic	9	67%	0.07	0.07	0.08	0.87	0.17	0.27
Boron	9	100%	--	--	2.48	18.00	7.23	5.71
Cadmium	9	100%	--	--	0.45	1.28	0.84	0.30
Chromium	9	100%	--	--	1.71	3.32	2.51	0.57
Cobalt	9	11%	0.11	0.12	0.14	0.14	--	--
Copper	9	100%	--	--	3.53	7.07	4.99	1.05
Manganese	9	100%	--	--	25.90	59.50	43.80	13.10
Mercury	9	22%	0.02	0.02	0.02	0.02	0.01	--
Molybdenum	9	100%	--	--	2.04	13.90	5.15	3.55
Nickel	9	100%	--	--	0.80	4.23	1.67	1.06
Selenium	9	100%	--	--	0.31	54.40	8.83	17.52
Silver	9	0%	0.04	0.05	--	--	--	--
Thallium	9	67%	0.01	0.01	0.01	0.02	0.01	0.01
Uranium	9	0%	0.09	0.10	--	--	--	--
Vanadium	9	100%	--	--	0.33	1.13	0.61	0.26
Zinc	9	100%	--	--	19.30	43.10	31.77	6.93

Table 3-44
Summary of COPC Concentrations in Spring Grass/Forbs (mg/kg-dw)
Ballard Mine Waste Rock Dump MWD084

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	9	0%	0.46	0.50	0.00	0.00	--	--
Arsenic	9	100%	--	--	0.08	6.72	0.97	2.16
Boron	9	100%	--	--	4.36	9.66	6.39	1.84
Cadmium	9	100%	--	--	0.20	3.32	1.60	0.81
Chromium	9	100%	--	--	1.55	2.87	2.16	0.53
Cobalt	9	0%	0.12	0.13	--	--	--	--
Copper	9	100%	--	--	4.75	11.30	6.84	1.92
Manganese	9	100%	--	--	18.80	48.80	25.14	9.17
Mercury	9	56%	0.01	0.02	0.01	0.02	0.01	0.01
Molybdenum	9	100%	--	--	3.43	101.00	28.72	31.48
Nickel	9	100%	--	--	1.29	6.30	2.55	1.58
Selenium	9	100%	--	--	2.06	146.00	56.34	49.81
Silver	9	0%	0.05	0.05	--	--	--	--
Thallium	9	89%	0.01	0.01	0.05	0.17	0.08	0.05
Uranium	9	0%	0.09	0.10	--	--	--	--
Vanadium	9	100%	--	--	0.33	0.99	0.51	0.23
Zinc	9	100%	--	--	28.00	89.90	53.31	18.78

Table 3-45
Summary of COPC Concentrations in Spring Grass/Forbs (mg/kg-dw)
Ballard Mine Waste Rock Dump MWD093

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	9	0%	0.48	0.50	0.00	0.00	--	--
Arsenic	9	100%	--	--	0.08	9.15	1.20	2.98
Boron	9	78%	2.38	2.39	6.40	19.40	8.28	5.61
Cadmium	9	100%	--	--	0.51	3.30	1.48	1.00
Chromium	9	100%	--	--	1.53	5.97	3.00	1.47
Cobalt	9	11%	0.11	0.13	0.12	0.12	--	--
Copper	9	100%	--	--	4.14	8.72	5.99	1.23
Manganese	9	100%	--	--	27.40	59.00	40.72	8.74
Mercury	9	0%	0.02	0.02	--	--	--	--
Molybdenum	9	100%	--	--	4.56	18.00	8.58	4.45
Nickel	9	100%	--	--	2.23	7.03	4.66	1.68
Selenium	9	100%	--	--	1.19	116.00	20.40	36.75
Silver	9	0%	0.04	0.05	--	--	--	--
Thallium	9	89%	0.01	0.01	0.02	0.25	0.11	0.08
Uranium	9	22%	0.09	0.10	0.11	0.20	0.07	--
Vanadium	9	100%	--	--	0.34	2.15	0.76	0.60
Zinc	9	100%	--	--	29.80	161.00	71.33	40.49

Table 3-46
Summary of COPC Concentrations in Spring Grass/Forbs (mg/kg-dw)
Ballard Mine Partially Backfilled Pit MMP035

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	9	0%	0.49	0.50	0.00	0.00	--	--
Arsenic	9	100%	--	--	0.09	1.80	0.70	0.58
Boron	9	100%	--	--	3.26	16.90	7.60	4.10
Cadmium	9	100%	--	--	0.27	2.20	0.77	0.58
Chromium	9	100%	--	--	0.88	1.84	1.36	0.33
Cobalt	9	0%	0.12	0.13	--	--	--	--
Copper	9	100%	--	--	3.21	4.37	3.75	0.34
Manganese	9	100%	--	--	14.20	35.80	24.66	7.48
Mercury	9	0%	0.02	0.05	--	--	--	--
Molybdenum	9	100%	--	--	3.48	28.80	11.09	7.19
Nickel	9	100%	--	--	0.86	4.36	2.77	1.14
Selenium	9	100%	--	--	8.92	122.00	47.70	37.91
Silver	9	0%	0.05	0.05	--	--	--	--
Thallium	9	100%	--	--	0.01	0.35	0.10	0.11
Uranium	9	0%	0.10	0.10	--	--	--	--
Vanadium	9	100%	--	--	0.16	0.37	0.26	0.07
Zinc	9	100%	--	--	35.90	111.00	63.49	22.90

Table 3-47
Summary of COPC Concentrations in Spring Grass/Forbs (mg/kg-dw)
Ballard Mine Partially Backfilled Pit MMP036

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	9	0%	0.48	0.50	0.00	0.00	--	--
Arsenic	9	100%	--	--	0.11	8.88	1.20	2.88
Boron	9	100%	--	--	2.57	16.50	6.90	4.45
Cadmium	9	100%	--	--	1.10	4.52	2.23	1.04
Chromium	9	100%	--	--	1.56	7.53	3.38	1.96
Cobalt	9	0%	0.12	0.13	--	--	--	--
Copper	9	100%	--	--	3.62	10.30	5.74	1.93
Manganese	9	100%	--	--	27.10	45.80	35.39	6.66
Mercury	4	25%	0.02	0.02	0.01	0.01	--	--
Molybdenum	9	89%	1.49	1.49	2.70	9.47	5.51	2.77
Nickel	9	100%	--	--	1.09	11.70	4.25	3.18
Selenium	9	100%	--	--	0.37	20.40	6.54	7.54
Silver	9	44%	0.05	0.05	0.05	0.16	0.05	0.04
Thallium	9	100%	--	--	0.02	0.44	0.14	0.15
Uranium	9	22%	0.10	0.10	0.15	0.42	0.10	--
Vanadium	9	100%	--	--	0.38	7.06	1.92	2.07
Zinc	9	100%	--	--	32.30	151.00	68.99	39.17

Table 3-48
Summary of COPC Concentrations in Spring Grass/Forbs (mg/kg-dw)
Ballard Mine Historic Facility MBS001

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	5	0%	0.49	0.49	0.00	0.00	--	--
Arsenic	5	100%	--	--	0.25	0.44	0.32	0.08
Boron	5	100%	--	--	3.06	44.10	16.37	17.70
Cadmium	5	100%	--	--	0.15	2.94	1.45	1.02
Chromium	5	100%	--	--	1.24	2.05	1.51	0.35
Cobalt	5	0%	0.12	0.12	--	--	--	--
Copper	5	100%	--	--	2.68	7.83	5.22	1.91
Manganese	5	100%	--	--	11.70	99.20	34.30	36.71
Mercury	5	20%	0.02	0.05	0.05	0.05	--	--
Molybdenum	5	100%	--	--	1.96	425.00	90.07	187.27
Nickel	5	100%	--	--	1.31	6.53	3.66	2.22
Selenium	5	100%	--	--	4.35	27.50	14.70	10.23
Silver	5	0%	0.05	0.05	--	--	--	--
Thallium	5	100%	--	--	0.05	0.32	0.19	0.11
Uranium	5	0%	0.10	0.10	--	--	--	--
Vanadium	5	100%	--	--	0.30	1.27	0.58	0.40
Zinc	5	100%	--	--	35.60	67.00	51.02	14.15

Table 3-49
Summary of COPC Concentrations in Spring Grass/Forbs (mg/kg-dw)
Ballard Mine Historic Haul Road MHR001

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	9	0%	0.49	0.50	0.00	0.00	--	--
Arsenic	9	78%	0.07	0.07	0.09	0.73	0.18	0.21
Boron	9	100%	--	--	5.00	19.20	12.23	4.40
Cadmium	9	100%	--	--	0.17	1.25	0.57	0.42
Chromium	9	100%	--	--	0.94	2.24	1.40	0.43
Cobalt	9	22%	0.12	0.12	0.13	0.13	0.08	--
Copper	9	100%	--	--	4.36	6.94	5.47	0.90
Manganese	9	100%	--	--	17.20	60.90	45.54	15.65
Mercury	9	0%	0.02	0.05	--	--	--	--
Molybdenum	9	78%	1.48	1.49	2.57	9.56	4.72	3.24
Nickel	9	100%	--	--	0.58	6.95	2.43	2.04
Selenium	9	100%	--	--	0.38	69.20	9.61	22.49
Silver	9	0%	0.05	0.05	--	--	--	--
Thallium	9	33%	0.01	0.01	0.01	0.05	0.01	0.02
Uranium	9	11%	0.09	0.10	0.12	0.12	--	--
Vanadium	9	100%	--	--	0.16	1.64	0.50	0.47
Zinc	9	100%	--	--	17.00	78.90	36.43	19.25

Table 3-50
Summary of COPC Concentrations in Spring Grass/Forbs (mg/kg-dw)
Henry Mine Waste Rock Dump MWD085

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	8	0%	0.48	0.50	0.00	0.00	--	--
Arsenic	8	75%	0.07	0.08	0.08	0.25	0.12	0.07
Boron	8	100%	--	--	3.55	10.50	7.76	2.34
Cadmium	8	100%	--	--	0.65	2.13	1.09	0.50
Chromium	8	100%	--	--	1.50	4.48	3.12	1.10
Cobalt	8	13%	0.12	0.13	0.17	0.17	--	--
Copper	8	100%	--	--	4.09	8.14	6.00	1.45
Manganese	8	100%	--	--	18.00	43.10	30.04	9.28
Mercury	8	25%	0.01	0.02	0.01	0.01	0.01	--
Molybdenum	8	100%	--	--	5.55	58.40	17.36	18.02
Nickel	8	100%	--	--	1.89	5.73	3.19	1.35
Selenium	8	100%	--	--	1.24	19.20	5.08	5.99
Silver	8	0%	0.05	0.05	--	--	--	--
Thallium	8	100%	--	--	0.08	0.24	0.15	0.05
Uranium	8	0%	0.09	0.10	--	--	--	--
Vanadium	8	100%	--	--	0.27	1.19	0.76	0.31
Zinc	8	100%	--	--	25.20	69.00	42.21	15.32

Table 3-51
Summary of COPC Concentrations in Spring Grass/Forbs (mg/kg-dw)
Henry Mine Waste Rock Dump MWD086

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	9	0%	0.50	0.50	0.00	0.00	--	--
Arsenic	9	78%	0.07	0.07	0.09	0.61	0.19	0.20
Boron	9	100%	--	--	2.90	15.50	8.26	4.02
Cadmium	9	100%	--	--	0.40	1.66	0.93	0.42
Chromium	9	100%	--	--	1.67	2.60	2.07	0.32
Cobalt	9	0%	0.12	0.12	--	--	--	--
Copper	9	100%	--	--	5.21	10.80	7.81	1.76
Manganese	9	100%	--	--	22.30	44.40	31.76	7.46
Mercury	9	22%	0.01	0.02	0.01	0.01	0.01	--
Molybdenum	9	100%	--	--	4.74	13.30	7.70	3.21
Nickel	9	100%	--	--	1.78	6.00	3.63	1.65
Selenium	9	100%	--	--	0.77	46.00	12.36	16.48
Silver	9	0%	0.05	0.05	--	--	--	--
Thallium	9	100%	--	--	0.02	0.24	0.10	0.08
Uranium	9	0%	0.09	0.10	--	--	--	--
Vanadium	9	100%	--	--	0.36	0.59	0.44	0.08
Zinc	9	100%	--	--	28.70	67.20	46.03	15.53

Table 3-52
Summary of COPC Concentrations in Spring Grass/Forbs (mg/kg-dw)
Henry Mine Waste Rock Dump MWD087

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	9	0%	0.50	0.50	0.00	0.00	--	--
Arsenic	9	78%	0.07	0.07	0.07	1.28	0.23	0.40
Boron	9	100%	--	--	3.33	28.30	10.26	7.94
Cadmium	9	100%	--	--	0.65	5.29	1.78	1.45
Chromium	9	100%	--	--	1.48	4.38	2.70	0.97
Cobalt	9	11%	0.12	0.13	0.15	0.15	--	--
Copper	9	100%	--	--	5.98	11.10	8.24	2.00
Manganese	9	100%	--	--	12.60	29.40	23.16	5.84
Mercury	9	22%	0.01	0.02	0.01	0.02	0.01	--
Molybdenum	9	100%	--	--	10.20	74.60	45.36	23.70
Nickel	9	100%	--	--	1.78	9.28	4.13	2.24
Selenium	9	100%	--	--	0.45	146.00	17.06	48.35
Silver	9	11%	0.05	0.05	0.09	0.09	--	--
Thallium	9	100%	--	--	0.06	0.71	0.23	0.20
Uranium	9	11%	0.09	0.10	0.21	0.21	--	--
Vanadium	9	100%	--	--	0.27	2.38	0.73	0.65
Zinc	9	100%	--	--	41.60	93.10	60.08	18.43

Table 3-53
Summary of COPC Concentrations in Spring Grass/Forbs (mg/kg-dw)
Henry Mine Waste Rock Dump MWD088

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	8	0%	0.50	0.50	0.00	0.00	--	--
Arsenic	8	88%	0.07	0.07	0.09	0.43	0.18	0.14
Boron	8	100%	--	--	5.25	15.10	8.49	3.23
Cadmium	8	100%	--	--	0.62	2.24	1.23	0.49
Chromium	8	100%	--	--	2.30	9.23	4.19	2.36
Cobalt	8	13%	0.12	0.12	0.22	0.22	--	--
Copper	8	100%	--	--	5.37	8.43	7.13	1.05
Manganese	8	100%	--	--	20.50	54.80	35.83	10.74
Mercury	8	0%	0.02	0.02	--	--	--	--
Molybdenum	8	100%	--	--	5.42	14.90	9.59	3.41
Nickel	8	100%	--	--	1.94	8.13	4.74	2.16
Selenium	8	100%	--	--	0.47	4.52	1.49	1.37
Silver	8	25%	0.05	0.05	0.05	0.08	0.04	--
Thallium	8	100%	--	--	0.03	0.46	0.19	0.16
Uranium	8	25%	0.10	0.10	0.17	0.36	0.10	--
Vanadium	8	100%	--	--	0.50	2.95	1.20	0.95
Zinc	8	100%	--	--	28.60	109.00	57.69	24.27

Table 3-54
Summary of COPC Concentrations in Spring Grass/Forbs (mg/kg-dw)
Henry Mine Waste Rock Dump MWD090

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	8	0%	0.49	0.50	0.00	0.00	--	--
Arsenic	8	100%	--	--	0.09	0.91	0.33	0.31
Boron	8	100%	--	--	3.96	15.40	7.26	4.39
Cadmium	8	100%	--	--	0.36	2.20	0.92	0.64
Chromium	8	100%	--	--	1.38	1.98	1.70	0.21
Copper	8	0%	0.12	0.13	--	--	--	--
Copper, total	8	100%	--	--	5.29	8.32	6.99	1.00
Manganese	8	100%	--	--	14.60	32.90	19.50	5.97
Mercury	8	75%	0.02	0.02	0.01	0.02	0.01	0.00
Molybdenum	8	100%	--	--	6.25	24.90	13.66	8.02
Nickel	8	100%	--	--	1.60	4.40	2.81	1.02
Selenium	8	100%	--	--	2.02	134.00	38.15	47.04
Silver	8	0%	0.05	0.05	--	--	--	--
Thallium	8	100%	--	--	0.12	0.28	0.17	0.05
Uranium	8	0%	0.09	0.10	--	--	--	--
Vanadium	8	100%	--	--	0.33	0.57	0.41	0.09
Zinc	8	100%	--	--	37.30	56.40	45.83	7.19

Table 3-55
Summary of COPC Concentrations in Spring Grass/Forbs (mg/kg-dw)
Henry Mine Historic Haul Road MHR002

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	8	0%	0.48	0.50	0.00	0.00	--	--
Arsenic	8	100%	--	--	0.07	0.17	0.12	0.03
Boron	8	88%	2.44	2.44	3.24	17.60	10.02	5.40
Cadmium	8	100%	--	--	0.87	3.70	1.60	0.91
Chromium	8	100%	--	--	1.93	4.61	2.96	0.85
Cobalt	8	0%	0.12	0.13	--	--	--	--
Copper	8	100%	--	--	6.13	7.45	6.67	0.42
Manganese	8	100%	--	--	19.60	46.40	32.53	8.43
Mercury	8	13%	0.01	0.02	0.03	0.03	--	--
Molybdenum	8	88%	1.46	1.46	1.96	11.30	5.88	4.09
Nickel	8	100%	--	--	2.52	7.85	4.70	1.53
Selenium	8	100%	--	--	1.27	8.26	3.55	2.14
Silver	8	13%	0.05	0.05	0.08	0.08	--	--
Thallium	8	100%	--	--	0.12	0.39	0.22	0.08
Uranium	8	25%	0.10	0.10	0.16	0.17	0.08	--
Vanadium	8	100%	--	--	0.55	1.82	0.97	0.46
Zinc	8	100%	--	--	42.40	81.90	56.09	15.10

Table 3-56
Summary of COPC Concentrations in Spring Grass/Forbs (mg/kg-dw)
Enoch Valley Mine Waste Rock Dump MWD091N

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	6	0%	0.49	0.50	0.00	0.00	--	--
Arsenic	6	100%	--	--	0.08	0.32	0.17	0.11
Boron	6	100%	--	--	2.65	10.70	5.75	2.90
Cadmium	6	100%	--	--	0.14	1.15	0.52	0.34
Chromium	6	100%	--	--	1.38	2.44	2.01	0.40
Cobalt	6	0%	0.12	0.13	--	--	--	--
Copper	6	100%	--	--	3.86	8.65	5.35	1.76
Manganese	6	100%	--	--	16.40	58.20	34.12	14.47
Mercury	4	25%	0.02	0.02	0.03	0.03	--	--
Molybdenum	6	100%	--	--	1.96	25.60	9.87	8.57
Nickel	6	100%	--	--	1.36	2.75	1.87	0.52
Selenium	6	100%	--	--	1.75	27.70	11.21	11.53
Silver	6	0%	0.05	0.05	--	--	--	--
Thallium	6	83%	0.01	0.01	0.02	0.14	0.07	0.06
Uranium	6	0%	0.09	0.10	--	--	--	--
Vanadium	6	100%	--	--	0.21	0.90	0.46	0.24
Zinc	6	100%	--	--	24.90	47.90	30.90	8.83

Table 3-57
Summary of COPC Concentrations in Spring Grass/Forbs (mg/kg-dw)
Enoch Valley Mine Waste Rock Dump MWD091S

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	7	14%	0.48	0.49	0.50	0.50	--	--
Arsenic	7	100%	--	--	0.11	0.30	0.19	0.08
Boron	7	100%	--	--	3.78	12.20	7.26	2.93
Cadmium	7	100%	--	--	0.32	2.54	0.96	0.72
Chromium	7	100%	--	--	2.41	9.22	4.48	2.23
Cobalt	7	29%	0.12	0.12	0.15	0.21	0.09	--
Copper	7	100%	--	--	4.81	7.93	6.31	1.10
Manganese	7	100%	--	--	26.90	90.80	53.30	20.79
Mercury	7	29%	0.01	0.01	0.01	0.01	0.01	--
Molybdenum	7	86%	1.48	1.48	3.87	20.70	8.37	6.50
Nickel	7	100%	--	--	1.54	7.30	4.21	2.19
Selenium	7	100%	--	--	0.56	26.40	7.21	9.09
Silver	7	0%	0.05	0.05	--	--	--	--
Thallium	7	100%	--	--	0.03	0.06	0.04	0.01
Uranium	7	57%	0.10	0.10	0.10	0.19	0.10	0.05
Vanadium	7	100%	--	--	0.68	2.37	1.44	0.67
Zinc	7	100%	--	--	18.90	52.00	39.99	11.50

Table 3-58
Summary of COPC Concentrations in Spring Grass/Forbs (mg/kg-dw)
Enoch Valley Mine Waste Rock Dump MWD092

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	7	0%	0.48	0.50	0.00	0.00	--	--
Arsenic	7	86%	0.07	0.07	0.14	0.94	0.32	0.31
Boron	7	86%	2.46	2.46	2.53	26.70	7.96	8.84
Cadmium	7	100%	--	--	0.87	2.67	1.78	0.64
Chromium	7	100%	--	--	2.62	4.51	3.82	0.68
Cobalt	7	14%	0.12	0.13	0.13	0.13	--	--
Copper	7	100%	--	--	5.19	16.70	9.59	3.96
Manganese	7	100%	--	--	19.60	81.20	40.81	20.76
Mercury	7	14%	0.02	0.02	0.03	0.03	--	--
Molybdenum	7	100%	--	--	4.63	33.90	11.35	10.16
Nickel	7	100%	--	--	3.32	17.20	7.76	4.82
Selenium	7	100%	--	--	1.88	71.10	26.64	23.79
Silver	7	57%	0.05	0.05	0.05	0.08	0.05	0.02
Thallium	7	100%	--	--	0.04	0.35	0.15	0.11
Uranium	7	57%	0.09	0.10	0.12	0.26	0.12	0.08
Vanadium	7	100%	--	--	0.59	2.08	1.34	0.60
Zinc	7	100%	--	--	35.90	98.20	50.17	21.87

Table 3-59
Summary of COPC Concentrations in Spring Grass/Forbs (mg/kg-dw)
Enoch Valley Mine Active Facility MAR001

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	2	0%	0.49	0.50	0.00	0.00	--	--
Arsenic	2	100%	--	--	0.17	0.34	0.25	--
Boron	2	100%	--	--	7.67	45.90	26.79	--
Cadmium	2	100%	--	--	0.79	2.50	1.64	--
Chromium	2	100%	--	--	3.45	4.84	4.15	--
Cobalt	2	50%	0.12	0.12	0.18	0.18	--	--
Copper	2	100%	--	--	6.96	7.28	7.12	--
Manganese	2	100%	--	--	25.80	43.50	34.65	--
Mercury	2	0%	0.02	0.02	--	--	--	--
Molybdenum	2	50%	1.48	1.48	7.93	7.93	--	--
Nickel	2	100%	--	--	5.05	6.26	5.66	--
Selenium	2	100%	--	--	1.54	16.00	8.77	--
Silver	2	0%	0.05	0.05	--	--	--	--
Thallium	2	100%	--	--	0.02	0.04	0.03	--
Uranium	2	50%	0.09	0.09	0.13	0.13	--	--
Vanadium	2	100%	--	--	1.91	2.02	1.97	--
Zinc	2	100%	--	--	37.80	65.50	51.65	--

Table 3-60
Summary of COPC Concentrations in Spring Grass/Forbs (mg/kg-dw)
Enoch Valley Mine Active Facility MTA001

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	5	0%	0.49	0.50	0.00	0.00	--	--
Arsenic	5	60%	0.07	0.07	0.27	0.51	0.24	0.21
Boron	5	100%	--	--	3.03	22.30	11.23	10.05
Cadmium	5	100%	--	--	0.10	2.27	1.01	1.00
Chromium	5	100%	--	--	1.99	8.05	4.15	2.59
Cobalt	5	40%	0.12	0.12	0.16	0.67	0.20	--
Copper	5	100%	--	--	5.11	9.49	6.60	1.78
Manganese	5	100%	--	--	35.30	137.00	65.60	41.72
Mercury	5	0%	0.02	0.02	--	--	--	--
Molybdenum	5	80%	1.50	1.50	1.75	10.60	3.97	3.91
Nickel	5	100%	--	--	0.41	6.25	3.23	2.58
Selenium	5	100%	--	--	0.39	5.56	2.38	2.08
Silver	5	20%	0.05	0.05	0.07	0.07	--	--
Thallium	5	80%	0.01	0.01	0.02	0.11	0.05	0.05
Uranium	5	40%	0.10	0.10	0.16	2.52	0.57	--
Vanadium	5	100%	--	--	0.36	9.18	3.11	3.67
Zinc	5	100%	--	--	17.10	46.40	34.12	12.87

Table 3-61
Summary of COPC Concentrations in Shrub Leaf Samples (mg/kg-dw)
Ballard Mine Background MBB001

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	13	0%	0.50	0.50	0.00	0.00	--	--
Arsenic	13	0%	0.07	0.08	--	--	--	--
Boron	13	100%	--	--	17.20	43.90	28.05	9.88
Cadmium	13	100%	--	--	0.03	1.20	0.40	0.42
Chromium	13	100%	--	--	0.87	1.79	1.29	0.29
Cobalt	13	8%	0.12	0.13	0.14	0.14	--	--
Copper, total	13	100%	--	--	4.45	7.20	6.02	0.94
Manganese	13	100%	--	--	30.20	102.00	62.23	23.44
Mercury	13	23%	0.01	0.05	0.02	0.04	0.01	0.01
Molybdenum	13	54%	1.48	1.50	1.71	10.40	2.15	2.59
Nickel	13	100%	--	--	1.04	3.64	1.95	0.81
Selenium	13	85%	0.10	0.10	0.10	1.16	0.45	0.36
Silver	13	0%	0.05	0.05	--	--	--	--
Thallium	13	0%	0.01	0.01	--	--	--	--
Uranium	13	0%	0.09	0.10	--	--	--	--
Vanadium	13	100%	--	--	0.25	0.53	0.36	0.09
Zinc	13	100%	--	--	18.50	87.60	41.08	24.25

Table 3-62
Summary of COPC Concentrations in Shrub Leaf Samples (mg/kg-dw)
Henry Mine Background MBH002

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	20	0%	0.48	0.97	0.00	0.00	--	--
Arsenic	20	55%	0.07	0.07	0.08	5.87	0.40	1.29
Boron	20	100%	--	--	9.49	52.00	32.33	11.65
Cadmium	20	75%	0.02	0.02	0.02	0.18	0.07	0.05
Chromium	20	100%	--	--	1.22	3.45	2.26	0.59
Cobalt	20	15%	0.11	0.13	0.14	0.42	0.09	0.09
Copper, total	20	100%	--	--	3.16	19.50	8.17	5.22
Manganese	20	100%	--	--	10.20	269.00	107.15	71.28
Mercury	20	25%	0.01	0.02	0.01	0.06	0.01	0.01
Molybdenum	20	15%	1.43	2.91	1.54	2.32	1.08	0.50
Nickel	20	100%	--	--	0.77	2.23	1.23	0.41
Selenium	20	100%	--	--	0.17	0.81	0.42	0.21
Silver	20	35%	0.05	0.05	0.09	0.37	0.10	0.12
Thallium	20	0%	0.01	0.01	--	--	--	--
Uranium	20	0%	0.09	0.10	--	--	--	--
Vanadium	20	100%	--	--	0.31	1.49	0.63	0.28
Zinc	20	100%	--	--	4.80	65.00	21.49	13.51

Table 3-63
Summary of COPC Concentrations in Shrub Leaf Samples (mg/kg-dw)
Enoch Valley Mine Background MBE001

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	20	5%	0.49	5.00	5.41	5.41	--	--
Arsenic	20	25%	0.07	0.15	0.10	0.47	0.10	0.12
Boron	20	100%	--	--	13.20	364.00	39.16	76.64
Cadmium	20	85%	0.02	0.05	0.03	1.73	0.40	0.58
Chromium	20	100%	--	--	0.98	2.69	1.66	0.46
Cobalt	20	5%	0.11	0.25	0.30	0.30	--	--
Copper, total	20	100%	--	--	3.98	14.40	7.76	3.24
Manganese	20	100%	--	--	18.80	1170.00	192.21	254.92
Mercury	12	33%	0.01	0.02	0.02	0.09	0.02	0.02
Molybdenum	20	5%	1.45	15.00	7.53	7.53	--	--
Nickel	20	100%	--	--	0.93	4.94	2.64	1.13
Selenium	20	90%	0.09	0.20	0.10	1.65	0.39	0.42
Silver	20	0%	0.04	0.10	--	--	--	--
Thallium	20	5%	0.01	0.02	0.01	0.01	--	--
Uranium	20	5%	0.09	0.20	0.10	0.10	--	--
Vanadium	20	100%	--	--	0.30	1.73	0.67	0.41
Zinc	20	100%	--	--	19.30	289.00	43.18	59.31

Table 3-64
Summary of COPC Concentrations in Shrub Leaf Samples (mg/kg-dw)
Ballard Mine

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	12	0%	0.46	0.50	0.00	0.00	--	--
Arsenic	12	83%	0.07	0.07	0.11	9.41	1.83	2.98
Boron	12	100%	--	--	18.60	49.70	28.45	10.68
Cadmium	12	100%	--	--	0.05	2.99	0.66	0.83
Chromium	12	100%	--	--	1.08	3.97	1.79	0.82
Cobalt	12	0%	0.12	0.13	--	--	--	--
Copper	12	100%	--	--	2.71	17.70	6.46	3.88
Manganese	12	100%	--	--	11.20	233.00	55.49	62.82
Mercury	12	33%	0.01	0.05	0.01	0.03	0.01	0.01
Molybdenum	12	58%	1.46	1.49	1.70	16.70	3.61	4.75
Nickel	12	100%	--	--	0.82	26.10	8.21	7.61
Selenium	12	100%	--	--	0.37	189.00	38.51	58.59
Silver	12	0%	0.05	0.05	--	--	--	--
Thallium	12	58%	0.01	0.01	0.03	0.17	0.05	0.06
Uranium	12	0%	0.09	0.10	--	--	--	--
Vanadium	12	100%	--	--	0.30	2.52	0.70	0.66
Zinc	12	100%	--	--	28.40	172.00	51.67	39.56

Table 3-65
Summary of COPC Concentrations in Shrub Leaf Samples (mg/kg-dw)
Henry Mine

Analyte	n	% Detection	Undetected min	Undetected max	Detected min	Detected max	Mean	Stdev
Antimony	0	--	--	--	--	--	--	--
Arsenic	0	--	--	--	--	--	--	--
Boron	0	--	--	--	--	--	--	--
Cadmium	0	--	--	--	--	--	--	--
Chromium	0	--	--	--	--	--	--	--
Cobalt	0	--	--	--	--	--	--	--
Copper	0	--	--	--	--	--	--	--
Manganese	0	--	--	--	--	--	--	--
Mercury	0	--	--	--	--	--	--	--
Molybdenum	0	--	--	--	--	--	--	--
Nickel	0	--	--	--	--	--	--	--
Selenium	0	--	--	--	--	--	--	--
Silver	0	--	--	--	--	--	--	--
Thallium	0	--	--	--	--	--	--	--
Uranium	0	--	--	--	--	--	--	--
Vanadium	0	--	--	--	--	--	--	--
Zinc	0	--	--	--	--	--	--	--

Table 3-66
Summary of COPC Concentrations in Shrub Leaf Samples (mg/kg-dw)
Enoch Valley Mine

Analyte	n	% Detection	Undetected min	Undetected max	Detected min	Detected max	Mean	Stdev
Antimony	2	0%	0.50	1.17	0.00	0.00	--	--
Arsenic	2	50%	0.07	0.07	7.78	7.78	--	--
Boron	2	100%	--	--	11.70	18.40	15.05	--
Cadmium	2	100%	--	--	1.09	4.39	2.74	--
Chromium	2	100%	--	--	2.89	7.09	4.99	--
Cobalt	2	50%	0.13	0.13	0.23	0.23	--	--
Copper, total	2	100%	--	--	6.66	10.70	8.68	--
Manganese	2	100%	--	--	19.60	24.40	22.00	--
Mercury	2	50%	0.02	0.02	0.01	0.01	--	--
Molybdenum	2	50%	1.49	1.49	1.73	1.73	--	--
Nickel	2	100%	--	--	4.56	14.10	9.33	--
Selenium	2	100%	--	--	8.26	18.00	13.13	--
Silver	2	50%	0.05	0.05	0.11	0.11	--	--
Thallium	2	100%	--	--	0.01	0.04	0.03	--
Uranium	2	50%	0.10	0.10	0.28	0.28	--	--
Vanadium	2	100%	--	--	1.07	2.77	1.92	--
Zinc	2	100%	--	--	30.50	38.10	34.30	--

Table 3-67
Summary of COPC Concentrations in Shrub Stem Samples (mg/kg-dw)
Ballard Mine Background MBB001

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	13	0%	0.49	1.09	0.00	0.00	--	--
Arsenic	13	8%	0.07	0.08	17.10	17.10	--	--
Boron	13	100%	--	--	7.91	16.60	12.13	2.12
Cadmium	13	100%	--	--	0.09	1.95	0.57	0.59
Chromium	13	100%	--	--	0.66	3.65	1.22	0.76
Cobalt	13	0%	0.12	0.22	--	--	--	--
Copper	13	100%	--	--	4.26	11.50	7.32	2.06
Manganese	13	100%	--	--	10.60	226.00	57.43	64.86
Mercury	13	0%	0.01	0.05	--	--	--	--
Molybdenum	13	8%	1.48	1.54	24.40	24.40	--	--
Nickel	13	100%	--	--	0.48	1.47	1.00	0.25
Selenium	13	62%	0.09	0.10	0.13	3.18	0.41	0.85
Silver	13	8%	0.05	0.09	38.20	38.20	--	--
Thallium	13	0%	0.01	0.02	--	--	--	--
Uranium	13	0%	0.09	0.18	--	--	--	--
Vanadium	13	100%	--	--	0.17	0.97	0.32	0.21
Zinc	13	100%	--	--	17.90	61.10	35.68	13.41

Table 3-68
Summary of COPC Concentrations in Shrub Stem Samples (mg/kg-dw)
Henry Mine Background MBH002

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	20	0%	0.46	1.66	0.00	0.00	--	--
Arsenic	20	35%	0.07	0.07	0.08	6.70	0.40	1.48
Boron	20	95%	2.50	2.50	6.42	39.10	15.90	9.31
Cadmium	20	95%	0.02	0.02	0.06	0.27	0.13	0.07
Chromium	20	100%	--	--	0.96	4.12	2.42	0.77
Cobalt	20	10%	0.12	0.13	0.13	0.24	0.07	--
Copper	20	100%	--	--	2.05	15.00	6.78	3.31
Manganese	20	100%	--	--	0.60	542.00	122.66	146.81
Mercury	20	10%	0.01	0.02	0.01	0.07	0.01	--
Molybdenum	20	5%	1.39	4.97	2.23	2.23	--	--
Nickel	20	100%	--	--	0.42	1.92	0.84	0.37
Selenium	20	90%	0.10	0.12	0.11	1.20	0.27	0.26
Silver	20	35%	0.05	0.05	0.05	10.50	0.57	2.34
Thallium	20	0%	0.01	0.01	--	--	--	--
Uranium	20	5%	0.09	0.11	0.16	0.16	--	--
Vanadium	20	100%	--	--	0.27	1.05	0.60	0.19
Zinc	20	100%	--	--	0.55	33.90	15.99	8.02

Table 3-69
Summary of COPC Concentrations in Shrub Stem Samples (mg/kg-dw)
Enoch Valley Mine Background MBE001

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	20	0%	0.47	8.62	0.00	0.00	--	--
Arsenic	20	20%	0.07	0.33	0.10	12.40	1.06	3.17
Boron	20	95%	43.10	43.10	6.32	40.00	16.05	8.22
Cadmium	20	95%	0.02	0.02	0.04	1.89	0.48	0.54
Chromium	20	100%	--	--	0.14	2.62	1.63	0.60
Cobalt	20	0%	0.11	0.27	--	--	--	--
Copper	20	95%	0.15	0.15	3.73	11.50	6.64	2.81
Manganese	20	100%	--	--	22.50	591.00	144.30	156.10
Mercury	17	12%	0.01	0.02	0.03	0.05	0.01	--
Molybdenum	20	0%	1.41	25.90	--	--	--	--
Nickel	20	95%	0.20	0.20	0.64	5.33	1.57	1.19
Selenium	20	65%	0.09	0.15	0.10	1.31	0.27	0.30
Silver	20	0%	0.04	0.11	--	--	--	--
Thallium	20	5%	0.01	0.02	0.01	0.01	--	--
Uranium	20	0%	0.09	0.22	--	--	--	--
Vanadium	20	95%	0.12	0.12	0.37	1.19	0.65	0.30
Zinc	20	100%	--	--	11.60	52.60	28.44	11.66

Table 3-70
Summary of COPC Concentrations in Shrub Stem Samples (mg/kg-dw)
Ballard Mine

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	12	0%	0.47	0.50	0.00	0.00	--	--
Arsenic	12	58%	0.07	0.07	0.08	0.40	0.12	0.11
Boron	12	100%	--	--	7.00	17.40	11.54	3.59
Cadmium	12	100%	--	--	0.30	3.83	0.91	0.97
Chromium	12	100%	--	--	0.71	2.54	1.42	0.56
Cobalt	12	8%	0.12	0.12	0.20	0.20	--	--
Copper	12	100%	--	--	3.01	13.00	5.32	2.84
Manganese	12	100%	--	--	3.91	559.00	94.08	172.54
Mercury	11	9%	0.01	0.02	0.03	0.03	--	--
Molybdenum	12	33%	1.41	1.50	1.82	14.90	3.07	4.64
Nickel	12	100%	--	--	0.57	20.20	5.33	5.97
Selenium	12	100%	--	--	0.48	22.60	7.55	7.23
Silver	12	8%	0.05	0.05	0.43	0.43	--	--
Thallium	12	75%	0.01	0.01	0.01	0.59	0.11	0.17
Uranium	12	0%	0.10	0.10	--	--	--	--
Vanadium	12	100%	--	--	0.16	1.04	0.48	0.28
Zinc	12	100%	--	--	12.80	102.00	36.26	24.31

Table 3-71
Summary of COPC Concentrations in Shrub Stem Samples (mg/kg-dw)
Henry Mine

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	0	--	--	--	--	--	--	--
Arsenic	0	--	--	--	--	--	--	--
Boron	0	--	--	--	--	--	--	--
Cadmium	0	--	--	--	--	--	--	--
Chromium	0	--	--	--	--	--	--	--
Cobalt	0	--	--	--	--	--	--	--
Copper	0	--	--	--	--	--	--	--
Manganese	0	--	--	--	--	--	--	--
Mercury	0	--	--	--	--	--	--	--
Molybdenum	0	--	--	--	--	--	--	--
Nickel	0	--	--	--	--	--	--	--
Selenium	0	--	--	--	--	--	--	--
Silver	0	--	--	--	--	--	--	--
Thallium	0	--	--	--	--	--	--	--
Uranium	0	--	--	--	--	--	--	--
Vanadium	0	--	--	--	--	--	--	--
Zinc	0	--	--	--	--	--	--	--

Table 3-72
Summary of COPC Concentrations in Shrub Stem Samples (mg/kg-dw)
Enoch Valley Mine

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	2	0%	0.50	0.91	0.00	0.00	--	--
Arsenic	2	100%	--	--	0.13	0.19	0.16	--
Boron	2	100%	--	--	6.32	29.40	17.86	--
Cadmium	2	100%	--	--	1.76	3.63	2.70	--
Chromium	2	100%	--	--	2.27	4.13	3.20	--
Cobalt	2	50%	0.12	0.12	0.13	0.13	--	--
Copper	2	100%	--	--	6.52	20.10	13.31	--
Manganese	2	100%	--	--	9.98	48.80	29.39	--
Mercury	2	50%	0.02	0.02	0.01	0.01	--	--
Molybdenum	2	0%	1.50	2.72	--	--	--	--
Nickel	2	100%	--	--	5.37	9.47	7.42	--
Selenium	2	100%	--	--	7.25	13.50	10.38	--
Silver	2	50%	0.05	0.05	0.09	0.09	--	--
Thallium	2	50%	0.01	0.01	0.17	0.17	--	--
Uranium	2	50%	0.10	0.10	0.14	0.14	--	--
Vanadium	2	100%	--	--	0.90	1.45	1.18	--
Zinc	2	100%	--	--	27.60	58.10	42.85	--

Table 3-73
Summary of COPC Concentrations in Spring Grass Samples (mg/kg-dw)
Ballard Mine Background Life Form Stations MBB001

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	4	0%	0.49	1.00	0.00	0.00	--	--
Arsenic	4	50%	0.07	0.08	0.08	12.70	3.21	--
Boron	4	75%	4.98	4.98	4.23	12.30	6.27	4.28
Cadmium	4	100%	--	--	0.11	0.38	0.22	0.12
Chromium	4	100%	--	--	1.09	1.83	1.50	0.31
Cobalt	4	0%	0.12	0.13	--	--	--	--
Copper	4	100%	--	--	5.63	6.23	5.91	0.25
Manganese	4	100%	--	--	24.90	49.40	40.78	11.03
Mercury	3	0%	0.02	0.05	--	--	--	--
Molybdenum	4	100%	--	--	3.30	240	113.48	127.23
Nickel	4	75%	0.49	0.49	0.57	0.84	0.57	0.25
Selenium	4	100%	--	--	0.29	0.35	0.31	0.03
Silver	4	0%	0.05	0.05	--	--	--	--
Thallium	4	0%	0.01	0.01	--	--	--	--
Uranium	4	0%	0.10	0.10	--	--	--	--
Vanadium	4	100%	--	--	0.22	0.38	0.32	0.07
Zinc	4	100%	--	--	19.40	39.40	26.40	8.97

Table 3-74
Summary of COPC Concentrations in Spring Grass Samples (mg/kg-dw)
Henry Mine Background Life Form Stations MBH002

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	3	0%	0.50	0.50	0.00	0.00	--	--
Arsenic	3	67%	0.07	0.07	0.11	6.67	2.27	--
Boron	3	100%	--	--	3.66	4.50	3.95	0.47
Cadmium	3	33%	0.02	0.02	0.03	0.03	--	--
Chromium	3	100%	--	--	2.17	3.15	2.80	0.54
Cobalt	3	0%	0.12	0.12	--	--	--	--
Copper	3	100%	--	--	4.90	7.19	5.89	1.17
Manganese	3	100%	--	--	35.10	63.90	52.63	15.39
Mercury	3	0%	0.01	0.01	--	--	--	--
Molybdenum	3	100%	--	--	1.89	2.87	2.43	0.50
Nickel	3	100%	--	--	0.57	0.67	0.63	0.05
Selenium	3	100%	--	--	0.27	0.39	0.34	0.07
Silver	3	100%	--	--	0.12	0.60	0.30	0.26
Thallium	3	0%	0.01	0.01	--	--	--	--
Uranium	3	0%	0.10	0.10	--	--	--	--
Vanadium	3	100%	--	--	0.38	0.52	0.44	0.07
Zinc	3	100%	--	--	19.70	24.80	21.67	2.74

Table 3-75
Summary of COPC Concentrations in Spring Grass Samples (mg/kg-dw)
Enoch Valley Mine Background Life Form Stations MBE001

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	3	0%	0.50	1.61	0.00	0.00	--	--
Arsenic	3	33%	0.07	0.37	0.23	0.23	--	--
Boron	3	67%	8.06	8.06	2.76	3.04	3.28	--
Cadmium	3	100%	--	--	0.05	0.42	0.24	0.19
Chromium	3	100%	--	--	2.00	2.80	2.39	0.40
Cobalt	3	0%	0.12	0.61	--	--	--	--
Copper	3	100%	--	--	4.70	7.20	5.83	1.27
Manganese	3	100%	--	--	35.00	71.10	49.27	19.20
Mercury	2	0%	0.02	0.05	--	--	--	--
Molybdenum	3	67%	4.84	4.84	1.98	8.11	4.17	--
Nickel	3	100%	--	--	0.88	1.13	0.98	0.13
Selenium	3	100%	--	--	0.92	3.26	1.76	1.30
Silver	3	0%	0.05	0.25	--	--	--	--
Thallium	3	33%	0.01	0.05	0.01	0.01	--	--
Uranium	3	0%	0.10	0.49	--	--	--	--
Vanadium	3	100%	--	--	0.43	0.72	0.56	0.15
Zinc	3	100%	--	--	19.60	23.00	21.17	1.72

Table 3-76
Summary of COPC Concentrations in Spring Grass Samples (mg/kg-dw)
Ballard Mine Life Form Stations

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	10	0%	0.49	0.50	0.00	0.00	--	--
Arsenic	10	90%	0.07	0.07	0.08	1.33	0.42	0.44
Boron	10	80%	2.45	2.48	2.63	10.30	4.24	2.75
Cadmium	10	100%	--	--	0.08	4.43	1.12	1.29
Chromium	10	100%	--	--	1.06	3.46	2.28	0.81
Cobalt	10	0%	0.12	0.13	--	--	--	--
Copper	10	100%	--	--	3.68	7.00	5.11	1.11
Manganese	10	100%	--	--	17.50	64.80	34.27	17.26
Mercury	9	22%	0.02	0.02	0.02	0.03	0.01	--
Molybdenum	10	90%	1.49	1.49	3.23	22.90	9.15	6.50
Nickel	10	100%	--	--	0.55	8.77	3.40	2.72
Selenium	10	100%	--	--	0.32	121.00	30.27	38.85
Silver	10	10%	0.05	0.05	0.06	0.06	--	--
Thallium	10	70%	0.01	0.01	0.01	0.52	0.14	0.19
Uranium	10	0%	0.09	0.10	--	--	--	--
Vanadium	10	100%	--	--	0.24	2.40	0.67	0.66
Zinc	10	100%	--	--	22.10	250.00	68.86	66.79

Table 3-77
Summary of COPC Concentrations in Spring Grass Samples (mg/kg-dw)
Henry Mine Life Form Stations

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	10	0%	0.47	0.50	0.00	0.00	--	--
Arsenic	10	40%	0.07	0.07	0.17	1.20	0.20	0.36
Boron	10	70%	2.35	2.46	2.50	8.95	3.83	3.03
Cadmium	10	100%	--	--	0.25	2.22	0.88	0.57
Chromium	10	100%	--	--	1.76	5.89	3.04	1.32
Cobalt	10	0%	0.12	0.13	--	--	--	--
Copper	10	100%	--	--	3.87	8.29	5.52	1.38
Manganese	10	100%	--	--	17.80	54.60	31.52	13.12
Mercury	10	60%	0.01	0.02	0.01	0.05	0.02	0.01
Molybdenum	10	100%	--	--	1.53	125.00	20.69	37.33
Nickel	10	100%	--	--	0.71	4.23	2.40	1.29
Selenium	10	100%	--	--	0.59	139.00	15.36	43.45
Silver	10	0%	0.05	0.05	--	--	--	--
Thallium	10	90%	0.01	0.01	0.02	0.22	0.10	0.07
Uranium	10	0%	0.09	0.10	--	--	--	--
Vanadium	10	100%	--	--	0.28	1.30	0.69	0.35
Zinc	10	100%	--	--	17.30	63.80	43.49	16.16

Table 3-78
Summary of COPC Concentrations in Spring Grass Samples (mg/kg-dw)
Enoch Valley Mine Life Form Stations

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	10	0%	0.48	0.50	0.00	0.00	--	--
Arsenic	10	80%	0.07	0.07	0.08	0.79	0.17	0.22
Boron	10	100%	--	--	2.59	22.60	6.38	6.15
Cadmium	10	100%	--	--	0.45	4.23	1.31	1.16
Chromium	10	100%	--	--	2.16	13.70	4.03	3.45
Cobalt	10	10%	0.12	0.12	0.29	0.29	--	--
Copper	10	100%	--	--	4.88	10.50	7.00	1.67
Manganese	10	100%	--	--	23.90	64.10	38.92	10.58
Mercury	9	33%	0.01	0.02	0.01	0.02	0.01	0.00
Molybdenum	10	100%	--	--	2.79	30.50	8.30	8.10
Nickel	10	100%	--	--	1.18	12.90	3.98	3.69
Selenium	10	100%	--	--	1.76	25.50	7.45	6.87
Silver	10	20%	0.05	0.05	0.06	0.13	0.04	--
Thallium	10	90%	0.01	0.01	0.02	0.38	0.10	0.11
Uranium	10	10%	0.10	0.10	1.27	1.27	--	--
Vanadium	10	100%	--	--	0.25	7.61	1.44	2.20
Zinc	10	100%	--	--	28.30	73.30	41.90	17.14

Table 3-79
Summary of COPC Concentrations in Spring Forbs Samples (mg/kg-dw)
Ballard Mine Background Life Form Stations MBB001

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	4	0%	0.49	0.50	0.00	0.00	--	--
Arsenic	4	75%	0.07	0.07	0.11	13.10	3.36	6.50
Boron	4	100%	--	--	23.40	29.80	25.15	3.10
Cadmium	4	100%	--	--	0.13	0.48	0.30	0.19
Chromium	4	100%	--	--	1.07	1.83	1.37	0.32
Cobalt	4	0%	0.12	0.13	--	--	--	--
Copper	4	100%	--	--	4.68	7.91	5.78	1.48
Manganese	4	100%	--	--	31.40	45.60	40.48	6.25
Mercury	4	25%	0.01	0.05	0.02	0.02	--	--
Molybdenum	4	100%	--	--	2.34	20.60	7.49	8.80
Nickel	4	100%	--	--	1.09	2.19	1.53	0.48
Selenium	4	100%	--	--	0.24	4.41	1.75	1.86
Silver	4	0%	0.05	0.05	--	--	--	--
Thallium	4	25%	0.01	0.01	0.03	0.03	--	--
Uranium	4	0%	0.10	0.10	--	--	--	--
Vanadium	4	100%	--	--	0.31	0.46	0.41	0.07
Zinc	4	100%	--	--	19.20	35.30	27.20	6.59

Table 3-80
Summary of COPC Concentrations in Spring Forbs Samples (mg/kg-dw)
Henry Mine Background Life Form Stations MBH002

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	3	0%	0.50	0.50	0.00	0.00	--	--
Arsenic	3	100%	--	--	0.19	0.91	0.48	0.38
Boron	3	100%	--	--	19.80	29.50	23.90	5.02
Cadmium	3	100%	--	--	0.23	0.36	0.29	0.06
Chromium	3	100%	--	--	2.32	7.36	4.44	2.62
Cobalt	3	100%	--	--	0.22	1.29	0.66	0.56
Copper	3	100%	--	--	5.79	9.68	7.11	2.22
Manganese	3	100%	--	--	96.10	261	173.03	83.00
Mercury	3	0%	0.01	0.01	--	--	--	--
Molybdenum	3	0%	1.48	1.50	--	--	--	--
Nickel	3	100%	--	--	1.58	4.71	2.74	1.72
Selenium	3	100%	--	--	0.29	0.52	0.43	0.12
Silver	3	67%	0.05	0.05	0.07	0.11	0.07	--
Thallium	3	33%	0.01	0.01	0.01	0.01	--	--
Uranium	3	0%	0.09	0.09	--	--	--	--
Vanadium	3	100%	--	--	0.89	3.67	1.99	1.48
Zinc	3	100%	--	--	18.10	25.10	20.87	3.72

Table 3-81
Summary of COPC Concentrations in Spring Forbs Samples (mg/kg-dw)
Enoch Valley Mine Background Life Form Stations MBE001

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	3	0%	0.47	0.87	0.00	0.00	--	--
Arsenic	3	100%	--	--	0.08	2.28	0.92	1.19
Boron	3	100%	--	--	19.30	27.10	24.27	4.32
Cadmium	3	100%	--	--	0.03	0.74	0.49	0.40
Chromium	3	100%	--	--	1.45	3.16	2.18	0.88
Cobalt	3	33%	0.12	0.13	0.32	0.32	--	--
Copper	3	100%	--	--	6.70	10.50	8.82	1.94
Manganese	3	100%	--	--	40.00	86.10	66.37	23.76
Mercury	2	0%	0.01	0.02	--	--	--	--
Molybdenum	3	33%	1.40	1.45	8.91	8.91	--	--
Nickel	3	100%	--	--	1.47	4.57	2.76	1.61
Selenium	3	100%	--	--	0.46	5.02	2.08	2.55
Silver	3	33%	0.05	0.05	0.05	0.05	--	--
Thallium	3	33%	0.01	0.01	0.01	0.01	--	--
Uranium	3	0%	0.10	0.10	--	--	--	--
Vanadium	3	100%	--	--	0.45	1.67	0.90	0.67
Zinc	3	100%	--	--	27.20	42.70	35.93	7.93

Table 3-82
Summary of COPC Concentrations in Spring Forbs Samples (mg/kg-dw)
Ballard Mine Life Form Stations

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	8	0%	0.48	0.62	0.00	0.00	--	--
Arsenic	8	88%	0.07	0.07	0.25	2.43	1.04	0.96
Boron	8	100%	--	--	16.00	40.90	28.04	7.32
Cadmium	8	100%	--	--	0.27	21.50	3.63	7.25
Chromium	8	100%	--	--	1.05	13.50	4.93	5.04
Cobalt	8	25%	0.12	0.24	0.25	0.32	0.12	--
Copper	8	100%	--	--	4.47	15.70	8.53	4.32
Manganese	8	100%	--	--	9.36	70.90	31.88	24.35
Mercury	8	25%	0.02	0.05	0.02	0.13	0.03	--
Molybdenum	8	75%	1.50	1.87	1.76	17.40	6.21	6.51
Nickel	8	100%	--	--	0.95	21.20	10.02	6.67
Selenium	8	100%	--	--	1.18	234	78.78	85.23
Silver	8	38%	0.05	0.09	0.12	5.56	0.78	1.94
Thallium	8	100%	--	--	0.01	0.49	0.19	0.16
Uranium	8	38%	0.09	0.19	0.19	1.38	0.28	0.46
Vanadium	8	100%	--	--	0.28	18.50	3.85	6.31
Zinc	8	100%	--	--	40.70	212	92.98	64.15

Table 3-83
Summary of COPC Concentrations in Spring Forbs Samples (mg/kg-dw)
Henry Mine Life Form Stations

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	10	10%	0.47	1.79	0.52	0.52	--	--
Arsenic	10	90%	0.07	0.07	0.08	1.53	0.37	0.50
Boron	10	100%	--	--	14.90	47.30	27.69	9.24
Cadmium	10	100%	--	--	0.74	5.08	2.34	1.51
Chromium	10	100%	--	--	1.38	18.20	4.33	5.02
Cobalt	10	30%	0.12	0.22	0.13	0.30	0.11	0.08
Copper	10	100%	--	--	3.91	15.40	8.07	3.40
Manganese	10	100%	--	--	10.20	30.50	21.67	6.04
Mercury	10	40%	0.01	0.02	0.01	0.07	0.02	0.02
Molybdenum	10	100%	--	--	2.95	110.00	19.65	32.31
Nickel	10	100%	--	--	3.62	17.40	7.53	4.09
Selenium	10	100%	--	--	0.86	67.60	15.71	23.54
Silver	10	10%	0.05	0.09	0.16	0.16	--	--
Thallium	10	100%	--	--	0.03	0.66	0.26	0.18
Uranium	10	10%	0.09	0.18	1.27	1.27	--	--
Vanadium	10	100%	--	--	0.46	13.10	2.17	3.86
Zinc	10	100%	--	--	36.00	75.30	60.41	12.62

Table 3-84
Summary of COPC Concentrations in Spring Forbs Samples (mg/kg-dw)
Enoch Valley Mine Life Form Stations

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	7	29%	0.47	0.74	0.67	1.13	0.45	--
Arsenic	7	86%	0.07	0.07	0.19	18.80	5.08	7.10
Boron	7	100%	--	--	20.60	50.40	28.47	10.13
Cadmium	7	100%	--	--	0.48	6.06	3.15	2.24
Chromium	7	100%	--	--	2.07	15.30	5.24	4.99
Cobalt	7	43%	0.12	0.12	0.13	0.77	0.19	0.26
Copper	7	100%	--	--	6.27	13.00	9.13	2.72
Manganese	7	100%	--	--	14.70	224.00	60.84	72.83
Mercury	7	43%	0.01	0.04	0.01	0.01	0.01	0.01
Molybdenum	7	100%	--	--	2.57	25.20	10.05	7.61
Nickel	7	100%	--	--	3.99	33.10	12.32	11.32
Selenium	7	100%	--	--	4.35	105.00	26.07	35.75
Silver	7	29%	0.05	0.05	0.06	0.16	0.05	--
Thallium	7	100%	--	--	0.05	3.83	0.75	1.37
Uranium	7	57%	0.10	0.10	0.13	2.75	0.55	0.99
Vanadium	7	100%	--	--	0.66	25.20	5.05	9.00
Zinc	7	100%	--	--	37.10	363.00	100.77	116.42

Table 3-85
Summary of COPC Concentrations in Fall Forbs Samples (mg/kg-dw)
Ballard Mine Background Life Form Stations MBB001

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	4	0%	0.49	0.50	0.00	0.00	--	--
Arsenic	4	100%	--	--	0.11	0.16	0.13	0.02
Boron	4	100%	--	--	33.80	50.90	42.10	7.01
Cadmium	4	100%	--	--	0.18	0.38	0.29	0.09
Chromium	4	100%	--	--	1.67	2.50	2.05	0.34
Cobalt	4	0%	0.12	0.13	--	--	--	--
Copper	4	100%	--	--	5.17	12.40	7.94	3.12
Manganese	4	100%	--	--	49.00	75.50	62.08	11.88
Mercury	4	25%	0.02	0.02	0.03	0.03	--	--
Molybdenum	4	100%	--	--	2.52	5.08	3.76	1.36
Nickel	4	100%	--	--	1.05	1.78	1.46	0.31
Selenium	4	100%	--	--	0.42	0.67	0.58	0.12
Silver	4	0%	0.05	0.05	--	--	--	--
Thallium	4	0%	0.01	0.01	--	--	--	--
Uranium	4	0%	0.10	0.10	--	--	--	--
Vanadium	4	100%	--	--	0.47	1.14	0.73	0.30
Zinc	4	100%	--	--	22.80	58.40	39.03	14.78

Table 3-86
Summary of COPC Concentrations in Fall Forbs Samples (mg/kg-dw)
Henry Mine Background Life Form Stations MBH002

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	3	0%	0.49	0.49	0.00	0.00	--	--
Arsenic	3	100%	--	--	0.20	0.52	0.33	0.17
Boron	3	100%	--	--	22.80	41.80	30.67	9.91
Cadmium	3	100%	--	--	0.08	0.64	0.27	0.32
Chromium	3	100%	--	--	1.28	4.22	2.44	1.56
Cobalt	3	33%	0.12	0.61	0.36	0.36	--	--
Copper	3	100%	--	--	4.53	6.81	5.35	1.27
Manganese	3	100%	--	--	59.00	161	101.43	53.11
Mercury	3	0%	0.01	0.02	--	--	--	--
Molybdenum	3	33%	1.47	1.47	1.91	1.91	--	--
Nickel	3	67%	0.98	0.98	0.60	1.68	0.92	--
Selenium	3	100%	--	--	0.39	1.63	0.95	0.63
Silver	3	0%	0.05	0.05	--	--	--	--
Thallium	3	0%	0.01	0.01	--	--	--	--
Uranium	3	0%	0.10	0.10	--	--	--	--
Vanadium	3	67%	0.61	0.61	0.38	1.65	0.78	--
Zinc	3	100%	--	--	16.30	18.20	16.97	1.07

Table 3-87
Summary of COPC Concentrations in Fall Forbs Samples (mg/kg-dw)
Enoch Valley Mine Background Life Form Stations MBE001

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	3	0%	0.49	0.50	0.00	0.00	--	--
Arsenic	3	100%	--	--	0.15	0.24	0.19	0.04
Boron	3	100%	--	--	37.50	68.30	53.97	15.51
Cadmium	3	100%	--	--	0.06	0.97	0.61	0.48
Chromium	3	100%	--	--	1.57	2.79	2.36	0.68
Cobalt	3	0%	0.12	0.61	--	--	--	--
Copper	3	100%	--	--	4.30	7.21	5.57	1.49
Manganese	3	100%	--	--	26.00	88.80	58.57	31.46
Mercury	3	67%	0.02	0.02	0.01	0.02	0.01	--
Molybdenum	3	100%	--	--	1.65	17.30	6.99	8.93
Nickel	3	100%	--	--	1.09	1.94	1.43	0.45
Selenium	3	100%	--	--	0.63	7.28	2.90	3.80
Silver	3	0%	0.05	0.05	--	--	--	--
Thallium	3	33%	0.01	0.01	0.02	0.02	--	--
Uranium	3	0%	0.10	0.10	--	--	--	--
Vanadium	3	100%	--	--	0.54	1.16	0.84	0.31
Zinc	3	100%	--	--	24.10	43.50	35.03	9.93

Table 3-88
Summary of COPC Concentrations in Fall Forbs Samples (mg/kg-dw)
Ballard Mine Life Form Stations

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	10	0%	0.49	0.50	0.00	0.00	--	--
Arsenic	10	60%	0.08	1.46	0.23	8.42	3.09	3.20
Boron	10	100%	--	--	21.30	54.30	28.91	9.49
Cadmium	10	100%	--	--	0.10	6.54	1.95	2.02
Chromium	10	100%	--	--	0.91	3.94	1.94	0.81
Cobalt	10	0%	0.12	0.62	--	--	--	--
Copper	10	100%	--	--	3.28	9.25	4.81	1.83
Manganese	10	100%	--	--	11.70	42.90	20.97	11.09
Mercury	10	20%	0.01	0.05	0.01	0.03	0.01	--
Molybdenum	10	90%	1.48	1.48	1.85	76	23.99	26.70
Nickel	10	100%	--	--	0.81	15	6.58	4.57
Selenium	10	100%	--	--	0.92	1010	174.90	307.03
Silver	10	10%	0.05	0.05	0.05	0.05	--	--
Thallium	10	80%	0.01	0.01	0.02	0.47	0.15	0.18
Uranium	10	10%	0.09	0.10	0.14	0.14	--	--
Vanadium	10	50%	0.61	0.62	0.52	1.38	0.61	0.40
Zinc	10	100%	--	--	19.30	119	55.32	34.27

Table 3-89
Summary of COPC Concentrations in Fall Forbs Samples (mg/kg-dw)
Henry Mine Life Form Stations

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	10	0%	0.49	0.50	0.00	0.00	--	--
Arsenic	10	90%	0.07	0.07	0.08	10.20	4.16	4.35
Boron	10	100%	--	--	14.80	46.30	25.01	10.54
Cadmium	10	100%	--	--	0.83	3.73	1.63	0.91
Chromium	10	100%	--	--	1.53	3.94	2.31	0.70
Cobalt	10	0%	0.12	0.62	--	--	--	--
Copper	10	100%	--	--	3.24	10.50	4.78	2.44
Manganese	10	100%	--	--	8.99	34.90	15.22	7.63
Mercury	10	0%	0.02	0.05	--	--	--	--
Molybdenum	10	100%	--	--	1.56	23.80	7.21	6.70
Nickel	10	100%	--	--	1.39	16.00	4.37	4.20
Selenium	10	100%	--	--	1.28	69.10	11.07	20.55
Silver	10	0%	0.05	0.05	--	--	--	--
Thallium	10	100%	--	--	0.01	0.42	0.24	0.14
Uranium	10	10%	0.10	0.10	0.29	0.29	--	--
Vanadium	10	90%	0.62	0.62	0.51	2.69	0.84	0.67
Zinc	10	100%	--	--	23.60	72.70	38.85	18.21

Table 3-90
Summary of COPC Concentrations in Fall Forbs Samples (mg/kg-dw)
Enoch Valley Mine Life Form Stations

			Undetected		Detected			
Analyte	**n**	**% Detection**	**min**	**max**	**min**	**max**	**Mean**	**Stdev**
Antimony	10	0%	0.49	0.50	0.00	0.00	--	--
Arsenic	10	30%	0.07	0.37	0.13	10.60	1.19	3.31
Boron	10	100%	--	--	15.10	42.30	27.04	9.17
Cadmium	10	100%	--	--	0.61	5.80	2.00	1.48
Chromium	10	100%	--	--	1.58	5.73	2.66	1.36
Cobalt	10	20%	0.12	0.12	0.16	0.20	0.08	--
Copper	10	100%	--	--	3.41	13.20	5.90	2.99
Manganese	10	100%	--	--	9.52	58.40	25.47	17.15
Mercury	10	30%	0.01	0.02	0.01	0.02	0.01	0.00
Molybdenum	10	100%	--	--	4.00	19.00	9.52	5.43
Nickel	10	100%	--	--	1.88	16.70	5.82	4.49
Selenium	10	100%	--	--	3.22	120.00	30.89	36.58
Silver	10	0%	0.05	0.05	--	--	--	--
Thallium	10	90%	0.01	0.01	0.02	0.33	0.12	0.11
Uranium	10	20%	0.09	0.10	0.17	0.30	0.09	--
Vanadium	10	100%	--	--	0.54	3.60	1.14	0.96
Zinc	10	100%	--	--	30.30	56.30	44.37	7.80

TABLE 3-91
BALLARD MINE
CULTURALLY SIGNIFICANT PLANT SAMPLE CONCENTRATIONS AND SCREENING LEVEL EXCEEDANCES (mg/kg dw)[1]

	Selenium	Molybdenum
Soil Screening Level	**5**	**5**
BALLARD ARLU[2]	1.17	<1.47
BALLARD JUSC-LEAF[2]	<0.499	4.29
BALLARD JUSC-STEM[2]	0.483 J	1.74 J
Partially Backfilled Pit Locations		
MMP036 PRVI-FRUIT	0.722 J	<1.49
MMP036 PRVI-LEAF	1.80	<1.49
MMP036 PRVI-STEM	1.97	<1.50
Waste Rock Dump Locations		
MWD083 POTR-LEAF	2.21	<1.48
MWD083 POTR-STEM	2.54	<1.50
MWD093 ARTR-LEAF	2.16	<1.48
MWD093 ARTR-STEM	1.57	<1.49

Notes:
1 - Triplicate samples are treated as a single sample as described in Section 2.
2 - Exact facility locations of these samples were not recorded.
J - The result is an estimated quantity. The associated numerical value is the approximated concentration of the analyte in the sample.
ARLU - white sagebrush (*Artemisia ludoviciana*)
ARTR - big sagebrush (*Artemisia tridentata*)
JUSC - Rocky Mountain juniper (*Juniperus scopulorum*)
POTR - quaking aspen (*Populus tremuloides*)
PRVI - chokecherry (*Prunus virginiana*)

TABLE 3-92
HENRY MINE
CULTURALLY SIGNIFICANT PLANT SAMPLE CONCENTRATIONS AND SCREENING LEVEL EXCEEDANCES (mg/kg dw)[1]

	Selenium	Molybdenum
Soil Screening Level	**5**	**5**
Waste Rock Dump Locations		
MWD086 ARTR-LEAF	0.643 J	2.78 J
MWD086 ARTR-STEM	0.504 J	<1.50
MWD086 POTR-LEAF	5.26	<1.49
MWD086 POTR-STEM	1.23	<1.49
MWD087 ARLU	1.78	<1.50
Background Locations		
MBH002 JUSC-LEAF	0.181 J	<1.49
MBH002 JUSC-STEM	0.192 J	<1.48

Notes:
1 - Triplicate samples are treated as a single sample as described in Section 2.
Shaded cells indicate screening level exceedance.
J - The result is an estimated quantity. The associated numerical value is the approximated concentration of the analyte in the sample.
ARLU - white sagebrush (*Artemisia ludoviciana*)
ARTR - big sagebrush (*Artemisia tridentata*)
JUSC - Rocky Mountain juniper (*Juniperus scopulorum*)
POTR - quaking aspen (*Populus tremuloides*)

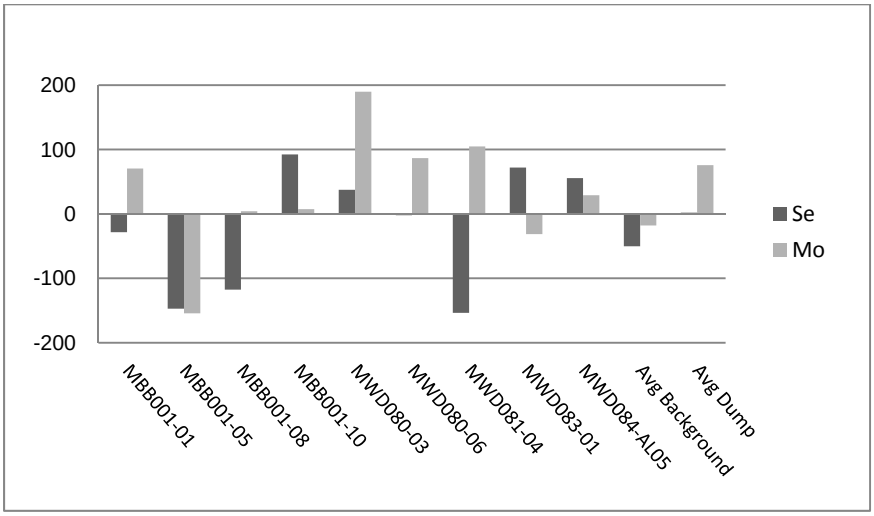
TABLE 3-93
ENOCH VALLEY MINE
CULTURALLY SIGNIFICANT PLANT SAMPLE CONCENTRATIONS AND SCREENING LEVEL EXCEEDANCES (mg/kg dw)[1]

	Selenium	Molybdenum
Soil Screening Level	**5**	**5**
Waste Rock Dump Locations		
MWD091 JUSC-LEAF	1.67 J	<1.47
MWD091 JUSC-STEM	1.05 J	<1.50
MWD091 POTR-LEAF	4.46	<1.49
MWD091 POTR-STEM	1.44	<1.50
MWD092 ALLIUM-BULB	0.686 J	<1.48
MWD092 ALLIUM-STEM	1.31	2.09 J
MWD092 ARLU	12.3 J	<1.45
MWD092 ARTR-LEAF	8.00 J	<1.49
MWD092 ARTR-STEM	3.98 J	<1.49
Background Location		
MBE001 WILD ST	<0.379	1.63 J

Notes:
1 - Triplicate samples are treated as a single sample as described in Section 2.
Shaded cells indicate screening level exceedance.
J - The result is an estimated quantity. The associated numerical value is the approximated concentration of the analyte in the sample.
ARLU - white sagebrush (*Artemisia ludoviciana*)
ARTR - big sagebrush (*Artemisia tridentata*)
JUSC - Rocky Mountain juniper (*Juniperus scopulorum*)
POTR - quaking aspen (*Populus tremuloides*)
ALLIUM - onion (scientific name undetermined)
WILD ST - wild strawberry

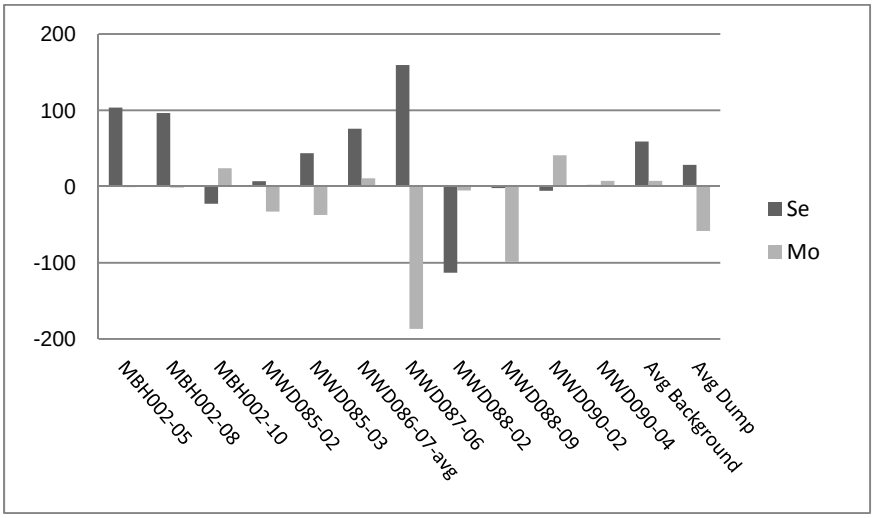
FIGURES

FIGURE 3-1
Ballard Mine Forbs
Percent Difference in Spring and Fall Concentrations



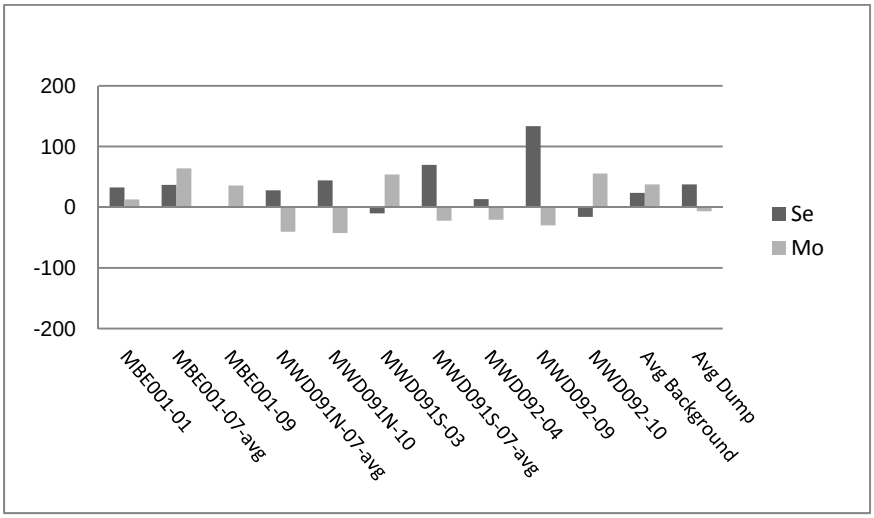
Note: The average Percent Difference was calculated by averaging the RPD from the individual sample stations

FIGURE 3-2
Henry Mine Forbs
Percent Difference in
Spring and Fall Concentrations



Note: The average Percent Difference was calculated by averaging the RPD from the individual sample stations

FIGURE 3-3
Enoch Valley Mine Forbs
Percent Difference
Spring and Fall Concentrations



Note: The average Percent Difference was calculated by averaging the RPD from the individual sample stations

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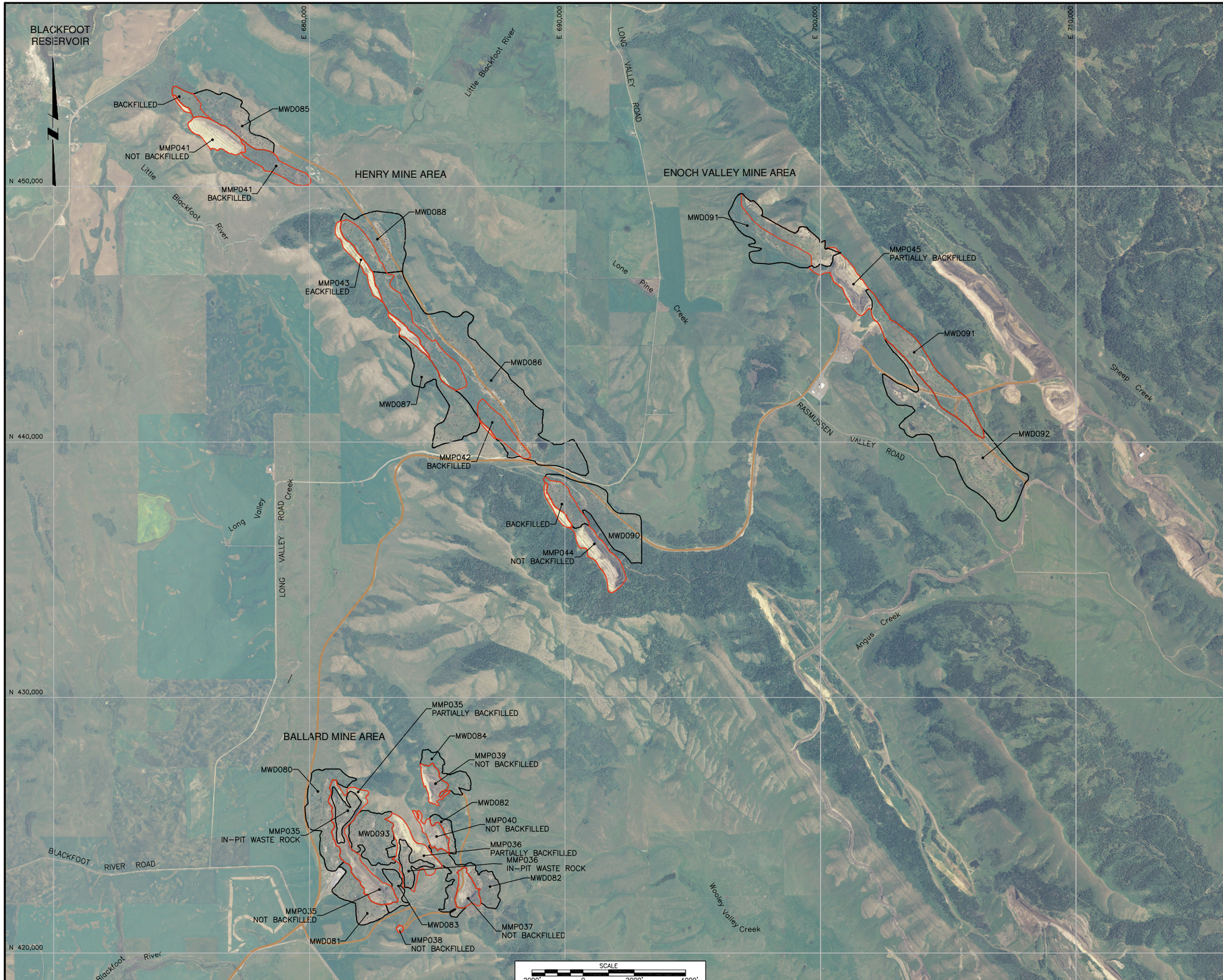

LEGEND:

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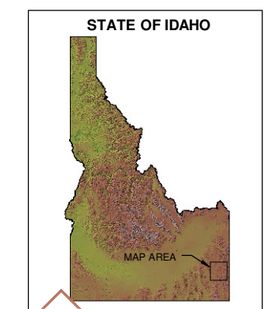

KEY MAP
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HORIZONTAL DATUM: NAD27
VERTICAL DATUM: NGVD29
UNITS: U.S. FEET

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DRAWN BY	E MARKS	03/02/10
CHECKED BY	C DUFFY	03/02/10
APPROVED BY	C FOULK	03/02/10
PROJECT MANAGER	C FOULK	03/02/10
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P4 Production, LLC

PROJECT LOCATION: BALLARD, HENRY AND ENOCH VALLEY MINES
PROJECT: SUPPLEMENTAL SOIL AND VEGETATION CHARACTERIZATION DATA SUMMARY TECHNICAL MEMORANDUM
TITLE: MINE AREA LOCATION MAP

MWH

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REVISION A
FILE NAME 1005813D265

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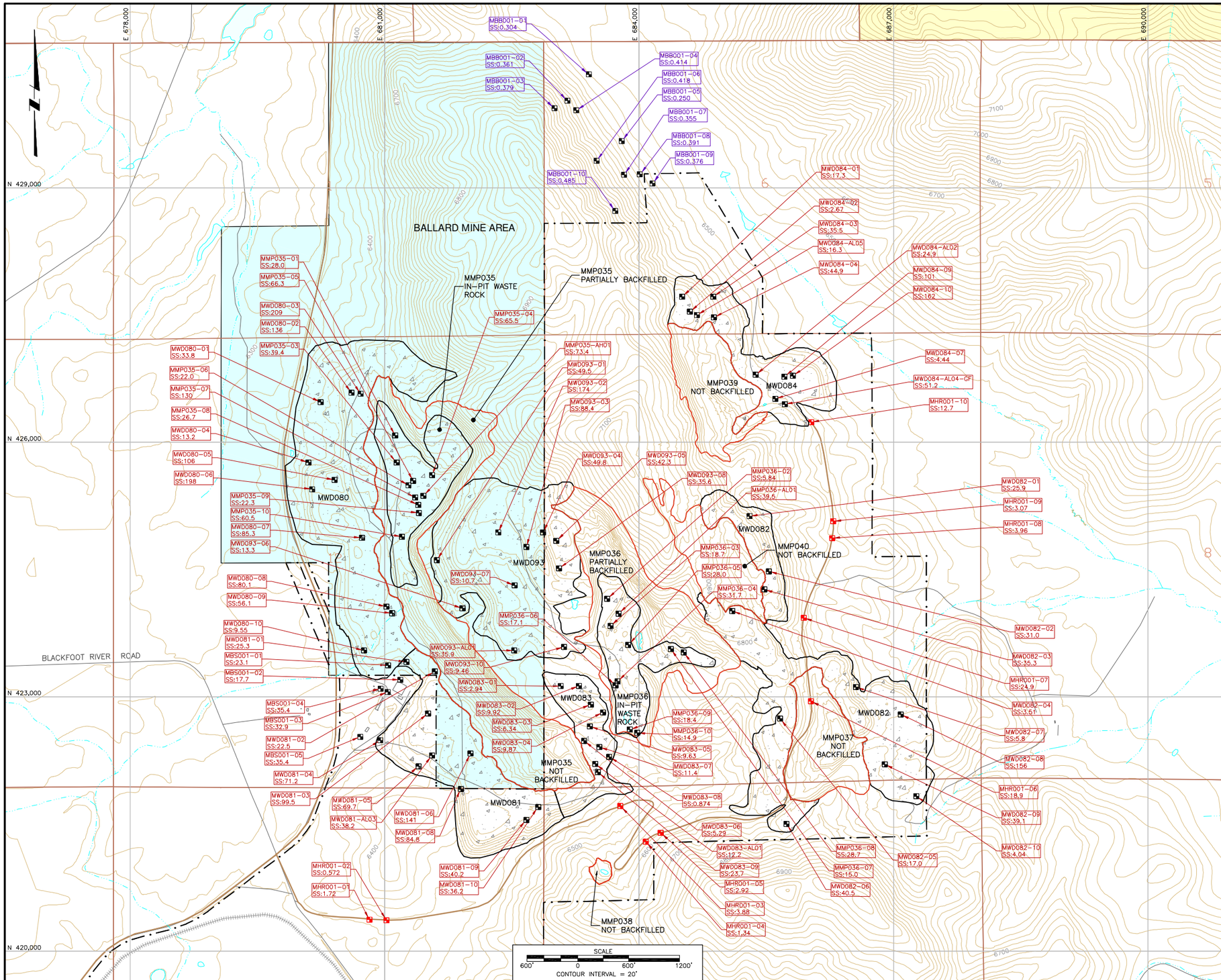

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MBB001-06 SS:0.418 — BACKGROUND SELENIUM DATA REPORTED IN MG/KG,DW

MWD085-09 SS:91.8 — SOIL SELENIUM DATA REPORTED IN MG/KG,DW

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HORIZONTAL DATUM: NAD27
VERTICAL DATUM: NGVD29
UNITS: U.S. FEET

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DRAWN BY	E MARKS	03/02/10
CHECKED BY	C DUFFY	03/02/10
APPROVED BY	C FOULK	03/02/10
PROJECT MANAGER	C FOULK	03/02/10
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CLIENT REFERENCE NO.		

P4 Production, LLC

PROJECT LOCATION: BALLARD, HENRY AND ENOCH VALLEY MINES
PROJECT: SUPPLEMENTAL SOIL AND VEGETATION CHARACTERIZATION DATA SUMMARY TECHNICAL MEMORANDUM
TITLE: 2009 BALLARD MINE AREA SOIL SAMPLE LOCATIONS AND RESULTS

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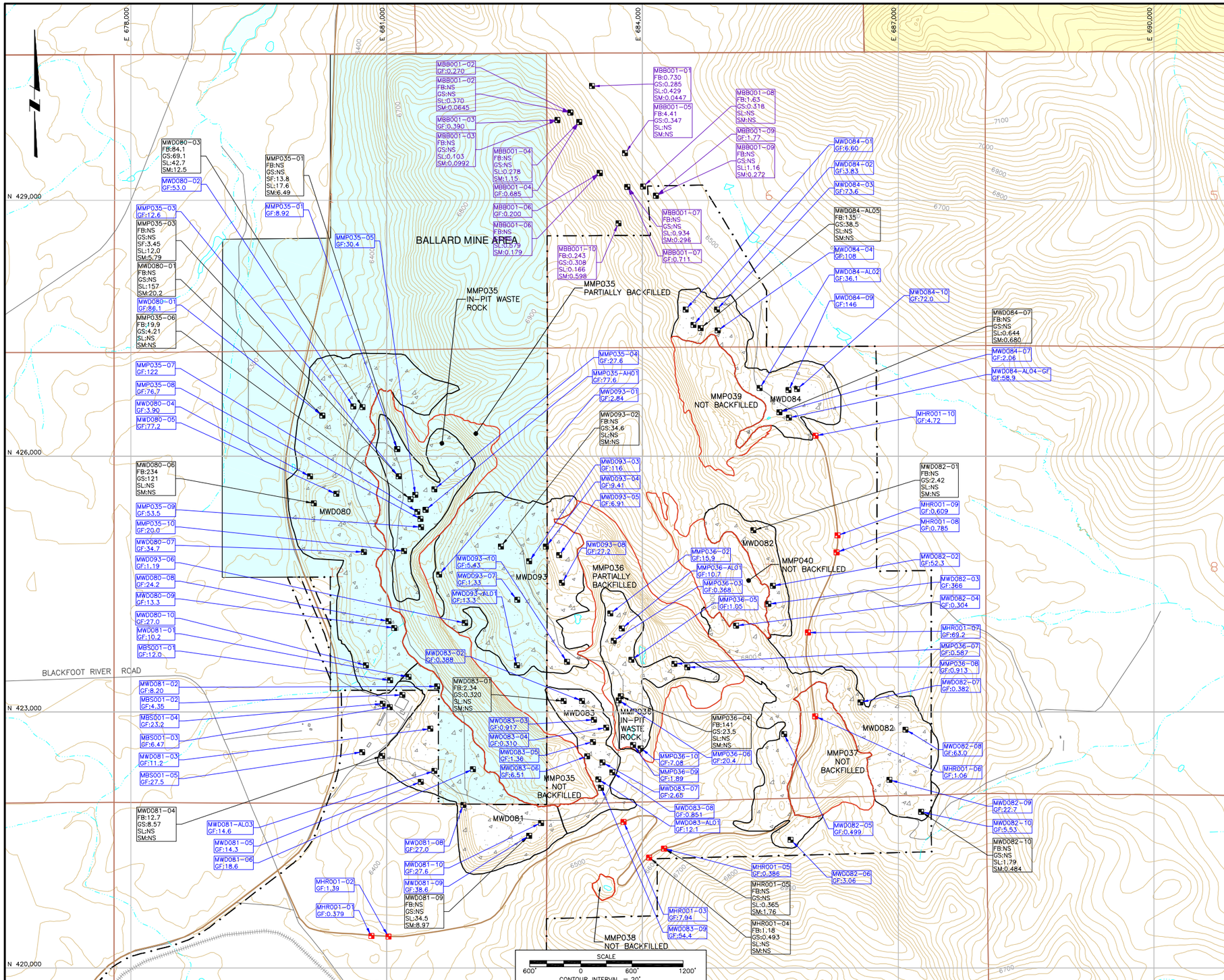

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MBB001-03 GF:0.390 — BACKGROUND SELENIUM DATA REPORTED IN MG/KG,DW

MHR002-10 FB:49 GS:3.78 SL:NS SM:NS — VEGETATION LIFE FORM SELENIUM DATA REPORTED IN MG/KG,DW

MWD085-09 GF:91.8 — VEGETATION SELENIUM DATA REPORTED IN MG/KG,DW

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PROJECTION: STATE PLANE COORDINATE SYSTEM
ZONE: IDAHO EAST
HORIZONTAL DATUM: NAD27
VERTICAL DATUM: NGVD29
UNITS: U.S. FEET

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PROJECT: SUPPLEMENTAL SOIL AND VEGETATION CHARACTERIZATION DATA SUMMARY TECHNICAL MEMORANDUM
TITLE: 2009 BALLARD MINE AREA VEGETATION SAMPLE LOCATIONS AND RESULTS

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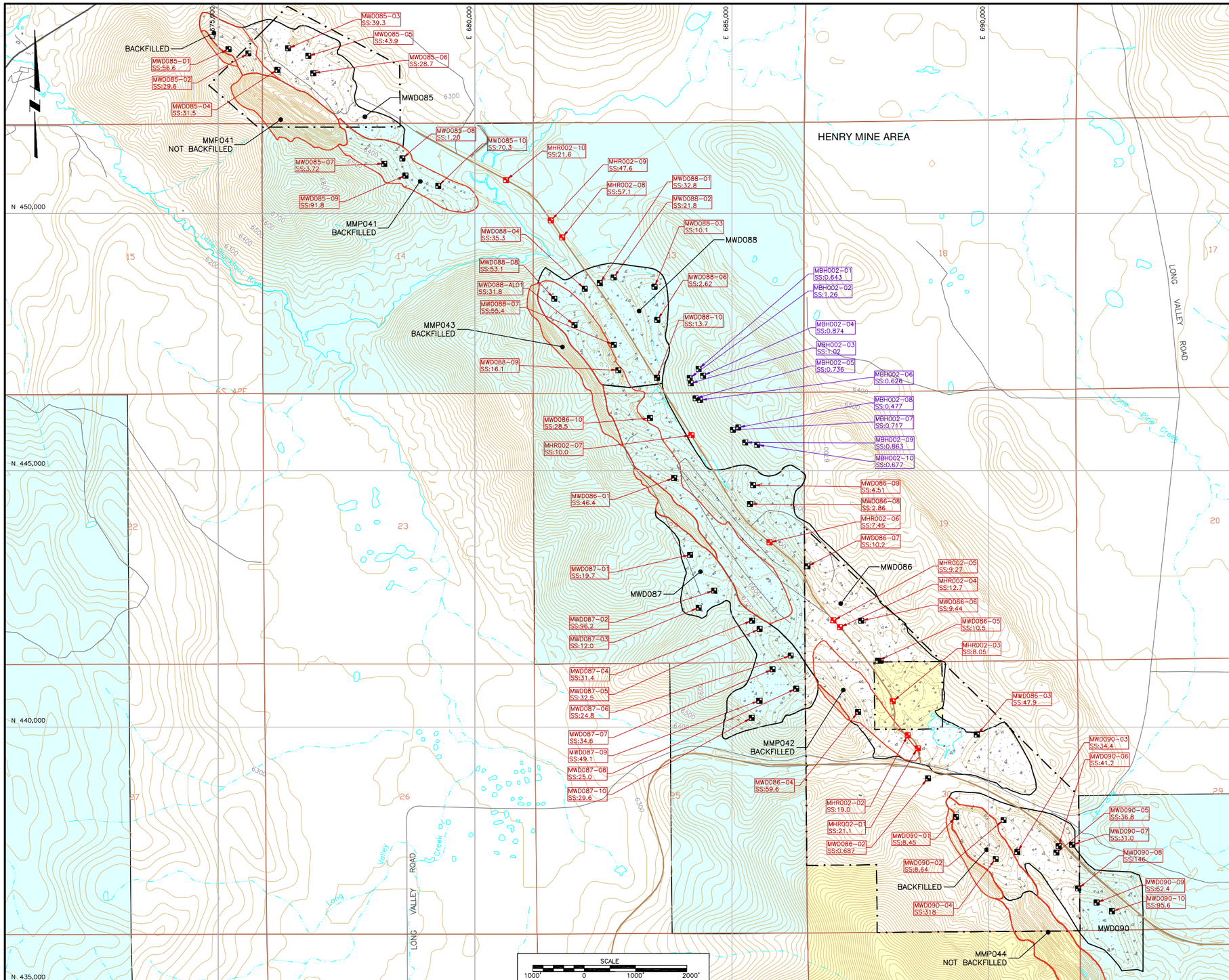

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P4 Production, LLC

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PROJECT: SUPPLEMENTAL SOIL AND VEGETATION CHARACTERIZATION DATA SUMMARY TECHNICAL MEMORANDUM
TITLE: 2009 HENRY MINE AREA SOIL SAMPLE LOCATIONS AND RESULTS

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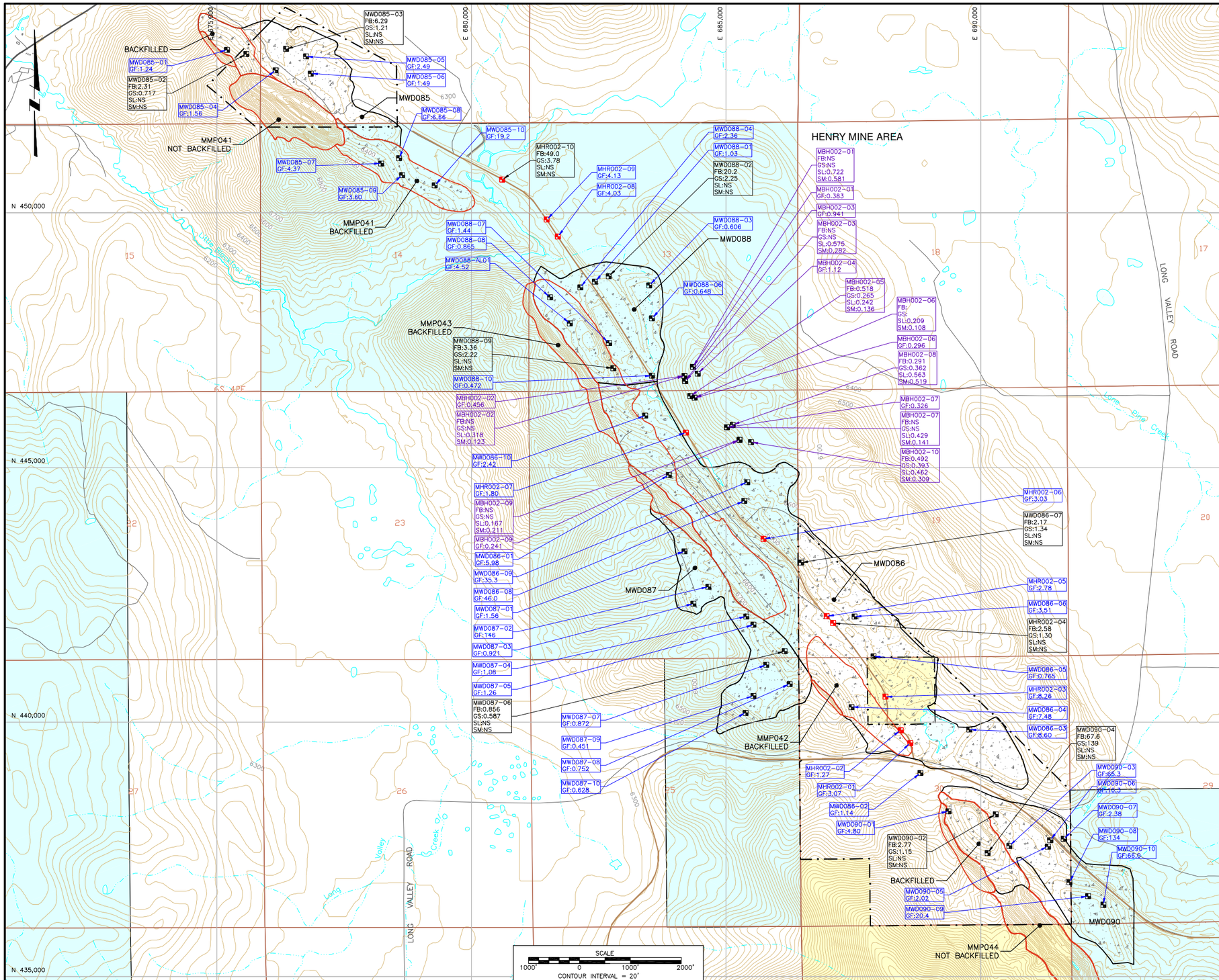

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PROJECTION: STATE PLANE COORDINATE SYSTEM
ZONE: IDAHO EAST
HORIZONTAL DATUM: NAD27
VERTICAL DATUM: NGVD29
UNITS: U.S. FEET

DESIGNED BY	D BRAME	03/02/10
DRAWN BY	E MARKS	03/02/10
CHECKED BY	C DUFFY	03/02/10
APPROVED BY	C FOULK	03/02/10
PROJECT MANAGER	C FOULK	03/02/10
CLIENT APPROVAL		
CLIENT REFERENCE NO.		

P4 Production, LLC

PROJECT LOCATION: BALLARD, HENRY AND ENOCH VALLEY MINES
PROJECT: SUPPLEMENTAL SOIL AND VEGETATION CHARACTERIZATION DATA SUMMARY TECHNICAL MEMORANDUM
TITLE: 2009 HENRY MINE AREA VEGETATION SAMPLE LOCATIONS AND RESULTS

MWH

DRAWING 3-4 | REVISION A
FILE NAME 1005813D262

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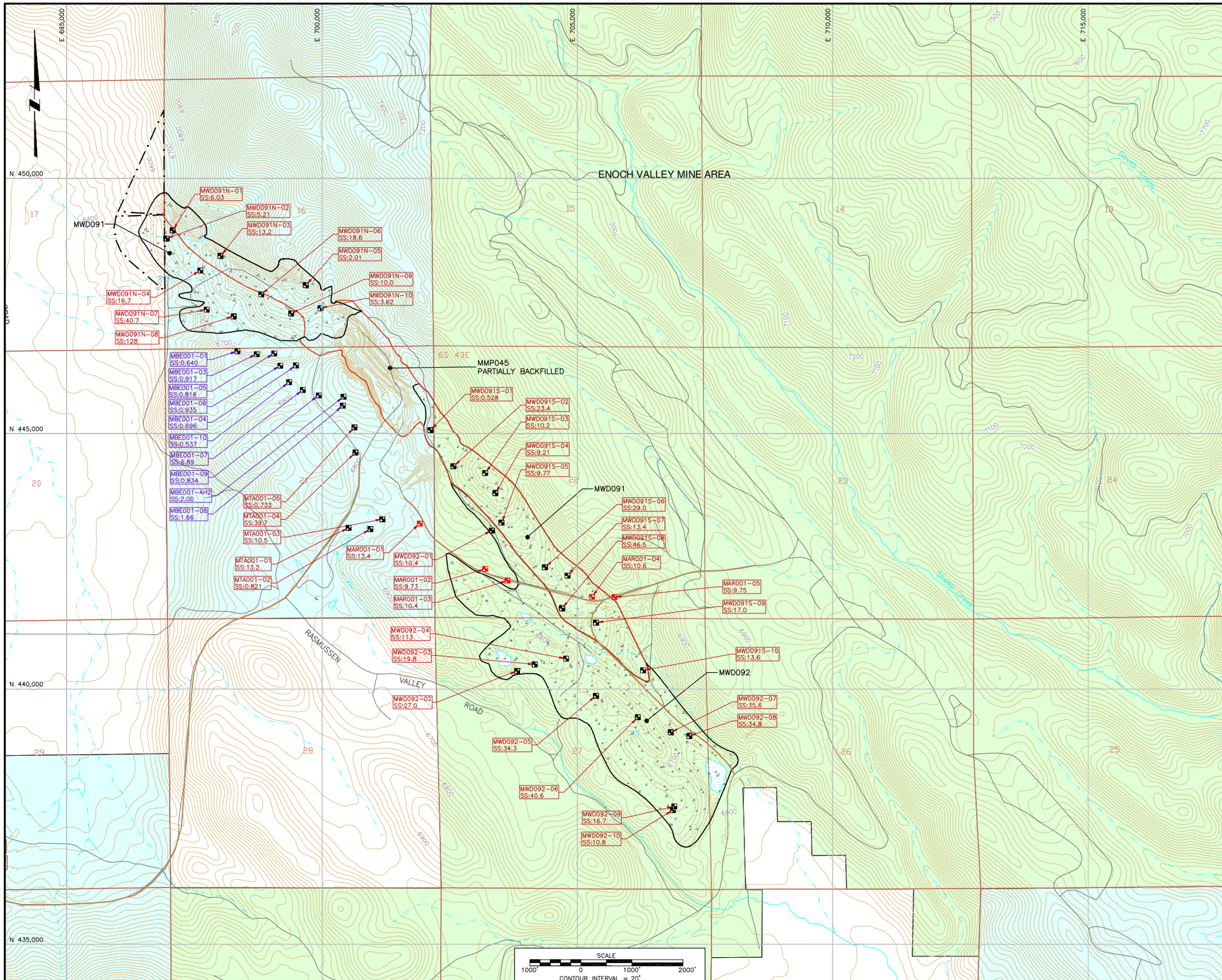

LEGEND:

- POST-MINE CONTOUR AND ELEVATION, FEET (APPROXIMATE)
- RIVER
- POND OR LAKE
- NATURAL DRAINAGE – PERENNIAL
- NATURAL DRAINAGE – INTERMITTENT
- HIGHWAY
- ROAD
- MONSANTO HAUL ROAD (ACTIVE & INACTIVE)
- RAILROAD
- MINE PIT LOCATION (APPROXIMATE WHERE COVERED BY BACKFILL)
- WASTE ROCK DUMP LOCATION (APPROXIMATE)
- WASTE ROCK DUMP LOCATION OR PIT BACKFILL (APPROXIMATE)
- APPROXIMATE OWNERSHIP BOUNDARY
- SECTION LINES
- A SECTION NUMBER
- BLM LANDS
- US NATIONAL FORESTS
- STATE LANDS
- NON FEDERAL LANDS

STATION TYPE:

- MAR = ACTIVE HAUL ROAD SAMPLE LOCATION
- MBE = BACKGROUND AREA SOIL SAMPLE LOCATION
- MTA = TIPPLE AREA SAMPLE LOCATION
- MWD = WASTE ROCK DUMP SOIL SAMPLE LOCATION

KEY:

MMP = MINE PIT
MWD = WASTE ROCK DUMP
SS = SURFACE SOIL

MBB001-06 SS:0.418 — BACKGROUND SELENIUM DATA REPORTED IN MG/KG,DW

MWD085-09 SS:91.8 — SOIL SELENIUM DATA REPORTED IN MG/KG,DW

DRAFT 3/11/10

ISSUE REV	DESCRIPTION	TECH	ENG	DATE
A	DRAFT	CHF	CDD	03/02/10

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1. POST-MINE TOPOGRAPHY GENERATED FROM:
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- SURVEY DATA FOR BALLARD MINE PROVIDED BY OLYMPUS AERIAL SURVEYS, INC. DATED: JUNE 2005.
- SURVEY DATA FOR HENRY MINE AREA PROVIDED BY OLYMPUS AERIAL SURVEYS, INC. DATED: NOVEMBER 2008.
- SURVEY DATA FOR ENOCH VALLEY MINE AREA PROVIDED BY P4 PRODUCTION DATED: DECEMBER 2007.
- US CENSUS BUREAU 2007 TIGER LINE DATA

PROJECTION: STATE PLANE COORDINATE SYSTEM
ZONE: IDAHO EAST
HORIZONTAL DATUM: NAD27
VERTICAL DATUM: NGVD29
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DESIGNED BY	D BRAME	03/02/10
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PROJECT MANAGER	C FOULK	03/02/10
CLIENT APPROVAL		
CLIENT REFERENCE NO.		

P4 Production, LLC

PROJECT LOCATION: BALLARD, HENRY AND ENOCH VALLEY MINES
PROJECT: SUPPLEMENTAL SOIL AND VEGETATION CHARACTERIZATION DATA SUMMARY TECHNICAL MEMORANDUM
TITLE: 2009 ENOCH VALLEY MINE AREA SOIL SAMPLE LOCATIONS AND RESULTS

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FILE NAME 1005813D263

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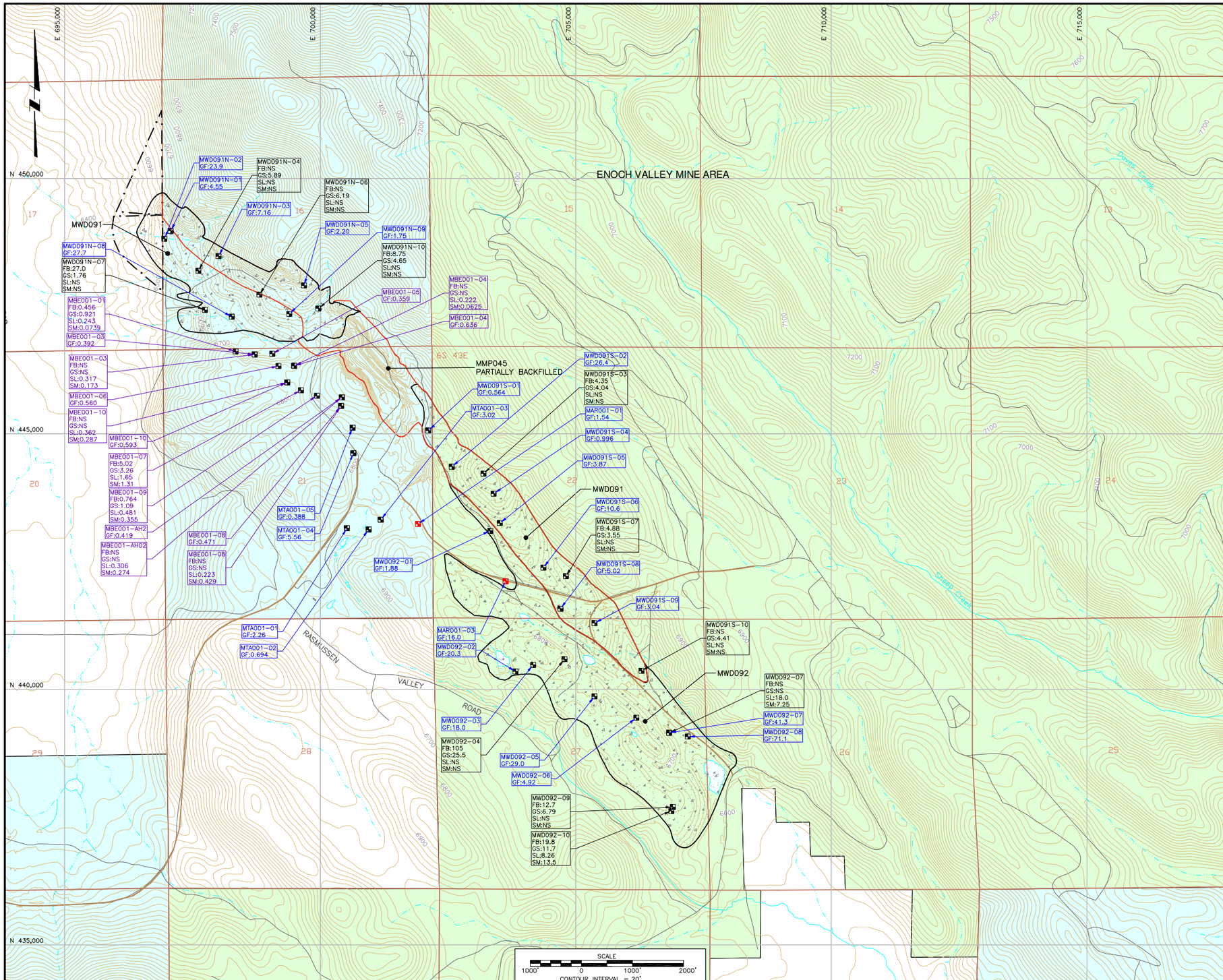

LEGEND:

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- RIVER
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STATION TYPE:

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- MBE = BACKGROUND AREA VEGETATION SAMPLE LOCATION
- MTA = TIPPLE AREA SAMPLE LOCATION
- MWD = WASTE ROCK DUMP VEGETATION SAMPLE LOCATION

KEY:

MMP = MINE PIT
MWD = WASTE ROCK DUMP
GF = GRASSES AND FORBS COMBINED
FB = FORBS
GS = GRASSES
SF = SHRUB FRUIT
SL = SHRUB LEAF
SM = SHRUB STEM
NS = NO SAMPLE

MBB001-03 GF:0.390 — BACKGROUND SELENIUM DATA REPORTED IN MG/KG,DW

MHR002-10 FB:49 GS:3.78 SL:NS SM:NS — VEGETATION LIFE FORM SELENIUM DATA REPORTED IN MG/KG,DW

MWD085-09 GF:91.8 — VEGETATION SELENIUM DATA REPORTED IN MG/KG,DW

DRAFT 3/11/10

ISSUE REV	DESCRIPTION	TECH	ENG	DATE
A	DRAFT	CHF	CDD	03/02/10

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P4 Production, LLC

PROJECT LOCATION: BALLARD, HENRY AND ENOCH VALLEY MINES
PROJECT: SUPPLEMENTAL SOIL AND VEGETATION CHARACTERIZATION DATA SUMMARY TECHNICAL MEMORANDUM
TITLE: 2009 ENOCH VALLEY MINE AREA VEGETATION SAMPLE LOCATIONS AND RESULTS

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FILE NAME 1005813D264

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APPENDIX A3

WELL INSTALLATION TECHNICAL MEMORANDUM (2009)

2009 MONITORING WELL INSTALLATION COMPLETION SUMMARY TECHNICAL MEMORANDUM

Draft
Revision 1

(Comment Response Attached)

July 2010

Prepared by:

MWH AMERICAS, INC.

Prepared for:

P4 PRODUCTION, LLC

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ATTACHMENTS

Attachment A Well Logs
Attachment B Response to Comments

ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DSR	Data Summary Report
EE/CA	Engineering Evaluations/Cost Analysis
EPA	United States Environmental Protection Agency
gpm	gallons per minute
GPS	global positioning system
JSA	Job Safety Analysis
LLC	limited liability company
MWH	MWH Americas, Inc.
PVC	polyvinyl chloride
RI/FS	remedial investigation/feasibility study
TOS	top of screen

1.0 INTRODUCTION AND PURPOSE

This technical memorandum has been prepared by MWH Americas, Inc. (MWH) to present the actual procedures used in, and the results of, drilling to install five new monitoring wells at the Ballard and Enoch Valley mines, which are the property of P4 Production, LLC (P4). These wells were installed to further delineate groundwater primarily impacted by selenium that was detected during previous investigations. The objectives and scope of the 2009 well installation program are described in the *2009 Monitoring Well Installation Technical Memorandum* (MWH, 2009a). The complete rationale and further definition of the objectives can be found in the *2007 and 2008 Data Summary Report* (2007/2008 DSR; MWH, 2009b). This work was conducted to satisfy, in part, conditions of Consent Order/Administrative Order on Consent for the Performance of Site Investigations and Engineering Evaluations/Cost Analysis (EE/CAs) at P4 Production, LLC, Phosphate Mine Sites in Southeastern Idaho (08/20/03), EPA Docket No. CERCLA-10-2003-0117. The former EE/CA investigative process at these mine sites has transitioned into a Remedial Investigation/Feasibility Study (RI/FS) in accordance with the requirements of the Administrative Settlement Agreement and Order on Consent/ Consent Order for RI/FS (2009 CO/AOC; USEPA, 2009). The information presented herein is used in the RI/FS scoping process, and the related water quality and hydraulic testing data are presented and evaluated in the RI/FS Work Plan (to which this document is attached).

This technical memorandum describes the new well installations and presents the well logs. Groundwater quality sampling results are not presented herein, but have been reported in the RI/FS Work Plan. In addition, hydraulic testing (slug testing) of the five new monitoring wells was conducted in early October 2009. These data have been analyzed and reported technical memorandum attached to the RI/FS Work Plan.

2.0 GENERAL DESCRIPTION OF WELL INSTALLATION PROCEDURES

Procedures common to all five drilling sites included: drill site preparation, health and safety procedures, drilling equipment used, logging procedures, and general well material type.

These are described below. The well installation plans and rationale, specific standard operating procedures, and health and safety plan are presented in MWH (2009a).

Prior to mobilizing the drill rig to a drill site, a Job Safety Analysis (JSA) form was prepared to identify potential physical and/or chemical safety hazards present at the jobsite and procedures to mitigate these potential hazards. Then, depending on the amount of site and/or road grading needed, a backhoe or bulldozer was used to construct a sump at each drill site to contain drilling fluids and water produced during drilling. Lastly, when any hot work was performed (such as welding two pieces of casing together) a hot work permit was filled out for that day, signed by appropriate personnel, and maintained on the site premises.

All of the monitoring wells installed during this phase of site investigation were drilled and completed by Independent Drilling of Soda Springs, Idaho using a Reich Drill R650 air rotary drilling rig equipped with either an approximately 8.5-inch diameter tri-cone drill bit or a 10-inch bit, where noted. Eight-inch-diameter steel surface casing was installed at each monitoring well location, typically to depths ranging from approximately 16 feet below ground surface (bgs) to 18 feet bgs, to provide a surface seal. The remainder of the borings were drilled in an open borehole. During drilling, soil and/or rock chip samples of subsurface deposits were collected from each monitoring well, using a strainer, at approximately 5-foot intervals. These samples were logged by a MWH geologist for rock type and other physical properties including color, which was classified using Munsell Soil Color Charts (1992 edition), unless stated otherwise.

Each well was constructed using a 4-inch-diameter Schedule 40 polyvinyl chloride (PVC) bottom cap, well screen, and casing. The well screen contained 0.010-inch machined slots, and stainless steel centralizers were generally attached to the well casings at 40-foot intervals. The sand pack for each well consisted of 20/40-grade sand manufactured by Ogalbay-Norton. When well materials were being placed, the driller tagged the top of the material with a weighted measuring tape (this procedure was not followed at MMW032 as indicated). Each well was fitted with a plastic, expandable and lockable well cap. Each well was completed approximately 3.5 to 4.5 feet above ground surface with a lockable outer casing

cap and concrete surface seal. In addition, the coordinates and elevation of each well location were estimated using a hand-held Garman® global positioning system (GPS) unit, pending a more formal survey by P4. A specific narrative description of each monitoring well is provided below.

Monitoring well locations are shown on Figures 1 and 2. The new wells installed in 2009, including new shallow direct-push monitoring wells, are called out on the figures. However, discussion of the direct-push wells is not included in this technical memorandum, but are included in a separate technical memorandum describing the 2009 direct-push investigation (attached to the RI/FS Work Plan).

3.0 NARRATIVE DESCRIPTIONS OF THE INDIVIDUAL WELLS

Specific details of the five monitoring well installations, including any deviations from planned procedures and unexpected variations in geology and hydrogeology, are provided in this section.

3.1 Monitoring Well MMW032

Monitoring well MMW032 was drilled on August 26, 2009. This new well is located approximately northeast of the Ballard Mine area and specifically northeast of the toe of waste rock dump area MWD084 (Figure 1). Monitoring Well MMW032 was installed to monitor groundwater flowing along deeper flow paths towards Slug Valley Fault as discussed in the 2007/2008 DSR (MWH, 2009b). The target formation for this well was the Dinwoody Formation or deep alluvium.

Monitoring well MMW032 was drilled to a targeted total depth of approximately 160 feet bgs. Generalized subsurface conditions consisted of brown to dark brown alluvium from approximately ground surface to a depth of approximately 55 feet bgs, a relatively thin zone of yellowish brown Dinwoody Formation from approximately 55 feet bgs to approximately 65 feet bgs, and cherty (siliceous) mudstone (Phosphoria Formation) from approximately 65 feet bgs to approximately 160 feet bgs. Groundwater was measured in the boring at a depth of approximately 46 feet bgs upon completion of drilling. According to the driller, the

portion of the target formation that was eventually screened produced approximately 10 gallons per minute (gpm) of water during drilling.

Because the Dinwoody Formation and/or deep alluvium was the target formation for the well screen, MWH instructed the drilling crew to set the well at the bottom of the Dinwoody Formation, a depth of 65 feet bgs. However, the drilling crew did not have the proper well screen or sand pack material with them (0.020 slots and 10/20 sand instead of the specified 0.010 slots and 20/40 sand). Therefore, they pulled back the drill pipe to a depth of 40 feet bgs, which is above the measured water table, and postponed additional well installation activities until they could order the proper well materials.

On August 27, 2009, the drilling crew mobilized back to the site with the proper well materials. However, the drillers indicated that they were only able to get 10-foot sections of 0.010 well screens from their supplier. No 5-foot sections were available. After measuring the depth to the bottom of the borehole, the drilling crew indicated that the borehole had naturally collapsed to 134 feet bgs. Bentonite chips were used to backfill the borehole from 134 feet bgs to approximately 69 feet bgs, then add sand was added from 69 feet bgs to 65 feet bgs and a 10-foot section of well screen was set at a depth of approximately 65 feet bgs. Two centralizers were applied to the casing above the well screen at approximately equal intervals.

After installing the well screen and casing to a depth of approximately 65 feet bgs, MWH instructed the drilling crew to add approximately seven bags of the 20/40 sand as a sand pack around the well screen from approximately 65 feet bgs to 51 feet bgs. Based on the depth to water the driller felt that placement of the sand pack by a direct pour opposed to tremie would be acceptable. However, after adding the sand to the well, the drilling crew indicated that depth to the top of sand measured 24 feet bgs, not 51 feet bgs as expected. This may have meant that the borehole had collapsed, prior to adding the sand, to a depth of approximately 38 feet bgs, and the well has a natural filter pack. However, the driller had not followed the SOP and it is uncertain as to which portion of the annulus is native material or sand filter pack. After this finding, MWH instructed the drilling crew to backfill the

remainder of the boring with hydrated bentonite chips to ground surface and prepare the surface seal. The well completion for monitoring well MMW032 is provided on the well logs contained in Attachment A.

The variances in depth of the sand measured during well installation suggested that either the borehole had partially collapsed during filter pack installation or the sand had bridged across the borehole during placement. From the interval of 24 to 65 feet below ground surface, the backfill is some combination of filter sand and native material. It was decided to develop and sample the well prior to making any decision as to the potential need to re-drill the boring and reinstall the well. Development was complicated by the relatively low yield of the screened formation, which required pumping to a dry condition over several cycles. Water quality of suitable turbidity was obtained during the development process, so it appears that the well has a suitable sand or natural filter pack. The analytical results from the well suggest that it is monitoring a deeper groundwater water source and not shallow alluvial groundwater, which has elevated selenium concentrations.

The objective of monitoring well MMW032 was to screen either the upper Dinwoody Formation or alluvium below the depth reached by the direct-push groundwater investigation. The well appears to be well positioned to provide data on the lower alluvium and the thin Dinwoody Formation section present. The lower yield suggests that it is not drawing excessive water from the upper section of alluvium. However, due to the uncertain construction of the well, if a water quality change occurs that suggest the possible presence of shallow alluvial groundwater, then the monitoring well may need to be replaced.

3.2 Monitoring Well MMW033

Monitoring well MMW033 was drilled on August 28, 2009. This new well is located approximately 100 feet north of existing monitoring wells MMW029 and MBW032 in the Ballard Mine area, and is specifically downgradient of waste rock dump MWD082 (Figure 1). Collectively, monitoring wells MMW029, MBW032, and MMW033 constitute nested wells. Monitoring well MMW033 was installed to monitor vertical hydraulic gradients and potential

vertical contaminant transport as discussed in the 2007/2008 DSR (MWH, 2009b). The target formation for this well was the deeper portion of the Dinwoody Formation.

Monitoring well MMW033 was drilled to a targeted total depth of approximately 160 feet bgs. Generalized subsurface conditions consisted of brown alluvium from approximately ground surface to a depth of approximately 18 feet bgs. Below 18 feet bgs, Dinwoody Formation calcareous mudstones, limestones and some claystones were encountered. These rocks were olive-brown to greenish gray from approximately 18 feet to approximately 110 feet bgs, and dark gray or black to olive-gray from approximately 108 to 160 feet bgs. Groundwater was measured in the boring at a depth of approximately 17 feet bgs upon completion of drilling. According to the driller, the screened formation was producing approximately 50 gpm of water during drilling.

The well screen was targeted for the 130 to 150-foot depth interval of the drill hole. This interval produced the most water (approximately 50 gpm), according to the driller, and had the required vertical separation from the adjacent shallow Dinwoody Formation well (MMW029).

After pulling the drill pipe out of the borehole, the driller measured the depth to bottom at approximately 155 feet bgs, indicating that there was approximately 5 feet of slough in the borehole. Prior to setting the well screen and casing, MWH instructed the drilling crew to add sand from a depth of approximately 155 feet bgs to approximately 150 feet bgs and to set 20 feet of well screen at approximately 150 feet bgs (top of screen [TOS] at approximately 130 feet bgs). The actual well screen depth was measured at approximately 148 feet bgs (TOS at approximately 128 feet bgs).

After installing the well screen and casing to a depth of approximately 148 feet bgs, the drilling crew added approximately 14 bags of 20/40 sand as a sand pack around the well screen from approximately 148 feet bgs to 124 feet bgs. MWH then instructed the drilling crew to backfill the remainder of the boring with hydrated bentonite chips to ground surface

and prepare the surface seal. A detail of the well completion for monitoring well MMW033 is provided in the Well Logs (Attachment A).

Monitoring well MMW033 screened the targeted Dinwoody Formation with the planned vertical separation from the shallower MMW029 as planned.

3.3 Monitoring Well MMW034

Monitoring well MMW034 was drilled on September 1 and September 2, 2009. This new well is located approximately 20 feet southeast of monitoring well MMW013 in the southeast Enoch Valley Mine area and is specifically downgradient of waste rock dump MWD092 (Figure 2). Monitoring well MMW034 was installed to monitor the deeper portion of the Dinwoody Formation to assess the vertical hydraulic gradient and contaminant transport.

Monitoring well MMW034 was drilled to a targeted total depth of approximately 160 feet bgs. Generalized subsurface conditions consisted of dark brown to olive yellow, sandy to silty clay with gravel (alluvium) from approximately ground surface to a depth of approximately 19 feet bgs, which was underlain by olive yellow to dark red-brown and olive calcareous siltstone and mudstone of the Dinwoody Formation from approximately 19 feet bgs to 160 feet bgs (i.e., target depth). Groundwater was measured in the boring at a depth of approximately 10 feet bgs upon completion of drilling. According to the driller, the formation was producing approximately 45 gpm of water during drilling.

Based on the static water level measured in this borehole at 10 feet bgs, MWH instructed the drilling crew to install 20 feet of well screen at a depth of approximately 160 feet bgs in the lower Dinwoody Formation. After pulling the drill pipe out of the borehole, the driller measured the depth to bottom at approximately 160 feet bgs. Prior to setting the well screen and casing at the selected depth, MWH directed the drilling crew to add one bag of sand to the borehole and set 20 feet of well screen at a depth of approximately 158 feet bgs. After the drilling crew installed the well screen and casing, there was approximately 4 feet of PVC pipe sticking up out of the hole, which meant that the borehole had collapsed somewhat prior to setting the well screen, so that the bottom of the screen was actually at 156 feet bgs.

Therefore, the well screen was screened across the interval from approximately 156 feet bgs to 136 feet bgs, with the remainder being blank casing.

After installing the well screen and casing to a depth of approximately 156 feet bgs, the drilling crew added approximately 15 bags of 20/40 sand as a sand pack around the well screen from approximately 156 feet bgs to 126 feet bgs. MWH then instructed the drilling crew to backfill the remainder of the boring with hydrated bentonite chips to ground surface and prepare the surface seal. A detail of the well completion for MMW034 is provided in the Well Logs (Attachment A).

3.4 Monitoring Well MMW035

Monitoring well MMW035 was drilled on August 29 and August 30, 2009. This new well is located approximately 20 feet north of existing monitoring wells MMW027 and MMW012 in the northwest Enoch Valley Mine area and is specifically downgradient of waste rock dump MWD091 (Figure 2). Collectively, monitoring wells MMW035, MMW027, and MMW012 constitute nested wells. Monitoring well MMW035 was installed to monitor the deeper Dinwoody Formation groundwater to assess the vertical hydraulic gradient and contaminant transport.

Monitoring well MMW035 was drilled to a targeted total depth of approximately 200 feet bgs. Generalized subsurface conditions consisted of dark red-brown to light brown sandy clay with gravel (colluviums) from approximately ground surface to a depth of approximately 22 feet bgs, followed by a black layer of basalt from approximately 18 feet to approximately 33 feet bgs, which was underlain by light yellow to olive brown and olive-gray Dinwoody Formation from approximately 33 feet bgs to 200 feet bgs (i.e., target depth). Groundwater was measured in the boring at a depth of approximately 76 feet bgs upon completion of drilling. According to the driller, the screened formation was producing approximately 50 gpm of water during drilling.

At the completion of drilling, MWH instructed the drilling crew to install the well at a depth of approximately 200 feet bgs in the deeper Dinwoody Formation. After pulling the drill

pipe out of the borehole, the driller measured the depth to bottom at approximately 200 feet bgs. Prior to setting the well screen and casing, MWH instructed the drilling crew to add one bag of sand from a depth of approximately 200 feet bgs to approximately 199 feet bgs and to set 20 feet of well screen at approximately 199 feet bgs (top of screen [TOS] at approximately 179 feet bgs).

After installing the well screen and casing to a depth of approximately 199 feet bgs, the drilling crew added approximately 14 bags of 20/40 sand as a sand pack around the well screen from approximately 199 feet bgs to 176 feet bgs. MWH then instructed the drilling crew to backfill the remainder of the boring with hydrated bentonite chips to ground surface and prepare the surface seal. A detail of the well completion for MMW035 is provided in the Well Logs (Attachment A).

3.5 Monitoring Well MMW036

Monitoring well MMW036 was drilled on August 31, 2009. This new well is located approximately 700 to 800 feet west of monitoring wells MMW035, MMW027 and MMW012 in the northwest Enoch Valley Mine area and is specifically downgradient of waste rock dump MWD091 (Figure 2). Monitoring well MMW036 was installed in the apparent downgradient (down dip) direction from MMW027 and MWD091 to monitor groundwater in the shallower portion of the Dinwoody Formation in a lateral direction at a target depth of 120 feet bgs.

Monitoring well MMW036 was drilled to a targeted total depth of approximately 160 feet bgs. Generalized subsurface conditions consisted of dark brown to yellowish brown, sandy clay, blackish brown gravelly sand, and gravelly-sandy-clay mixtures (colluvium) from approximately ground surface to a depth of approximately 88 feet bgs, followed by a thick deposit of hard, black basalt (with frequent fractured zones) from approximately 88 feet to 160 feet bgs. Once the basalt was encountered at 88 feet bgs, the drilling crew lost circulation so no cuttings were available to the total depth. Groundwater was measured in the boring at a depth of approximately 105 feet bgs upon completion of drilling and at 108

feet bgs 24 hours later. According to the driller, the formation was producing approximately 20 gpm of water during drilling.

At the completion of drilling, MWH and P4 personnel discussed the field finding that no Dinwoody Formation was encountered during drilling. The objective of the monitoring well was to assess the potential lateral extent of contamination indicated by the wells nearer the source (e.g., MMW027). It was apparent that the basalt layer represents the shallowest hydrogeologic unit in the valley east of the mine area, and is comparable to a local alluvial system. The connection of the basalt at MMW036 to the impacted units to the east is unknown, but given the fractured nature of the basalt at MMW036, this basalt unit is possibly in direct hydraulic connection with the impacted units to the east. Based on these considerations, and the fact that the static water level in this borehole was measured at 108 feet bgs, which is similar in depth to that recorded for MMW027, MWH instructed the drilling crew to install 20 feet of well screen at a depth of approximately 135 feet bgs in the shallow basalt deposit. After pulling the drill pipe out of the borehole, the driller measured the depth to bottom at approximately 160 feet bgs. Prior to setting the well screen and casing at the selected depth, MWH instructed the drilling crew to add bentonite chips from 160 feet to 137 feet bgs and then one bag of sand from a depth of approximately 137 to 135 feet bgs. The drilling crew then installed 20 feet of well screen from 135 to 115 feet bgs, with the remainder being blank casing.

After installing the well screen and casing to a depth of approximately 135 feet bgs, the drilling crew added approximately 14 bags of 20/40 sand as a sand pack around the well screen extending the sand filter pack from approximately 135 feet bgs to 111 feet bgs. MWH then instructed the drilling crew to backfill the remainder of the boring with hydrated bentonite chips to ground surface and prepare the surface seal. A detail of the well completion for MMW035 is provided in the Well Logs (Attachment A).

Given that the objective of monitoring well MMW036 was to investigate the lateral extent of contamination observed at MMW027 in the shallow portion of the groundwater system, installation of MMW036 in the permeable, fractured basalt fulfills that objective. It is

possible that the presence of basalt, with what appears to be relatively high hydraulic conductivity, accounts for the deeper depth to groundwater observed in this area compared to similar areas. The alluvial wells advanced downgradient of waste rock dump MWD091 have tended to be dry. This will be further evaluated through estimation of the hydraulic conductivity of MMW036 when slug testing is completed and analyzed.

3.6 Monitoring Wells MW-15A and MW-16A

Monitoring wells MW-15A and MW-16A were installed in 2006 as part of baseline data collection for the nearby Blackfoot Bridge Mine permitting process. Data collected from these wells for the Blackfoot Bridge program have been used as part of the EE/CA hydrogeologic characterization/groundwater quality program at the Ballard Mine. These wells are no longer being used for baseline data collection, but will continue to be used in the Ballard Mine RI/FS program. The logs for these wells have not previously been presented as part of the EE/CA; therefore, they are attached to this technical memorandum in Attachment A. Specifications of these wells have been presented in previous EE/CA documents.

4.0 REFERENCES

MWH, 2009a. *2009 Monitoring Well Installation Technical Memorandum, Final – Revision 1*. August 7.

MWH, 2009b. *2007 and 2008 Data Summary Report, Mine Sites Investigation, Final – Revision 2*. August 18.

USEPA, 2009. *Administrative Settlement Agreement and Order on Consent/Consent Order for Performance of Remedial Investigation and Feasibility Study at the Enoch, Henry, and Ballard Mine Sites in Southeastern Idaho.* United States Environmental Protection Agency, U.S. EPA Region 10, Idaho Department of Environmental Quality, United States Department of Agriculture, Forest Service Region 4, United States Department of the Interior, Bureau of Land Management, Shoshone-Bannock Tribes, in the Matter of Enoch Valley Mine, Henry Mine, Ballard Mine, P4 Production, L.L.C., Respondent. Effective Date of November 30, 2009.

TABLE 1

2009 AS-BUILT MONITORING WELL CONSTRUCTION SPECIFICATIONS

THE BALLARD AND ENOCH VALLEY MINES

Mine	Well #	GPS* Well Coordinates	GPS* Elevation (ft. AMSL)	Depth of Borehole (ft. bgs)	Depth to Water (ft. bgs)	Well Depth (ft.bgs)	Surface Casing		Well Casing			Well Screen			Backfill			Sand Pack Type and Depth Interval			Hydrated Bentonite Chips: Depth Interval	
							Dia. & Material	Depth from Surface (ft. bgs)	Dia. & Material	PVC Material	Depth from Surface (ft.bgs)	Dia. & Material	Slot Size (in.)	Screen Length (ft.)	Material Type	From (ft. bgs)	To (ft. bgs)	Sand Size	From (ft. bgs)	To (ft. bgs)	From (ft. bgs)	To (ft. bgs)
Ballard	MMW032 (see note 1)	N 42° 50' 09.3" W 111° 28' 21.8"	6,460	160	29	65	8" Steel	17	4" PVC	Sch. 40	55	4" PVC	0.010	10	Bentonite & Native	160	69	20/40	69	24	24	0
	MMW033	N 42° 49' 35.3" W 111° 28' 11.9"	6,516	160	17	150	8" Steel	16.5	4" PVC	Sch. 40	130	4" PVC	0.010	20	Sand	155	148	20/40	148	124	124	0
Enoch Valley	MMW034	N 42° 52' 09.1" W 111° 24' 14.8"	6,637	160	10	156	8" Steel	18	4" PVC	Sch. 40	136	4" PVC	0.010	20	Sand & Native	160	156	20/40	156	126	126	0
	MMW035	N 42° 53' 29.5" W 111° 25' 54.3"	6,494	200	76	199	8" Steel	31	4" PVC	Sch. 40	179	4" PVC	0.010	20	Sand	200	199	20/40	199	176	176	0
	MMW036	N 42° 53' 26.7" W 111° 26' 05.6"	6,444	160	108	135	8" Steel	16	4" PVC	Sch. 40	115	4" PVC	0.010	20	Bentonite	160	137	20/40	137	111	111	0

Notes:

*Preliminary survey data using handheld GPS equipment; more accurate coordinates and elevations will be obtained by P4 during a future formal survey.

1 – The sand pack interval in MMW032 is uncertain; it is a combination of sand and native material either due to bridging or borehole collapse.

bgs – below ground surface

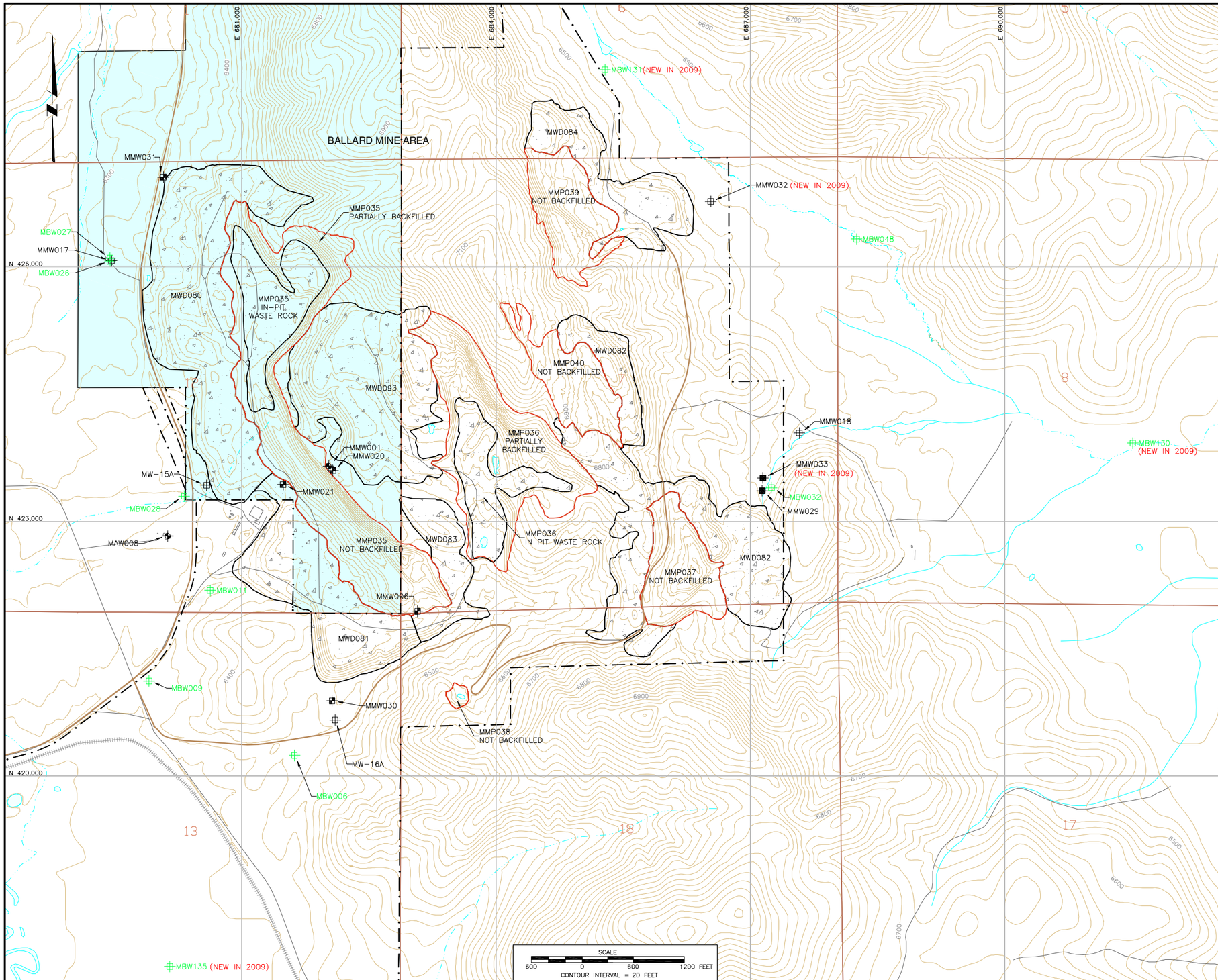
ft - feet

PVC – polyvinyl chloride (pipe)

AMSL – above mean sea level

GPS – global positioning system

FIGURES



LEGEND:

- POST-MINE CONTOUR & ELEVATION, FEET
- RIVER
- POND OR LAKE
- STREAM – PERENNIAL
- STREAM – INTERMITTENT
- HIGHWAY
- ROAD
- RAILROAD
- P4 PRODUCTION HAUL ROAD (ACTIVE & INACTIVE)
- MINE PIT LOCATION (APPROXIMATE WHERE COVERED BY BACKFILL)
- WASTE ROCK PILE LOCATION
- WASTE ROCK PILE LOCATION OR PIT BACKFILL (APPROXIMATE)
- APPROXIMATE OWNERSHIP BOUNDARY
- SECTION LINES
- 20 SECTION NUMBER
- BLM LANDS
- US NATIONAL FORESTS
- STATE LANDS
- NON FEDERAL LANDS

STATION TYPE:

- MAW = AGRICULTURAL WELL
- MDW = DOMESTIC WELL
- MPW = PRODUCTION WELL
- MMW = LOCAL AQUIFER MONITORING WELL (GENERALLY ALLUVIAL SYSTEM)
- MMW = INTERMEDIATE AQUIFER MONITORING WELL (GENERALLY DINWOODY FM.)
- MMW = REGIONAL AQUIFER MONITORING WELL (WELLS FM.)
- MMW = AQUIFER MONITORING WELL (UNKNOWN OR MULTIPLE AQUIFERS SCREENED)
- MBW = DIRECT PUSH ALLUVIAL AQUIFER WELL

KEY:

MMP = MINE PIT
MWD = WASTE ROCK DUMP

ISSUED DRAFT FOR AGENCY REVIEW 12/11/09

ISSUE REV	DESCRIPTION	TECH	ENG	DATE
1	ISSUED DRAFT FOR AGENCY REVIEW	CHF	CLF	12/11/09
0	ISSUED DRAFT FOR CLIENT REVIEW	CHF	CLF	11/16/09
A	DRAFT	CHF	CLF	10/16/09

DISCLAIMER:
THIS DRAWING WAS DEVELOPED THROUGH THE APPLICATION OF PROFESSIONAL ENGINEERING SKILL AND PROPRIETARY METHODOLOGIES, PROCESSES AND KNOW HOW OF MWH AS AUTHOR ALL PURSUANT TO THE TERMS OF A CONTRACTUAL SCOPE OF WORK GOVERNING ITS PREPARATION. THIS DRAWING MAY NOT BE USED OR MODIFIED OTHER THAN IN STRICT ACCORDANCE WITH THE TERMS OF THE GOVERNING CONTRACT AND SCOPE OF WORK OR OTHERWISE ABSENT THE INVOLVEMENT AND CONSENT OF THE AUTHOR. ANY ALTERATION OR ADAPTATION OF THIS DRAWING SHALL BE CONSISTENT WITH THE AUTHOR'S CONTRACTUAL AND PROPRIETARY RIGHTS AND BE AT USER'S SOLE RISK AND WITHOUT ANY LIABILITY OR LEGAL RESPONSIBILITY OF MWH.

DRAWING REFERENCE(S):
1. POST-MINE TOPOGRAPHY GENERATED FROM:
- USGS DIGITAL ELEVATION MODELS (DEM)-24K.
- SURVEY DATA FOR BALLARD MINE PROVIDED BY OLYMPUS AERIAL SURVEYS, INC. DATED: JUNE 2005.
- SURVEY DATA FOR HENRY MINE AREA PROVIDED BY OLYMPUS AERIAL SURVEYS, INC. DATED: NOVEMBER 2008.
- SURVEY DATA FOR ENOCH VALLEY MINE AREA PROVIDED BY P4 PRODUCTION DATED: DECEMBER 2007.
- US CENSUS BUREAU 2007 TIGER LINE DATA

PROJECTION: STATE PLANE COORDINATE SYSTEM
ZONE: IDAHO EAST
HORIZONTAL DATUM: NAD27
VERTICAL DATUM: NGVD29
UNITS: U.S. FEET

DESIGNED BY	C FOULK	12/11/09
DRAWN BY	E MARKS	12/11/09
CHECKED BY	C FOULK	12/11/09
APPROVED BY	C FOULK	12/11/09
PROJECT MANAGER	C FOULK	12/11/09
CLIENT APPROVAL	B KOCH	12/02/09
CLIENT REFERENCE NO.		

P4 Production, LLC

PROJECT LOCATION: BALLARD, HENRY AND ENOCH VALLEY MINES
PROJECT: 2009 WELL INSTALLATION COMPLETION SUMMARY TECHNICAL MEMORANDUM
TITLE: WELL LOCATIONS - BALLARD MINE

MWH

FIGURE: 1 of 2
REVISION: 1
FILE NAME: 1005813D205

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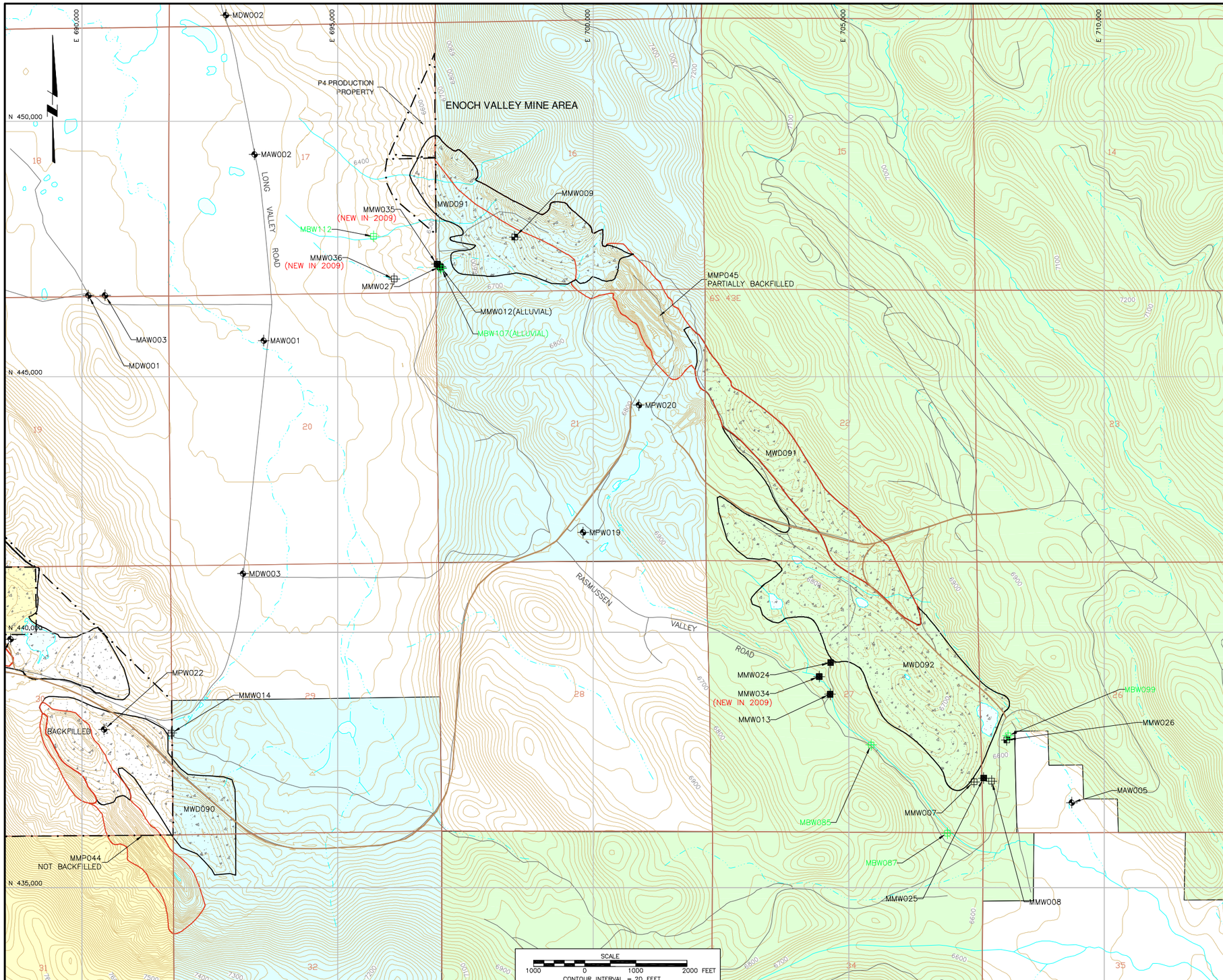

LEGEND:

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- WASTE ROCK PILE LOCATION OR PIT BACKFILL (APPROXIMATE)
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- MMW = AQUIFER MONITORING WELL (UNKNOWN OR MULTIPLE AQUIFERS SCREENED)
- MBW = DIRECT PUSH ALLUVIAL AQUIFER WELL

KEY:

MMP = MINE PIT
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ISSUED DRAFT FOR AGENCY REVIEW 12/11/09

ISSUE REV	DESCRIPTION	TECH	ENG	DATE
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- SURVEY DATA FOR ENOCH VALLEY MINE AREA PROVIDED BY P4 PRODUCTION DATED: DECEMBER 2007.
- US CENSUS BUREAU 2007 TIGER LINE DATA

PROJECTION: STATE PLANE COORDINATE SYSTEM
ZONE: IDAHO EAST
HORIZONTAL DATUM: NAD27
VERTICAL DATUM: NGVD29
UNITS: U.S. FEET

DESIGNED BY	C FOULK	12/11/09
DRAWN BY	E MARKS	12/11/09
CHECKED BY	C FOULK	12/11/09
APPROVED BY	C FOULK	12/11/09
PROJECT MANAGER	C FOULK	12/11/09
CLIENT APPROVAL	B KOCH	12/02/09
CLIENT REFERENCE NO.		

P4 Production, LLC

PROJECT LOCATION: BALLARD, HENRY AND ENOCH VALLEY MINES
PROJECT: 2009 WELL INSTALLATION COMPLETION SUMMARY TECHNICAL MEMORANDUM
TITLE: WELL LOCATIONS - ENOCH VALLEY MINE

MWH

FIGURE: 2 of 2
REVISION: 1
FILE NAME: 1005813D204

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ATTACHMENT A

WELL LOGS

RECORD OF BOREHOLE: MMW032

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Air Rotary
Drilling Date(s)	: 8/26/09	Drilled By	: Kip Rahmig (Independent)
Latitude	: N 42 50' 15.5"	Logged By	: J. Yurkovich (MWH)
Longitude	: W 111 28' 36.3"	Installed By	: Kip Rahmig (Independent)
Elevation (ft) AMSL	: 6,460 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Sample	Time	DESCRIPTION	Formation
1	0830	Silty sand, dry, brown (7.5YR, 4/3).	Alluvium
2	0833		
3	0835	Silty sand, moist, brown (7.5YR, 4/3).	
4	0840	Sandy clay, trace gravel, red-brown (5YR, 5/2), med plasticity, wet.	
5	0900		
6	0910	Gravely sand with clay, black and brown (7.5YR, 5/2), poorly graded, wet, clay nodules present.	
7	0912		
8	0916		
9	0922	Sandy gravel with clay, brown (7.5YR, 5/3), wet. Clay: 15% Sand: 30% Gravel: 55%	
10	0926	Gravelly sand, dark brown (7.5YR, 2.5/1), wet.	
11	0932	Weathered bedrock, brown (10YR, 5/4), poorly graded, wet.	
12	0938	Mudstone and some sandstone, yellowish-brown (10YR, 5/4), some slightly calcareous, up to fine grained sand.	Dinwoody
13	0944		
14	0954	Mudstone, non-calcareous, black (GLEY, 2.5/10B), wet, cuttings, siliceous (cherty).	Phosphoria
15	0956		
16	0958		
17	1000		
18	1002		
19	1004		
20	1006		

Depth in Feet: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100

Well Details

CONSTRUCTION DETAILS

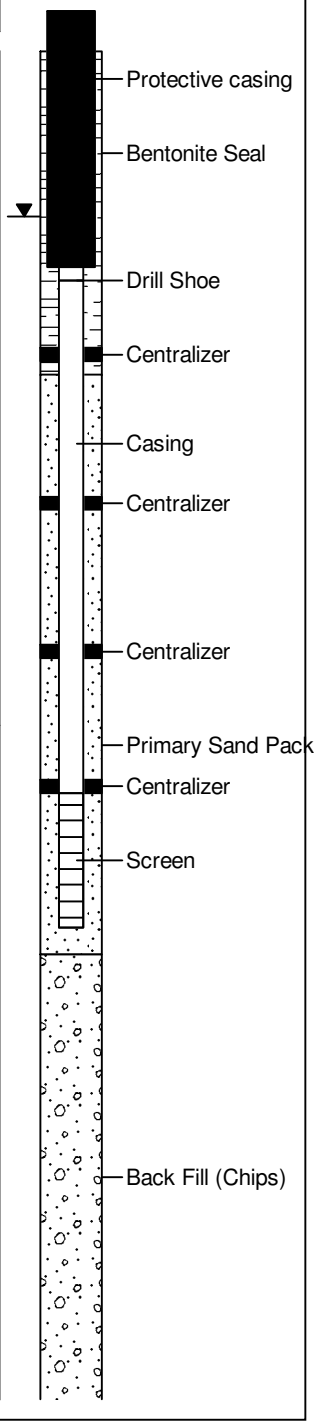
Installation Date	: 8/27/2009
Boring Total Depth (ft bgs)	: 160
Well Total Depth (ft bgs)	: 65
Casing Type	: Schedule 40 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 10
Screened Interval (ft bgs)	: 65-55
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 67-24
Secondary Filter Interval (ft bgs)	: N/A
Bentonite Seal (Chips)	:
Interval (ft bgs)	: 24-0
Bentonite Seal (slurry)	:
Interval (ft bgs)	: NA
Formation at Screen	: Dinwoody
Depth Water Encountered: when Drilling (ft bgs)	: 35
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	:
Backfill (ft bgs)	: 160-67
Steel Casing Depth (ft bgs)	: 17
Pump Depth (ft bgs)	: 61
Pump Intake Depth (ft bgs)	: 61
Height of MP (ft ags)	: 3

SAMPLE DETAILS

Fall 09 Static Water Level (ft bmp)	: 35
Fall 09 Total Se (mg/L)	:

NOTES:
Bottom of borehole at 160ft bgs.
Cuttings were always wet due to water being injected as drilling fluid, or produced by formations.
Backfilled to 67 ft bgs to place the well screen within the target formation.
Borehole collapsed or sand bridged during filter pack placement-composition of 24-65' is unknown with sand and native material.

Well: MMW032
Elev.: 6,460 AMSL



RECORD OF BOREHOLE: MMW032

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Air Rotary
Drilling Date(s)	: 8/26/09	Drilled By	: Kip Rahmig (Independent)
Latitude	: N 42 50' 15.5"	Logged By	: J. Yurkovich (MWH)
Longitude	: W 111 28' 36.3"	Installed By	: Kip Rahmig (Independent)
Elevation (ft) AMSL	: 6,460 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
100	21	1008	Mudstone, same as above.	Phosphoria
105	22	1010		
110	23	1012		
115	24	1014		
120	25	1016		
125	26	1018		
130	27	1020		
135	28	1022		
140	29	1024		
145	30	1026		
150	31	1028		
155	32	1030		
160				
165				
170				
175				
180				
185				
190				
195				
200				

Well Details

CONSTRUCTION DETAILS

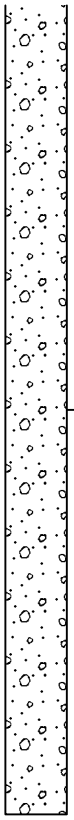
Installation Date	: 8/27/2009
Boring Total Depth (ft bgs)	: 160
Well Total Depth (ft bgs)	: 65
Casing Type	: Schedule 40 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 10
Screened Interval (ft bgs)	: 65-55
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 67-24
Secondary Filter Interval (ft bgs)	: N/A
Bentonite Seal (Chips)	:
Interval (ft bgs)	: 24-0
Bentonite Seal (slurry)	:
Interval (ft bgs)	: NA
Formation at Screen	: Dinwoody
Depth Water Encountered: when Drilling (ft bgs)	: 35
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	:
Backfill (ft bgs)	: 160-67
Steel Casing Depth (ft bgs)	: 17
Pump Depth (ft bgs)	: 61
Pump Intake Depth (ft bgs)	: 61
Height of MP (ft ags)	: 3

SAMPLE DETAILS

Fall 09 Static Water Level :(ft bmp)	: 35
Fall 09 Total Se (mg/L)	:

NOTES:
Bottom of borehole at 160ft bgs.
Cuttings were always wet due to water being injected as drilling fluid, or produced by formations.
Backfilled to 67 ft bgs to place the well screen within the target formation.
Borehole collapsed or sand bridged during filter pack placement-composition of 24-65' is unknown with sand and native material.

Well: MMW032
Elev.: 6,460 AMSL



RECORD OF BOREHOLE: MMW033

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Air Rotary
Drilling Date(s)	: 8/28/09	Drilled By	: Kip Rahmig (Independent)
Latitude	: N 42 49' 58.8"	Logged By	: J. Yurkovich (MWH)
Longitude	: W 111 28' 19.8"	Installed By	: Kip Rahmig (Independent)
Elevation (ft) AMSL	: 6,516 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	0922	Sandy silt, dry, brown (10YR, 5/3).	Alluvium
5	2	0925		
10	3	0930	Sandy silt with some clay, dry, brown (10YR, 5/3), slightly plastic.	
15	4	0935	Clayey sand, olive-brown (2.5YR, 6/3), wet.	
20	5	1030	Rock @ 18' bgs. Mudstone, olive-brown (2.5YR, 6/3), calcareous.	Dinwoody
25	6	1040		
30	7	1045	Claystone, olive-brown (2.5YR, 6/3), calcareous, some mudstone.	
35	8	1050	Mudstone, olive-brown (2.5YR, 4/2), calcareous, some limestone with calcite veining.	
40	9	1055		
45	10	1058		
50	11	1100		
55	12	1102	Mudstone, gray (1GLEY, 5/N), calcareous.	
60	13	1104	Mudstone, some fine sand, greenish-gray (1GLEY, 6/10), calcareous.	
65	14	1106		
70	15	1108		
75	16	1110		
80	17	1113		
85	18	1117	becomes olive-brown, producing 10-15GPM.	
90	19	1121		
95	20	1124		
100				

Well Details

CONSTRUCTION DETAILS

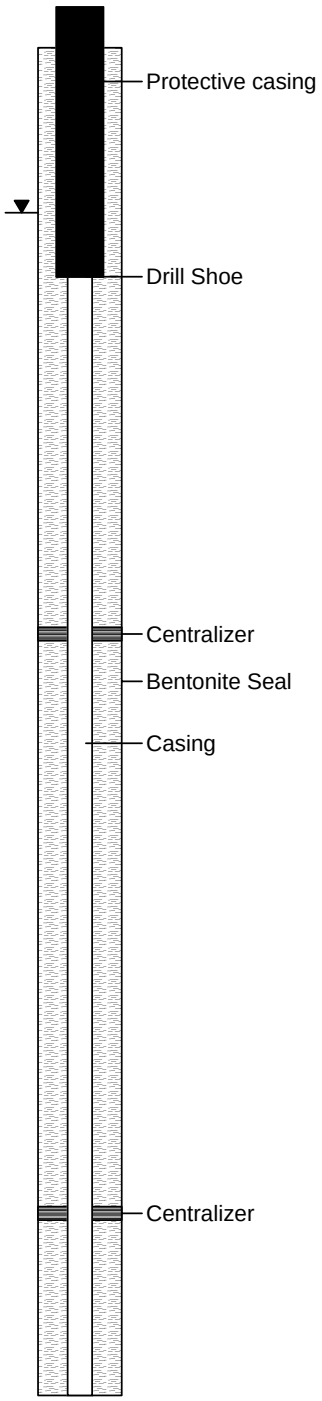
Installation Date	: 8/28/2009
Boring Total Depth (ft bgs)	: 160
Well Total Depth (ft bgs)	: 150
Casing Type	: Schedule 40 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 20
Screened Interval (ft bgs)	: 148-128
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 155-124
Secondary Filter Interval	: N/A
(ft bgs)	:
Bentonite Seal (Chips)	:
Interval (ft bgs)	: 124-0
Bentonite Seal (slurry)	:
Interval (ft bgs)	: NA
Formation at Screen	: Dinwoody
Depth Water Encountered	:
when Drilling (ft bgs)	: 17
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	:
Backfill (ft bgs)	: 155-150 (Sand)
Steel Casing Depth	:
(ft bgs)	: 17
Pump Depth (ft bgs)	: 141
Pump Intake Depth (ft bgs)	: 141
Height of MP (ft ags)	: 3

SAMPLE DETAILS

Fall 09 Static Water Level (ft bmp) : 20
Fall 09 Total Se (mg/L) :

NOTES:
Bottom of borehole at 160ft bgs.
Cuttings were always wet due to water being injected as drilling fluid, or produced by formations.
Backfilled with sand to 150 ft bgs to place the well screen within the target formation.

Well: MMW033
Elev.: 6,516 AMSL



RECORD OF BOREHOLE: MMW033

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Air Rotary
Drilling Date(s)	: 8/28/09	Drilled By	: Kip Rahmig (Independent)
Latitude	: N 42 49' 58.8"	Logged By	: J. Yurkovich (MWH)
Longitude	: W 111 28' 19.8"	Installed By	: Kip Rahmig (Independent)
Elevation (ft) AMSL	: 6,516 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
100	21	1127	Mudstone, olive-brown (2.5YR, 4/2), some sand, calcareous.	Dinwoody
105	22	1130		
110	23	1135	Claystone, gray (GLEY 1, 4/N), glossy, slightly calcareous to non-calcareous.	
115	24	1138		
120	25	1141		
125	26	1144	Limestone and mudstone, medium gray (GLEY 1, 5/N), fissle, calcareous.	
130	27	1147		
135	28	1150		
140	29	1152	Limestone and mudstone, olive-gray mix, (GLEY 1, 5/N), fissle limestone, calcareous mudstone.	
145	30	1155		
150	31	1158	Limestone, gray (GLEY 1, 5/N).	
155	32	1200		
160				
165				
170				
175				
180				
185				
190				
195				
200				

Well Details

CONSTRUCTION DETAILS

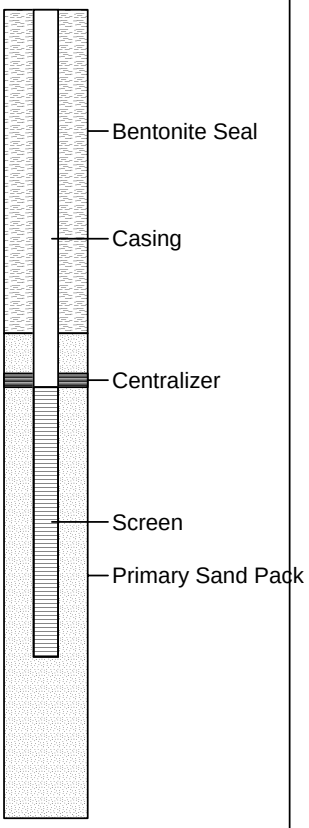
Installation Date	: 8/28/2009
Boring Total Depth (ft bgs)	: 160
Well Total Depth (ft bgs)	: 150
Casing Type	: Schedule 40 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 20
Screened Interval (ft bgs)	: 148-128
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 155-124
Secondary Filter Interval	: N/A
(ft bgs)	:
Bentonite Seal (Chips)	:
Interval (ft bgs)	: 124-0
Bentonite Seal (slurry)	:
Interval (ft bgs)	: NA
Formation at Screen	: Dinwoody
Depth Water Encountered	:
when Drilling (ft bgs)	: 17
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	:
Backfill (ft bgs)	: 155-150 (Sand)
Steel Casing Depth	:
(ft bgs)	: 17
Pump Depth (ft bgs)	: 141
Pump Intake Depth (ft bgs)	: 141
Height of MP (ft ags)	: 3

SAMPLE DETAILS

Fall 09 Static Water Level (ft bmp) : 20
Fall 09 Total Se (mg/L) :

NOTES:
Bottom of borehole at 160ft bgs.
Cuttings were always wet due to water being injected as drilling fluid, or produced by formations.
Backfilled with sand to 150 ft bgs to place the well screen within the target formation.

Well: MMW033
Elev.: 6,516 AMSL



RECORD OF BOREHOLE: MMW034

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Air Rotary
Drilling Date(s)	: 9/1/09-9/2/29	Drilled By	: Kip Rahmig (Independent)
Latitude	: N 42 52' 09.1"	Logged By	: J. Yurkovich (MWH)
Longitude	: W 111 24' 14.8"	Installed By	: Kip Rahmig (Independent)
Elevation (ft) AMSL	: 6,637 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Sample	Time	DESCRIPTION	Formation
1	1615	Sandy clay, dark brown (7.5YR, 4/2), dry.	Alluvium
2	1617		
3	1618	Sandy clay, little-some gravels, moist, olive-yellow (2.5Y, 6/6).	
4	1620	Fat clay, olive-yellow, moist, high plasticity, some sand and gravel, gravels are olive colored, like Dinwoody (2.5Y, 6/6) and calcareous.	
5	1650		
		Siltstone, olive-yellow (2.5Y, 6/6).	Dinwoody
6	1655	Siltstone, light olive-brown (2.5Y, 5/4), wet.	
7	1657	Mudstone, dark red-brown and olive (5YR, 3/3) and (5Y,5/3), with some clay nodules, calcareous, and laminated.	
8	1703		
9	1706		
10	1708		
11	1710		
12	1712		
13	1714		
14	1715		
15	1717		
16	1719		
17	0822	Mudstone, dark reddish-brown, (5YR, 3/3), calcareous, some clay nodules.	
18	0825	Mudstone, now olive (5Y, 5/3).	
19	0828		
20	0833	Limestone, very dark brown and olive mix (7.5YR, 3/1) and (5Y, 5/3).	

Depth in Feet: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100

Well Details

CONSTRUCTION DETAILS

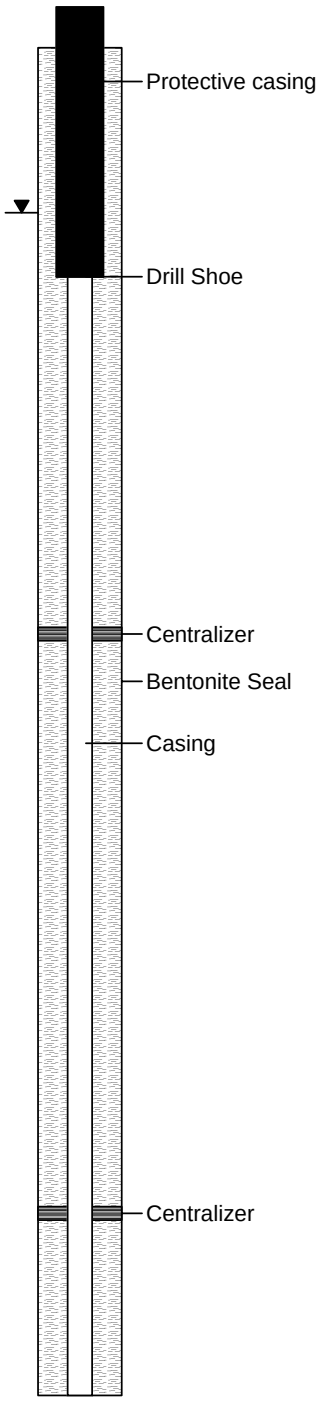
Installation Date	: 9/2/2009
Boring Total Depth (ft bgs)	: 160
Well Total Depth (ft bgs)	: 156
Casing Type	: Schedule 40 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 20
Screened Interval (ft bgs)	: 156-136
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 160-126
Secondary Filter Interval (ft bgs)	: N/A
Bentonite Seal (Chips) Interval (ft bgs)	: 126-0
Bentonite Seal (slurry) Interval (ft bgs)	: NA
Formation at Screen	: Dinwoody
Depth Water Encountered when Drilling (ft bgs)	: 10
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: 17
Backfill (ft bgs)	: 160-156 (Sand)
Steel Casing Depth (ft bgs)	: 17
Pump Depth (ft bgs)	: 146
Pump Intake Depth (ft bgs)	: 146
Height of MP (ft ags)	: 3

SAMPLE DETAILS

Fall 09 Static Water Level (ft bmp) : 13.13
Fall 09 Total Se (mg/L) :

NOTES:
Bottom of borehole at 160ft bgs.
Cuttings were always wet due to water being injected as drilling fluid, or produced by formation.
Backfilled with sand to 156 ft bgs to place the well screen within the target formation.

Well: MMW034
Elev.: 6,637 AMSL



RECORD OF BOREHOLE: MMW034

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Air Rotary
Drilling Date(s)	: 9/1/09-9/2/29	Drilled By	: Kip Rahmig (Independent)
Latitude	: N 42 52' 09.1"	Logged By	: J. Yurkovich (MWH)
Longitude	: W 111 24' 14.8"	Installed By	: Kip Rahmig (Independent)
Elevation (ft) AMSL	: 6,637 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Sample	Time	DESCRIPTION	Formation
21	0837		Dinwoody
22	0840		
23	0844		
24	0847	same as above except less reddish-brown, more olive.	
25	0850		
26	0853		
27	0856		
28	0904	same as above, except more olive-gray, (5Y, 4/2).	
29	0907	Limestone, olive-gray and very dark gray mix, (5Y, 4/2) and (2.5Y, 3/1).	
30	0909		
31	0913	Limestone, same as before, except just olive (5Y, 5/4), black laminations, and calcareous.	
32		becomes reddish-brown/olive mix.	

Depth in Feet: 100, 105, 110, 115, 120, 125, 130, 135, 140, 145, 150, 155, 160, 165, 170, 175, 180, 185, 190, 195, 200

Well Details

CONSTRUCTION DETAILS

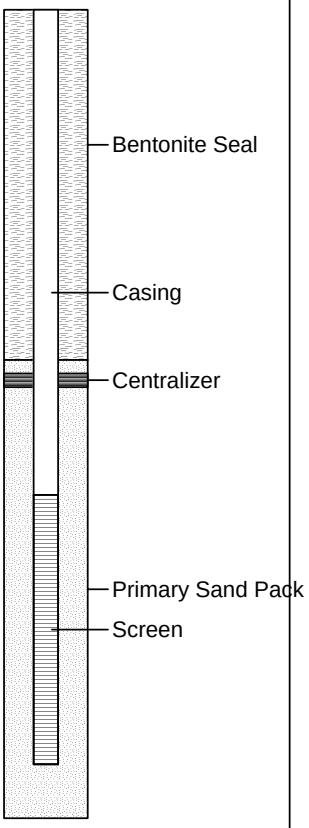
Installation Date	: 9/2/2009
Boring Total Depth (ft bgs)	: 160
Well Total Depth (ft bgs)	: 156
Casing Type	: Schedule 40 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 20
Screened Interval (ft bgs)	: 156-136
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 160-126
Secondary Filter Interval	: N/A
(ft bgs)	:
Bentonite Seal (Chips)	:
Interval (ft bgs)	: 126-0
Bentonite Seal (slurry)	:
Interval (ft bgs)	: NA
Formation at Screen	: Dinwoody
Depth Water Encountered	:
when Drilling (ft bgs)	: 10
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: 17
Backfill (ft bgs)	: 160-156 (Sand)
Steel Casing Depth	:
(ft bgs)	: 17
Pump Depth (ft bgs)	: 146
Pump Intake Depth (ft bgs)	: 146
Height of MP (ft ags)	: 3

SAMPLE DETAILS

Fall 09 Static Water Level (ft bmp) : 13.13
Fall 09 Total Se (mg/L) :

NOTES:
Bottom of borehole at 160ft bgs.
Cuttings were always wet due to water being injected as drilling fluid, or produced by formation.
Backfilled with sand to 156 ft bgs to place the well screen within the target formation.

Well: MMW034
Elev.: 6,637 AMSL



RECORD OF BOREHOLE: MMW035

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Air Rotary
Drilling Date(s)	: 8/29/09-8/30/29	Drilled By	: Kip Rahmig (Independent)
Latitude	: N 42 53' 29.5"	Logged By	: J. Yurkovich (MWH)
Longitude	: W 111 25' 54.3"	Installed By	: Kip Rahmig (Independent)
Elevation (ft) AMSL	: 6,494 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	1346	Sandy clay with gravel, dark red-brown (5YR, 2.5/2) dry, meduim to high plasticity.	Alluvium
5	2	1348	as above, except gravel is basaltic and light brown (7.5YR, 6/4).	
10	3	1350		
15	4	1352		
20	5	1355	Vesicular basalt, hard (GLEY 2, 4/5PB).	Basalt
25	6	1420		
30	7	1537		
35	8	1541	Sandy clay with gravel, redish-brown, high plasticity.	Alluvium
40	9	1547		
45	10	1550	same as above, except yellowish-brown (10YR, 5/6).	
50	11	1552	Claystone, calcareous, light olive-brown (2.5YR, 5/4).	Dinwoody
55	12	1555		
60	13	1558		
65	14	1600		
70	15	1603		
75	16	1605		
80	17	0815	Sandstone, poorly graded, calcareous, limestone, light olive-brown.	
85	18	0820	20% white quartz fragments.	
90	19	0825	Claystone, calcareous, light olive-brown (2.5YR, 5/4).	
95	20	0830	same as above except olive-gray (5Y, 4/2).	
100			same as above except olive (5Y, 5/3).	

Well Details

CONSTRUCTION DETAILS

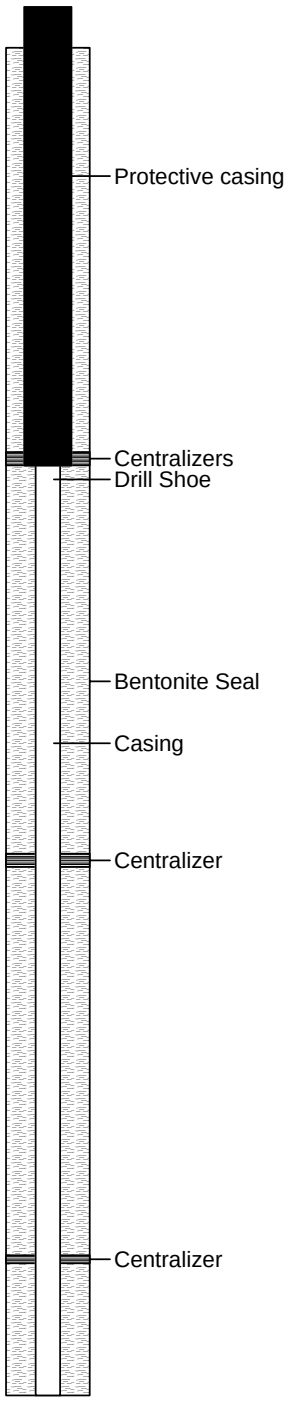
Installation Date	: 8/30/2009
Boring Total Depth (ft bgs)	: 200
Well Total Depth (ft bgs)	: 199
Casing Type	: Schedule 40 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 20
Screened Interval (ft bgs)	: 199-179
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 200-176
Secondary Filter Interval (ft bgs)	: N/A
Bentonite Seal (Chips) Interval (ft bgs)	: 176-0
Bentonite Seal (slurry) Interval (ft bgs)	: NA
Formation at Screen	: Dinwoody
Depth Water Encountered when Drilling (ft bgs)	: 76
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: 31
Backfill (ft bgs)	: NA
Steel Casing Depth (ft bgs)	: 31
Pump Depth (ft bgs)	: 146
Pump Intake Depth (ft bgs)	: 146
Height of MP (ft ags)	: 3

SAMPLE DETAILS

Fall 09 Static Water Level (ft bmp) : 83.52
Fall 09 Total Se (mg/L) :

NOTES:
Bottom of borehole at 200ft bgs.
Cuttings were always wet due to water being injected as drilling fluid, or produced by formation.

Well: MMW035
Elev.: 6,494 AMSL



RECORD OF BOREHOLE: MMW035

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Air Rotary
Drilling Date(s)	: 8/29/09-8/30/29	Drilled By	: Kip Rahmig (Independent)
Latitude	: N 42 53' 29.5"	Logged By	: J. Yurkovich (MWH)
Longitude	: W 111 25' 54.3"	Installed By	: Kip Rahmig (Independent)
Elevation (ft) AMSL	: 6,494 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Well: MMW035
Elev.: 6,494 AMSL

Depth in Feet	Sample	Time	DESCRIPTION	Formation
100	21	0833	Mudstone, calcareous, some clay nodules present, olive-yellow (5Y, 6/4).	Dinwoody
105	22	0835		
110	23	0840		
115	24	0844	same as above, except less clay, olive-gray (5Y, 4/2).	
120	25	0855		
125	26	0858		
130	27	0900		
135	28	0903	same as above except olive (5Y, 4/3).	
140	29	0908	becomes (5Y, 5/3).	
145	30	0911		
150	31	0914		
155	32	0918		
160	33	0920	same as above except olive-gray (5Y, 4/2).	
165	34	0930		
170	35	0940	same as above except more olive-gray (5Y, 5/2).	
175	36	0944	same as above except olive (5Y, 4/4).	
180	37	0950		
185	38	0955	some laminations present.	
190	39	1000		
195	40	1004		
200				

Well Details

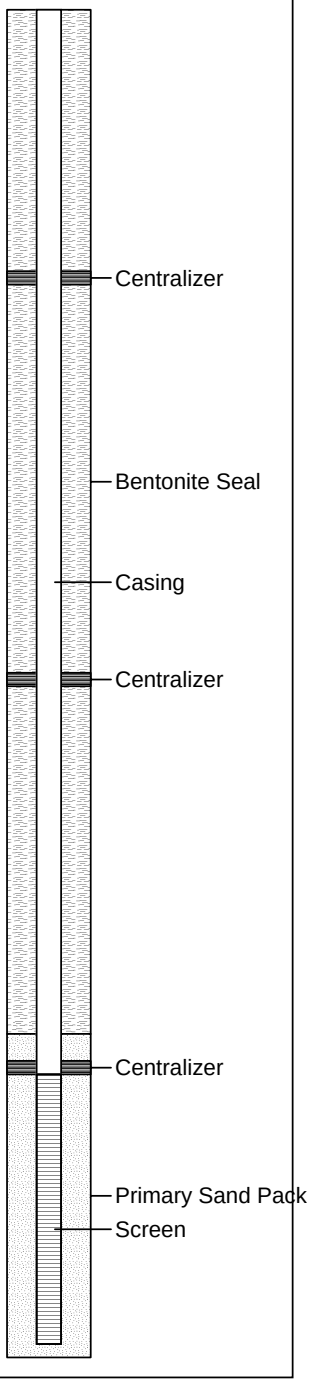
CONSTRUCTION DETAILS

Installation Date	: 8/30/2009
Boring Total Depth (ft bgs)	: 200
Well Total Depth (ft bgs)	: 199
Casing Type	: Schedule 40 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 20
Screened Interval (ft bgs)	: 199-179
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 200-176
Secondary Filter Interval	: N/A
(ft bgs)	:
Bentonite Seal (Chips)	:
Interval (ft bgs)	: 176-0
Bentonite Seal (slurry)	:
Interval (ft bgs)	: NA
Formation at Screen	: Dinwoody
Depth Water Encountered	:
when Drilling (ft bgs)	: 76
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: 31
Backfill (ft bgs)	: NA
Steel Casing Depth	:
(ft bgs)	: 31
Pump Depth (ft bgs)	: 146
Pump Intake Depth (ft bgs)	: 146
Height of MP (ft ags)	: 3

SAMPLE DETAILS

Fall 09 Static Water Level (ft bmp) : 83.52
Fall 09 Total Se (mg/L) :

NOTES:
Bottom of borehole at 200ft bgs.
Cuttings were always wet due to water being injected as drilling fluid, or produced by formation.



RECORD OF BOREHOLE: MMW036

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Air Rotary
Drilling Date(s)	: 8/31/09-9/01/29	Drilled By	: Kip Rahmig (Independent)
Latitude	: N 42 53' 26.7"	Logged By	: J. Yurkovich (MWH)
Longitude	: W 111 26' 05.6"	Installed By	: Kip Rahmig (Independent)
Elevation (ft) AMSL	: 6,444 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	1045	Sandy clay with basaltic gravel, brown (7.5YR, 4/2), wet, medium to high plasticity.	Alluvium/Colluvuim
5	2	1047		
10	3	1050		
15	4	1053	same as above except light brown (7.5YR, 6/3).	
20	5	1112		
25	6	1115	same as above, except high plasticity.	
30	7	1117	same as above, except dark brown (7.5YR, 3/2).	
35	8	1120		
40	9	1122	same as above, except light brown (2.5YR, 6/4).	
45	10	1124		
50	11	1126		
55	12	1128		
60	13	1130	Gravelly sand with clay, brown (basaltic gravels) (7.5YR 5/4).	
65	14	1133	Gravelly sand, blackish-brown, (10YR, 4/2).	
70	15	1140		
75	16	1144	Gravelly sand and clay, yellowish-brown (10YR, 4/2).	
80	17	1146		
85	18		Clayey sand to gravel, yellowish-brown (10YR, 5/6).	
90	19		Basalt No circulation/cuttings; Rig is chattering hard.	Basalt
95	20			
100				

Well Details

CONSTRUCTION DETAILS

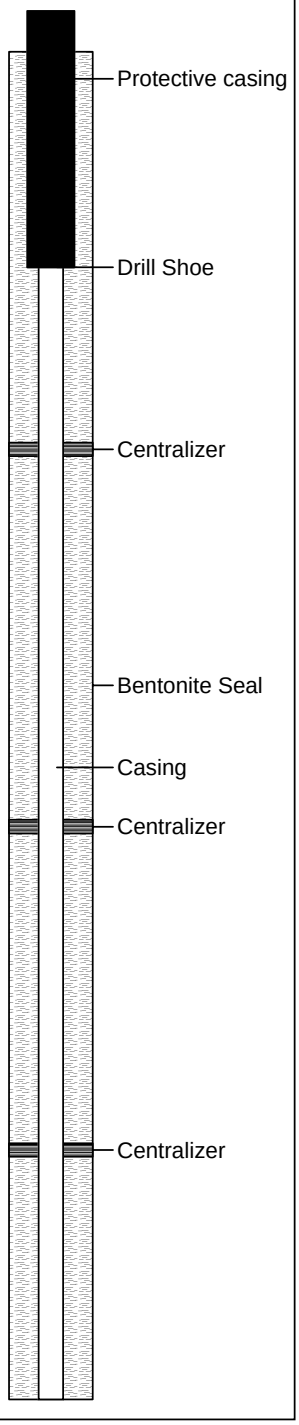
Installation Date	: 9/01/2009
Boring Total Depth (ft bgs)	: 160
Well Total Depth (ft bgs)	: 135
Casing Type	: Schedule 40 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 20
Screened Interval (ft bgs)	: 135-115
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 137-111
Secondary Filter Interval	: N/A
(ft bgs)	:
Bentonite Seal (Chips)	:
Interval (ft bgs)	: 160-137
Bentonite Seal (slurry)	:
Interval (ft bgs)	: NA
Formation at Screen	: Basalt
Depth Water Encountered	:
when Drilling (ft bgs)	: 105
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: 16
Backfill (ft bgs)	: NA
Steel Casing Depth	:
(ft bgs)	: 16
Pump Depth (ft bgs)	: 126
Pump Intake Depth (ft bgs)	: 126
Height of MP (ft ags)	: 3

SAMPLE DETAILS

Fall 09 Static Water Level (ft bmp) : 113.25
Fall 09 Total Se (mg/L) :

NOTES:
Bottom of borehole at 160ft bgs.
Cuttings were always wet due to water being injected as drilling fluid, or produced by formation.
Circulation lost in basalt.

Well: MMW036
Elev.: 6,444 AMSL



RECORD OF BOREHOLE: MMW036

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Air Rotary
Drilling Date(s)	: 8/31/09-9/01/29	Drilled By	: Kip Rahmig (Independent)
Latitude	: N 42 53' 26.7"	Logged By	: J. Yurkovich (MWH)
Longitude	: W 111 26' 05.6"	Installed By	: Kip Rahmig (Independent)
Elevation (ft) AMSL	: 6,444 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Well: MMW036
Elev.: 6,444 AMSL

Depth in Feet	Sample	Time	DESCRIPTION	Formation
100–160	21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32		Basalt, hard drilling, no circulation or cuttings.	Basalt

Well Details

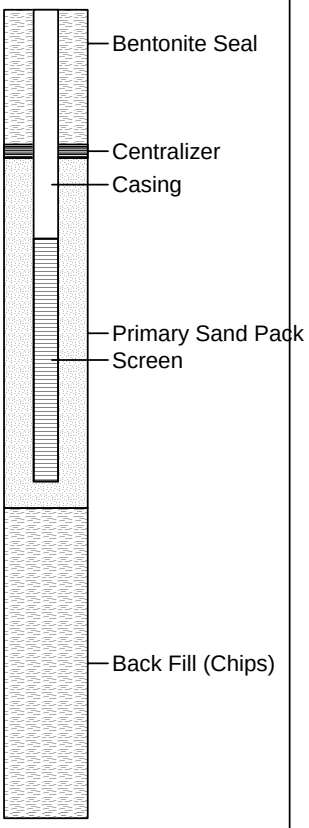
CONSTRUCTION DETAILS

Installation Date	: 9/01/2009
Boring Total Depth (ft bgs)	: 160
Well Total Depth (ft bgs)	: 135
Casing Type	: Schedule 40 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 20
Screened Interval (ft bgs)	: 135-115
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 137-111
Secondary Filter Interval	: N/A
(ft bgs)	:
Bentonite Seal (Chips)	:
Interval (ft bgs)	: 160-137
Bentonite Seal (slurry)	:
Interval (ft bgs)	: NA
Formation at Screen	: Basalt
Depth Water Encountered	:
when Drilling (ft bgs)	: 105
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: 16
Backfill (ft bgs)	: NA
Steel Casing Depth	:
(ft bgs)	: 16
Pump Depth (ft bgs)	: 126
Pump Intake Depth (ft bgs)	: 126
Height of MP (ft ags)	: 3

SAMPLE DETAILS

Fall 09 Static Water Level (ft bmp) : 113.25
Fall 09 Total Se (mg/L) :

NOTES:
Bottom of borehole at 160ft bgs.
Cuttings were always wet due to water being injected as drilling fluid, or produced by formation.
Circulation lost in basalt.



ATTACHMENT B

RESPONSE TO COMMENTS

Response to Agencies and Tribes Comments on
Draft 2009 Monitoring Well Installation Completion Summary
***Technical Memorandum, Revision 0*, prepared for P4 Production by MWH,**
December 16, 2009

(*Significant changes to the document that resulted from this comments have been underlined.*)

General Comments
The purpose of the referenced document is limited to a summary of the installation of five new wells at P4's Ballard and Enoch Valley Mines. The final number, location, and placement of the five new wells are generally consistent with P4's *Final 2009 Monitoring Well Installation Technical Memorandum, Revision 1*, dated August 7, 2009. The report does not include a discussion of groundwater sampling or any water quality and aquifer testing results for the new wells. It is assumed that this information will be provided in a separate deliverable.

Response: *As it* was *stated in the text, results of groundwater quality sampling results and the results and analysis of the hydraulic tests will be presented in future deliverables. The text as now been revised to indicate these results are included in the RI/FS Work Plan.*

Specific Comments
Section 3.1, page 4, 2nd and 3rd full paragraphs. The final configuration of the filter pack (either natural or artificial) at well MMW032 is uncertain. As P4 states:

"However, after adding the sand to the well, the drilling crew indicated that depth to the top of sand measured 24 feet bgs, not 51 feet bgs as expected. This likely meant that the borehole had collapsed, prior to adding the sand, to a depth of approximately 38 feet bgs."

and

"The variances in depth of the sand measured during well installation suggested that either the borehole had partially collapsed during filter pack installation or the sand had bridged across the borehole during placement."

This text suggests that the driller did not know that the borehole had collapsed around the screen prior placing the sand or that the sand had possibly bridged during placement, which suggests that the driller did not continually tag the filter pack as sand was being placed. Continual monitoring (tagging) during emplacement is specified in MWH's *Borehole Drilling and Logging Monitoring Well Installation Aquifer Testing - SOP*, dated July 2009. If the driller had continuously tagged the sand as it was being placed, he would have known that there was a problem before adding all seven bags of sand. The text should be revised to accurately reflect this deficiency in procedure, if applicable. Also, any information supporting a wall collapse versus sand bridging should be included in the text.

Furthermore, the text does not specify if the sand was tremmied into place as specified in the Work Plan or was free poured. Free pouring would more likely have caused bridging. If the sand at this or any well was free poured instead of tremmied, this change should be noted in the text of the referenced document.

Response: *The depth to water when the sand pack was placed was 46 feet below grade, or approximately nine feet above the well screen. Based on this the driller apparently felt that pouring the sand directly was an appropriate procedure. Based on the efforts to clear a potential bridge at the time, it appears the blockage was a collapse as opposed to a bridge. However, the cause of the issue is unknown. It should be noted that it was possible to develop the well and produce water with acceptable turbidity. In addition, the chemical analyses are not elevated with respect to selenium and therefore the well is not tapping the alluvial aquifer in this location but the deeper alluvium or Dinwoody Formation. Therefore, the well construction is adequate. It appears possible that most of the sand ended up around the well screen displacing the water upward and that a bridge may have occurred near the end of sand placement.*

The text has been modified to further indicate that the SOP was not followed. However, information subsequently collected since this well was installed indicates that the well is monitoring the targeted groundwater system and functioning as intended.

Section 3.1, page 5, 1st full paragraph. Given the uncertainty of the well construction at MMW032, the Agencies and Tribes (A/T) believes that it is premature to state with any certainty which formation this well actually represents. In describing the representativeness of this well, P4 states:

> The objective of monitoring well MMW032 was to screen either the upper Dinwoody Formation or alluvium below the depth reached by the direct-push groundwater investigation. The well appears to be well positioned to provide data on the lower alluvium and the thin Dinwoody Formation section present. The lower yield suggests that it is not drawing excessive water from the upper section of alluvium.

According to the well log, the well is open to saturated formation between 67 feet and 24 feet bgs (bottom of the borehole to the top of the sand), thus it straddles both saturated alluvium and saturated Dinwoody Formations. Based on this fact, the last sentence of the above quote should be deleted and replaced with a statement that explicitly documents that it is not known with certainty how and where water is entering the well and that its representativeness is unknown.

Response: *P4 agrees that the screened interval straddles both saturated alluvium and saturated Dinwoody Formation; however, this is assumed adequate to provide water quality data from deeper sections of the shallow aquifer not attainable by direct push.*

The objective of monitoring well MMW032 was to screen either the upper Dinwoody Formation and/or the deeper alluvium below the depth reached during the 2008 direct push groundwater investigation. The well construction is uncertain between 24 feet and 65 feet bgs through the interval of both saturated alluvium and the thin section of saturated Dinwoody Formation. Water captured from this open zone cannot be linked to either formation specifically; however, the lower yield suggests that excess water is not being drawn from the upper section of alluvium sampled by direct push. Therefore, the well is assumed to meet the objective of providing groundwater quality data from the targeted lower section of the shallow aquifer.

Additional text has been added acknowledging the uncertainty in the monitoring well construction. However, at this time, based on water quality and water levels in the monitoring well, it appears that the well is

sampling a flow system below the groundwater selenium plume and has defined the vertical extent of shallow groundwater contamination downgradient of MWD084 at the Ballard Mine.

Section 3.5, page 9, 2nd full paragraph, 4th sentence. Well MMW036 was completed in a basalt unit encountered below about 88 feet of alluvial material. Basalt was not anticipated at this drilling location. Furthermore, the total borehole depth of 160 feet did not fully penetrate the basalt, thus the total depth of the basalt is unknown. The text implies that the basalt appeared to be saturated throughout most of the penetrated interval. The well screen was subsequently set within the basalt at a depth of 115 feet to 135 feet bgs.

Without supporting chemical and hydraulic data, the A/T believes that it is premature to state with certainty that this new well is representative of the targeted, shallow portion of the Dinwoody Formation as P4 implies. Therefore, please revise the referenced sentence,

> "Given the fractured nature of the basalt, it is likely in direct hydraulic connection with the impacted units to the east."

to read as follows (changes are underlined):

> <u>The connection of the basalt at MMW036 to the impacted units to the east is unknown, but g</u>iven the fractured nature of the basalt <u>at MMW036</u>, <u>this basalt unit is possibly </u>in direct hydraulic connection with the impacted units to the east."

Response: *The requested text revision was made.*

Attachment A. General. Moisture designations are missing from many of the lithology descriptions provided in the borehole logs. Because the occurrance of groundwater is so important to this investigation, any available field information on potential saturation is important. Please revise each lithological unit on the borehole logs to include a description of the observed formation moisture (wet, dry, moist), as available. If the water content could not be discerned due to drilling methods or loss of circulation, this should be noted, as well.

Response: *Moisture designation was included in the lithologic description whenever possible. Typically, these designations were possible only when cuttings were large enough to break apart and inspect. The following statement is included in the Notes section of each log "Cuttings were always wet due to water being injected as drilling fluid, or produced by formations."*

Attachment A. MMW032. The text in Section 3.1 indicates the top of the filter sand is at 24 feet bgs whereas the borehole log shows that the top of the sand is at 39 feet bgs. Please correct the borehole log as appropriate. Furthermore, the text in Section 3.1 implies that the sand was actually placed between 38 feet and 24 feet bgs, whereas, below 38 feet bgs there is either a collapsed hole (natural filter) or an open annulus due to sand bridging. Please revise the borehole log to reflect the actual depth of the filter sand and the unknown nature of the annulus below 38 feet bgs.

Response: *The borehole log has been revised.*

APPENDIX A4

WELL TESTING TECHNICAL MEMORANDUM (2009)

2009 WELL TESTING
TECHNICAL MEMORANDUM

Final
Revision 2

May 2011

Prepared by:

MWH AMERICAS, INC.

Prepared for:

P4 PRODUCTION, LLC

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ATTACHMENTS

Attachment A AQTESOLV Output Files
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ACRONYMS AND ABBREVIATIONS

AMSL	above mean sea level
A/T	Agencies and Tribes
bgs	below ground surface
BLM	Bureau of Land Management
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CO/AOC	Consent Order/Administrative Order on Consent
DOI	Department of the Interior
EE/CA	Engineering Evaluations/Cost Analysis
ft	feet
gpm	gallons per minute
IDEQ	Idaho Department of Environmental Quality
LLC	limited liability company
MWH	MWH Americas, Inc.
RI/FS	remedial investigation/feasibility study
Tribes	Shoshone-Bannock Tribes
USEPA	United States Environmental Protection Agency
USFS	United States Department of Agriculture, Forest Service

1.0 INTRODUCTION AND PURPOSE

This technical memorandum has been prepared by MWH Americas, Inc. (MWH) to present the actual procedures used in, and the results of, hydraulic testing of monitoring wells at the Ballard, Henry and Enoch Valley mines (the Sites), which are the property of P4 Production, LLC (P4). In addition, a presentation of monitoring well water levels is made. The scope of the 2009 hydraulic well testing program is described in the *2009 Monitoring Well Installation Technical Memorandum* (MWH, 2009a).

This work was conducted to satisfy, in part, conditions of Consent Order/Administrative Order on Consent for the Performance of Site Investigations and Engineering Evaluations/Cost Analysis (EE/CAs) at P4 Production, LLC, Phosphate Mine Sites in Southeastern Idaho (08/20/03), EPA Docket No. CERCLA-10-2003-0117. However, on November 30, 2009, the EE/CA project and agreement was superseded by an Administrative Settlement Agreement and Order on Consent/Consent Order (CO/AOC) for Remedial Investigation/Feasibility Study (RI/FS). This 2009 CO/AOC is a voluntary agreement between P4 and the United States Environmental Protection Agency (USEPA), the Idaho Department of Environmental Quality (IDEQ), the United States Department of Agriculture, Forest Service (USFS), the United States Department of the Interior (DOI), the United States Bureau of Land Management (BLM), the Shoshone-Bannock Tribes (Tribes), collectively referred to as the "Agencies and Tribes" or A/T. The overall purpose of the 2009 CO/AOC is to conduct a Remedial Investigation and Feasibility Study (RI/FS) for P4's Ballard, Henry and Enoch Valley Mines (the Sites). The work described herein is also consistent with the objectives of the RI/FS.

Solid slug testing and pumping tests were the aquifer test methods used to evaluate the aquifer materials at the Sites. All testing was done on conventional monitoring well locations. Seven wells were slug tested between October 6 and October 8, 2009 and two pump-down tests were completed on October 12, 2009. These wells were selected based on suitability for the test and hydrogeologic conditions. Section 2.0 and 3.0 describe the

procedures and results of this activity, respectively. Section 4.0 presents water level data, and Section 5.0 provides the references.

2.0 AQUIFER TESTING PROCEDURES

The apparatus used for slug testing consisted of a 5.7-foot length of Schedule 40 PVC, 2 inches in diameter. This was filled with sand to provide density, capped at each end, and cemented shut. Two screw eyes were placed in one end of the slug and sealed to ensure water-tightness. A rope was attached to the screw eyes using small carabiners. The resulting volume of this slug was 0.172 ft^3, which, in 4-inch diameter wells, corresponds with a 1.9 ft rise in water height.

A transducer with a cable attached to a laptop was used to record water levels during slug testing. This instrument was set to a depth of approximately 15 ft below static water levels to allow adequate depth for the slug to sink below static water levels and become completely submerged while not being so deep as to compromise instrument accuracy.

At each well, the water level was first measured using a depth sounder. Once this depth was established, the transducer was lowered into the well. Two spots were marked on the rope connected to the slug, one marking the depth the slug needed to be lowered to be submerged below the static water level and another marking the depth it needed to be pulled up to be completely above the static water level. These marks were made with two knots in the rope where loops were tied, enabling the rope and slug to be anchored to a sturdy object on the ground surface at two consistent lengths.

Submerging the slug to the lower depth had the effect of raising the water level by the volume displaced by the slug and the opposite occurred when the slug was removed from the groundwater. The falling and rising heads that resulted from the slug being placed at each depth were measured and recorded with the transducer and laptop. Water exited the well through the screened interval into the aquifer during the falling head segment of the procedure and entered the well from the aquifer during the rising head.

Two wells located on the east side of Ballard Mine (MMW032 and MMW033) had pumps in place that could not be removed at the time of slug testing. Analyses of the recovery data after pumping were therefore performed in place of slug tests. For each of these wells, the well was purged dry within about 5 minutes from the start of the purge and several readings were taken using a sounder as the water level was rising. The water depth of MMW032 dropped by 43.7 ft. and MMW033's water depth dropped by 130.8 ft before the pump was turned off and recovery was allowed to begin.

3.0 AQUIFER TESTING ANALYSES AND RESULTS

The resulting test data and parameters of the well were entered into the AQTESOLV 4.0 computer program to develop curves that estimate the hydraulic conductivity of the sediments or bedrock around the well screen. The Bouwer-Rice (Bouwer, 1976) method was selected as the most appropriate solution for these slug tests. The use of the Bouwer-Rice solution assumes the following conditions for the aquifer and monitoring wells:

- aquifer has infinite areal extent
- aquifer is homogeneous and of uniform thickness
- aquifer potentiometric surface is initially horizontal
- test well is fully or partially penetrating
- a volume of water is injected or discharged from the well instantaneously
- aquifer is confined or unconfined
- flow is steady

Due to the low conductivity of the subsurface surrounding MMW032 and MMW033, the water level recovery was very slow, making the drawdown during pumping nearly instantaneous and similar to that of a slug test. AQTESOLV analyses on these wells were thus performed as slug test solutions rather than pumping test solutions.

The input parameters for the AQTESOLV analyses are provided on Table 1 and the resulting hydraulic conductivity of the subsurface surrounding each well is shown in Table 2. The locations of the wells tested are shown on Drawings 1 and 2. The AQTESOLV outputs showing normalized displacement versus time and a summary of inputs are provided in Attachment A. The hydraulic conductivity results ranged from 2.0 x 10^{-2} cm/sec for a well in the Wells Formation (MMW023) to 8.3 x 10^{-6} cm/sec for a well in the Dinwoody Formation (MMW032). For reference, the hydraulic conductivity testing results from 2008 are included in Tables 3 and 4. These data were reported in the *2008 and 2009 Data Summary Report* (MWH, 2009b).

4.0 WATER LEVELS

Water levels were recorded with a data logger in 26 different wells throughout Ballard, Henry, and Enoch Valley Mines. Records for each well were taken using a Level Logger instrument, which was hung from the underside of the well cap to a depth well below the static water level. The instrument recorded the head above it, and using a depth measured from the top of casing during the recorded period with the known elevation of the top of casing, the head measurements recorded by the Level Logger were translated into groundwater elevations for the duration of the recorded period. Graphs illustrating groundwater elevations and fluctuations for key bedrock monitoring locations can be found in Attachment B (alluvial wells are not presented). Both graphs with vertical (water level) axis to maximize the illustration of the shape of the hydrograph, and graphs where the maximum number of well on the same axis to show vertical relationships are provided.

In addition, water levels for 2008 and 2009 are presented in Table 5 and are shown on Drawings 1 through 3 for each of the mine areas. Although, the most current water level elevations available are shown on the drawings, measurements from direct-push boreholes (MBW prefix) have only been recorded during spring sampling events so the data show spring 2009 water levels for boreholes and fall 2009 water levels for monitoring wells (MMW prefix). Direct-push boreholes have not been part of the fall sampling plan have therefore not been visited in the fall, as seen also on Table 5. Therefore, the data are useful for

observing general potentiometric conditions but need to be used with caution in any quantitative assessments.

4.1 Ballard Mine

Each of the wells on the western side of the Ballard Mine, where water levels have been recorded with Level Loggers, has screened intervals in the Wells Formation (see Drawing 1 for Ballard Mine well locations and groundwater elevation information). Water level trends on the western side of the Ballard Mine area indicate similar patterns between wells MMW031, MMW006, and MMW021 (Attachment B). Vertical gradient between these wells is approximately in the listed order, with MMW031 having the highest head of the three. MMW030 and MMW020 have nearly the same magnitude of water level increase for the Spring 2009 recharge event, although MMW030's increase is somewhat sharper and with an earlier and sharper decline after its peak. The response to spring runoff suggests a local recharge source. The response in MMW020 suggests that there may be recharge occurring to a portion of the Wells Formation from the West Ballard Mine Pit. The response in MMW030 may be related to the fault encountered during the drilling of the well (water quality data suggest local alluvial water is not the source).

Trends for the two wells on the eastern side of the Ballard Mine, MMW018 and MMW029, were very similar chronologically in terms of their inflection points, although the rise in water levels from spring snowmelt was sharper and greater in magnitude for MMW029. Each well had a screened interval of the same length (15 ft), though MMW018 had contact with the alluvium as well as the Dinwoody Formation while MMW029 was only screened in the Dinwoody Formation.

4.2 Henry Mine

The wells with water level records at north Henry Mine (MMW028, MMW023, MMW019, MMW011, MMW004, and MMW022 in Attachment B) all appear to respond to recharge but in different degrees. The two Wells Formation well (MMW011 and MMW023) have the deepest water level, but the response in MMW011 suggests some local recharge. The source of this recharge is likely the Little Blackfoot River that crosses the Wells Formation outcrop

in this area. See Drawing 2 for Henry Mine well locations and groundwater elevation information, and Attachment 2 for the Level Logger graphs.

4.3 Enoch Valley Mine

The three wells at the Southeast end of the Enoch Valley Mine followed very similar patterns to one another. Wells MMW007, MMW008, and MMW025 all saw spikes and drops in water levels at the same times and the vertical gradient in this area is high to low in the previously listed order. MMW025 and MMW008 both have 20 ft screened intervals exclusively in the Dinwoody Formation while MMW007's 20 ft screened interval extends from the alluvium to the Dinwoody Formation immediately below it.

When comparing Wells Formation wells in the northwest area of the Enoch Valley Mine to the southeast, MMW009 and MMW026 showed similar initial temporal responses to Spring recharge but with noticeable differences in the duration and magnitudal trends. MMW009's response to recharge was of greater magnitude than that of MMW026 and the rise in its water levels lasted approximately four months before beginning to steadily decrease. MMW026's initial rise was not as sharp as that of MMW009 but levels in this well steadily increased throughout the remainder of the recorded period (late September, its rise lasted six months total). Both had screened intervals in the Wells Formation but MMW009's higher elevation near a potential recharge area likely caused its water levels to characteristically show more fluctuation. See Drawing 3 for Enoch Valley Mine well locations and groundwater elevation information, and Attachment B for the Level Logger graphs.

4.4 Vertical Gradients

Several monitoring wells were installed in 2009 to help assess vertical gradients and contaminant transport. At the Ballard Mine, this included MMW029 and MMW033. The Fall 2009 water elevation in MMW029 was 6474.26 ft-AMSL, opposed to 6478.71 ft-AMSL at MMW033. The deeper MMW033 had a 4.45 foot higher head compared to MMW029. The middle of the MMW029 screen is at 52.5 ft-bgs and the middle of the MMW033 is at 140 ft-bgs, so there is approximately an 87.5 foot separation. An upward gradient of 0.05 is, therefore, indicated in the Dinwoody Formation. However, the water level in alluvial

monitoring well MBW032 is 6499.13 ft-AMSL indicating a downward gradient from the upper alluvium to the Dinwoody Formation.

MMW027 and MMW035 were similarly paired in the Dinwoody Formation at the Enoch Valley Mine. The Fall 2009 water elevation in the shallower MMW027 was 6408.86 ft-AMSL, opposed to 6412.23 ft-AMSL in MMW035. Here again an upward gradient is indicated. The middle of the MMW027 screen is at 110 ft-bgs, and the middle of the MMW035 screen is at 189 ft-bgs. Therefore there is approximately 79 feet of vertical separation between the two wells and 3.37 feet of difference in water head. This indicates an upward gradient of approximately 0.04.

In other areas where there is an alluvial well and a nearby bedrock well, the gradient is generally downward. This may be due to the presence of perched zones in the alluvium at some locations. It is also notable that on the south end of Enoch Valley there is three well installed close together MMW007, MMW008 and MMW025. MMW007 and MMW008 are installed in to the weathered Dinwoody Formation/alluvium contact. MMW025 is installed in the Dinwoody Formation. The water levels in all these wells were very similar.

5.0 REFERENCES

Bouwer, H. and R.C. Rice, 1976. A slug test method for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells, Water Resources Research, vol. 12, no. 3, pp. 423-428.

MWH, 2009a. *2009 Monitoring Well Installation Technical Memorandum, Final – Revision 1*. Prepared by MWH for P4 Production, August 7.

MWH 2009b. *2007 and 2008 Data Summary Report*. Prepared by MWH for P4 Production, August.

TABLES

TABLE 1
AQTESOLV INPUT PARAMETERS FOR MONITORING WELLS

	Units	MMW006	MMW011	MMW021	MMW023	MMW032*	MMW033*	MMW034	MMW035	MMW036
Screened Interval	ft bgs	310-330	95-115	230-250	352-357	55-65	128-148	136-156	179-199	117-137
Casing Diameter	inches	4	4	4	4	4	4	4	4	4
Saturated Thickness	feet	75	28.6	37.6	249.8	47.7	136.8	141.5	112.5	26.6
Anisotropy Ratio	unitless	1	1	1	1	1	1	1	1	1
Initial Displacement	feet	1.9	1.9	1.9	1.9	N/A*	N/A*	1.9	1.9	1.9
Total Well Penetration Depth	ft bgs	330	115	250	357	65	150	156	199	137
Test Date	mo/day/yr	10/6/2009	10/7/2009	10/6/2009	10/7/2009	10/12/2009	10/12/2009	10/7/2009	10/8/2009	10/8/2009

Notes:

bgs = below ground surface
* Solid slugs were used for testing all wells with the exception of MMW032 and MMW033. Refer to Section 2.0 for a detailed explanation of the testing methods used for these wells.

TABLE 2
HYDRAULIC CONDUCTIVITY RESULTS FOR MONITORING WELLS

	Units	MMW006	MMW011	MMW021	MMW023	MMW032	MMW033	MMW034	MMW035	MMW036
Formation:		Wells	Wells	Wells	Wells	Dinwoody	Dinwoody	Dinwoody	Dinwoody	Basalt
Average K: Falling Head	ft/sec	4.2E-05	2.0E-05	4.5E-05	6.7E-04	-	-	3.4E-05	2.2E-04	5.3E-04
Average K: Rising Head	ft/sec	4.0E-05	2.0E-05	4.5E-05	6.5E-04	2.7E-07	4.3E-07	3.4E-05	2.2E-04	4.1E-04
Overall Average K	ft/sec	4.1E-05	2.0E-05	4.5E-05	6.6E-04	2.7E-07	4.3E-07	3.4E-05	2.2E-04	4.7E-04
	ft/day	3.5E+00	1.7E+00	3.9E+00	5.7E+01	2.4E-02	3.7E-02	2.9E+00	1.9E+01	4.1E+01
	cm/sec	1.2E-03	6.1E-04	1.4E-03	2.0E-02	8.3E-06	1.3E-05	1.0E-03	6.7E-03	1.4E-02

TABLE 3 HYDRAULIC CONDUCTIVITY RESULTS FOR DIRECT-PUSH MONITORING WELLS FROM 2008								
	Units	**MBW006**	**MBW009**	**MBW011**	**MBW027**	**MBW028**	**MBW085**	**MBW087**
Formation:		Alluvium	Alluvium	Alluvium	Alluvium	Alluvium	Alluvium	Alluvium
Hydraulic Conductivity	ft/sec	2E-04	8E-06	2E-05	2E-05	6E-06	2E-05	7E-05
	ft/day	2E+01	7E-01	1E+00	2E+00	6E-01	2E+00	6E+00
	cm/sec	6E-03	2E-04	5E-04	6E-04	2E-04	5E-04	2E-03

TABLE 4 HYDRAULIC CONDUCTIVITY RESULTS FOR MONITORING WELLS FROM 2008								
	Units	**MMW007**	**MMW008**	**MMW013**	**MMW014**	**MW-15A**	**MW-16A**	**MMW017**
Formation:		Alluvium / Dinwoody	Dinwoody	Dinwoody	Alluvium	Alluvium	Alluvium	Alluvium
Hydraulic Conductivity	ft/sec	2E-06	1E-05	5E-04	2E-05	4E-06	7E-06	7E-06
	ft/day	2E-01	9E-01	5E+01	2E+00	4E-01	6E-01	6E-01
	cm/sec	7E-05	3E-04	2E-02	6E-04	1E-04	2E-04	2E-04
	Units	**MMW024**	**MMW026**	**MMW027**	**MMW028**	**MMW029**	**MMW031**	
Formation:		Dinwoody	Wells	Dinwoody	Dinwoody	Dinwoody	Wells	
Hydraulic Conductivity	ft/sec	2E-04	5E-04	2E-04	1E-03	2E-05	1E-04	
	ft/day	1E+01	4E+01	2E+01	9E+01	2E+00	1E+01	
	cm/sec	5E-03	2E-02	5E-03	3E-02	5E-04	4E-03	

TABLE 5 2008 AND 2009 MONITORING WELL GROUNDWATER ELEVATIONS					
Well Name	Top of Casing Elevation	2008		2009	
		Spring	Fall	Spring	Fall
MBW006	6319.31	6313.81	NM	6318.31	NM
MBW009	6310.69	6307.39	NM	6310.03	NM
MBW011	6339.8	6330.80	NM	6339.90	NM
MBW026	6313.32	dry	NM	6308.53	NM
MBW027	6313.33	6303.43	NM	6307.25	NM
MBW028	6339.99	6334.20	NM	6330.69	NM
MBW032	6499.13	6495.63	NM	6493.74	NM
MBW048	6421.72	6417.72	NM	6421.22	NM
MBW085	6639.57	6637.47	NM	6638.71	NM
MBW087	6587.3	6586.10	NM	6586.90	NM
MBW099	6599.25	6594.60	NM	6597.00	NM
MBW107	6486.78	6449.58	NM	6452.45	NM
MBW112	-	dry	NM	dry	NM
MBW130	6416.29	PI	PI	6414.74	NM
MBW131	6468.52	PI	PI	6468.17	NM
MBW134	6298.042	PI	PI	6288.51	NM
MBW135	6290.56	PI	PI	6289.88	NM
MBW152	6280	PI	PI	6272.50	NM
MMW004	6280	6227.12	6226.17	6238.08	6231.21
MMW006	6485.494	6226.43	6216.16	6215.23	6220.15
MMW007	6619.993	6585.49	6578.64	6589.38	6582.53
MMW008	6603.637	6585.45	6578.44	6589.09	6582.07
MMW009	6661.1	6446.35	6447.49	6455.12	6454.66
MMW010	6462.44	6458.97	6442.68	6462.94	6454.70
MMW011	6266.796	6174.80	6172.04	6187.77	6180.90
MMW012	6487.986	dry	dry	dry	dry
MMW013	6646.139	6644.21	6633.99	6643.19	6638.71
MMW014	6438.799	6435.62	6433.45	6435.30	6433.60
MMW017	6313.869	6272.68	6273.08	6272.03	6280.10
MMW018	6459.312	6450.35	6445.41	6450.77	6446.45
MMW019	6259.975	6248.38	6245.77	6250.46	6247.69
MMW020	6530.967	6243.92	6240.92	6248.97	6251.76
MMW021	6436.187	6221.30	6221.44	6219.87	6223.78
MMW022	6634.415	6425.20	6426.37	6432.52	6433.27
MMW023	6266.934	6158.23	6157.88	6160.43	6159.95
MMW024	6704.365	PI	6639.15	6651.82	6643.37
MMW025	6612.142	PI	6578.54	6585.24	6581.53

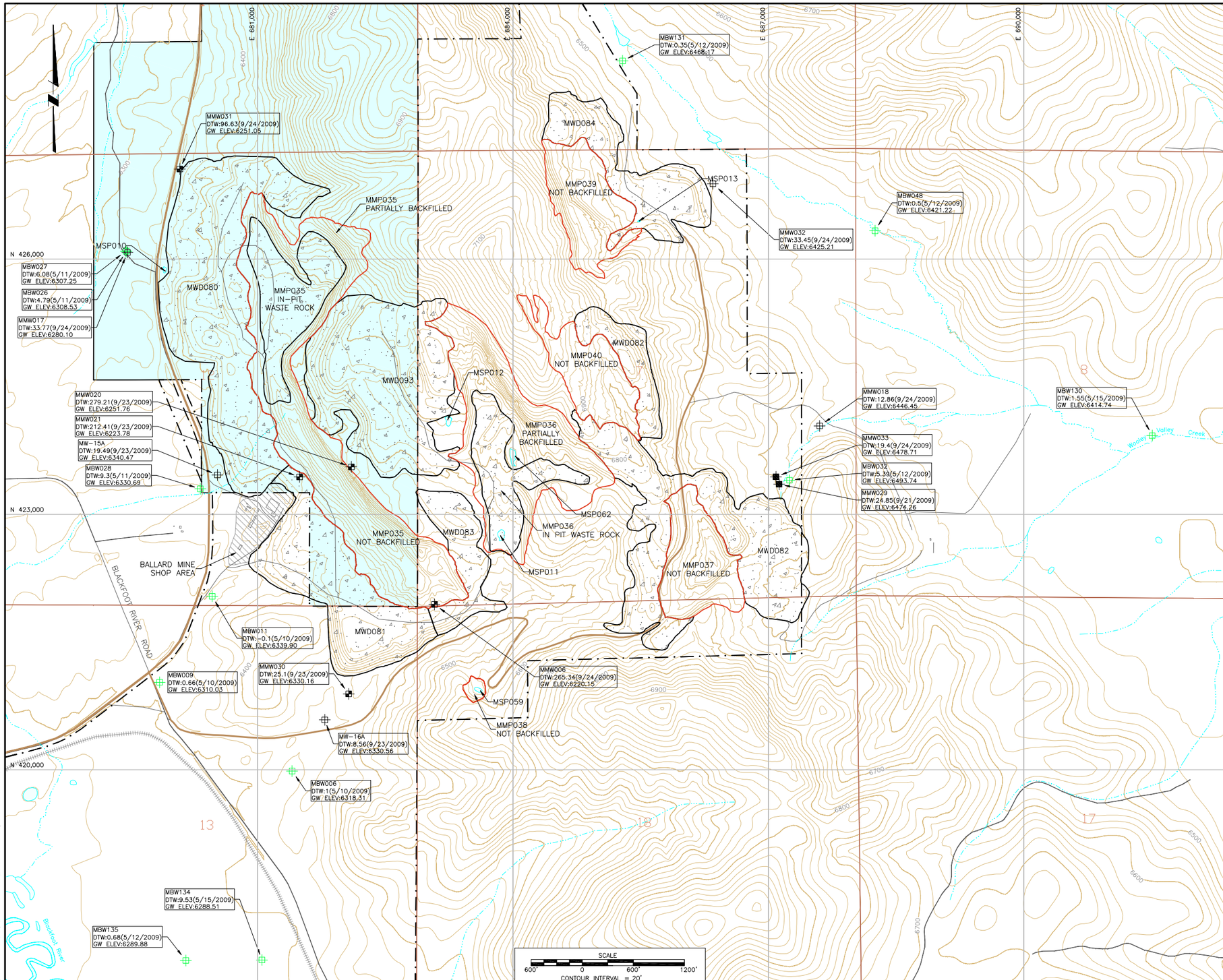
TABLE 5 2008 AND 2009 MONITORING WELL GROUNDWATER ELEVATIONS					
Well Name	Top of Casing Elevation	2008		2009	
		Spring	Fall	Spring	Fall
MMW026	6599.203	PI	6311.60	6313.03	6315.50
MMW027	6491.139	PI	6396.69	6398.96	6408.86
MMW028	6316.965	PI	6237.79	6254.82	6250.47
MMW029	6499.112	PI	6473.44	6486.91	6474.26
MMW030	6355.261	PI	6329.45	6334.05	6330.16
MMW031	6347.684	PI	6247.95	6247.50	6251.05
MMW032	6458.659	PI	PI	PI	6425.21
MMW033	6498.111	PI	PI	PI	6478.71
MMW034	6643.04	PI	PI	PI	6629.91
MMW035	6495.752	PI	PI	PI	6412.23
MMW036	6427.826	PI	PI	PI	6314.58
MW-15A	6365.91	6346.01	6343.53	6350.41	6340.47
MW-16A	6342.37	6336.45	6331.09	6338.32	6330.56

Notes:

PI: Prior to installation

NM: Not measured

DRAWINGS



LEGEND:

- POST-MINE CONTOUR AND ELEVATION, FEET (APPROXIMATE)
- RIVER
- POND OR LAKE
- NATURAL DRAINAGE – PERENNIAL
- NATURAL DRAINAGE – INTERMITTENT
- HIGHWAY
- ROAD
- MONSANTO HAUL ROAD (ACTIVE & INACTIVE)
- RAILROAD
- MINE PIT LOCATION (APPROXIMATE WHERE COVERED BY BACKFILL)
- WASTE ROCK DUMP LOCATION (APPROXIMATE)
- WASTE ROCK DUMP LOCATION OR PIT BACKFILL (APPROXIMATE)
- APPROXIMATE OWNERSHIP BOUNDARY
- SECTION LINES
- 20 SECTION NUMBER
- BLM LANDS
- US NATIONAL FORESTS
- STATE LANDS
- NON FEDERAL LANDS

STATION TYPE:

- MMW = ALLUVIAL AQUIFER MONITORING WELL
- MMW = INTERMEDIATE AQUIFER MONITORING WELL (GENERALLY DINWOODY FM.)
- MMW = REGIONAL AQUIFER MONITORING WELL (WELLS FM.)
- MMW = AQUIFER MONITORING WELL (UNKNOWN OR MULTIPLE AQUIFERS SCREENED)
- MBW = DIRECT-PUSH ALLUVIAL AQUIFER WELL

KEY:

MMP = MINE PIT
MWD = WASTE ROCK DUMP
MSP = POND

MMW029 / DTW:24.85(9/21/2009) / GW ELEV:6474.26 — GROUNDWATER STATION ID; GROUNDWATER SAMPLING DTW RESULT (mg/L)

ISSUE REV	DESCRIPTION	TECH	ENG	DATE
A	DRAFT	CHF	LTF	01/27/10

DISCLAIMER:
THIS DRAWING WAS DEVELOPED THROUGH THE APPLICATION OF PROFESSIONAL ENGINEERING SKILL AND PROPRIETARY METHODOLOGIES, PROCESSES AND KNOW HOW OF MWH AS AUTHOR ALL PURSUANT TO THE TERMS OF A CONTRACTUAL SCOPE OF WORK GOVERNING ITS PREPARATION. THIS DRAWING MAY NOT BE USED OR MODIFIED OTHER THAN IN STRICT ACCORDANCE WITH THE TERMS OF THE GOVERNING CONTRACT AND SCOPE OF WORK OR OTHERWISE ABSENT THE INVOLVEMENT AND CONSENT OF THE AUTHOR. ANY ALTERATION OR ADAPTATION OF THIS DRAWING SHALL BE CONSISTENT WITH THE AUTHOR'S CONTRACTUAL AND PROPRIETARY RIGHTS AND BE AT USER'S SOLE RISK AND WITHOUT ANY LIABILITY OR LEGAL RESPONSIBILITY OF MWH.

DRAWING REFERENCE(S):
1. POST-MINE TOPOGRAPHY GENERATED FROM:
- USGS DIGITAL ELEVATION MODELS (DEM)-24K.
- SURVEY DATA FOR BALLARD MINE PROVIDED BY OLYMPUS AERIAL SURVEYS, INC. DATED: JUNE 2005.
- SURVEY DATA FOR HENRY MINE AREA PROVIDED BY OLYMPUS AERIAL SURVEYS, INC. DATED: NOVEMBER 2008.
- SURVEY DATA FOR ENOCH VALLEY MINE AREA PROVIDED BY P4 PRODUCTION DATED: DECEMBER 2007.
- US CENSUS BUREAU 2007 TIGER LINE DATA

PROJECTION: STATE PLANE COORDINATE SYSTEM
ZONE: IDAHO EAST
HORIZONTAL DATUM: NAD27
VERTICAL DATUM: NGVD29
UNITS: U.S. FEET

DESIGNED BY	L FUHRIG	01/27/10
DRAWN BY	C FOWLER	01/27/10
CHECKED BY	E MARKS	01/27/10
APPROVED BY	C FOULK	01/27/10
PROJECT MANAGER	C FOULK	01/27/10
CLIENT APPROVAL		
CLIENT REFERENCE NO.		

P4 Production, LLC

PROJECT LOCATION: BALLARD, HENRY AND ENOCH VALLEY MINES
PROJECT: WELL TESTING TECHNICAL MEMO
TITLE: BALLARD MINE AREA
2009 WELL LOCATIONS AND WATER LEVELS

MWH

SHEET 1 of 3
REVISION A
FILE NAME 1005813D233

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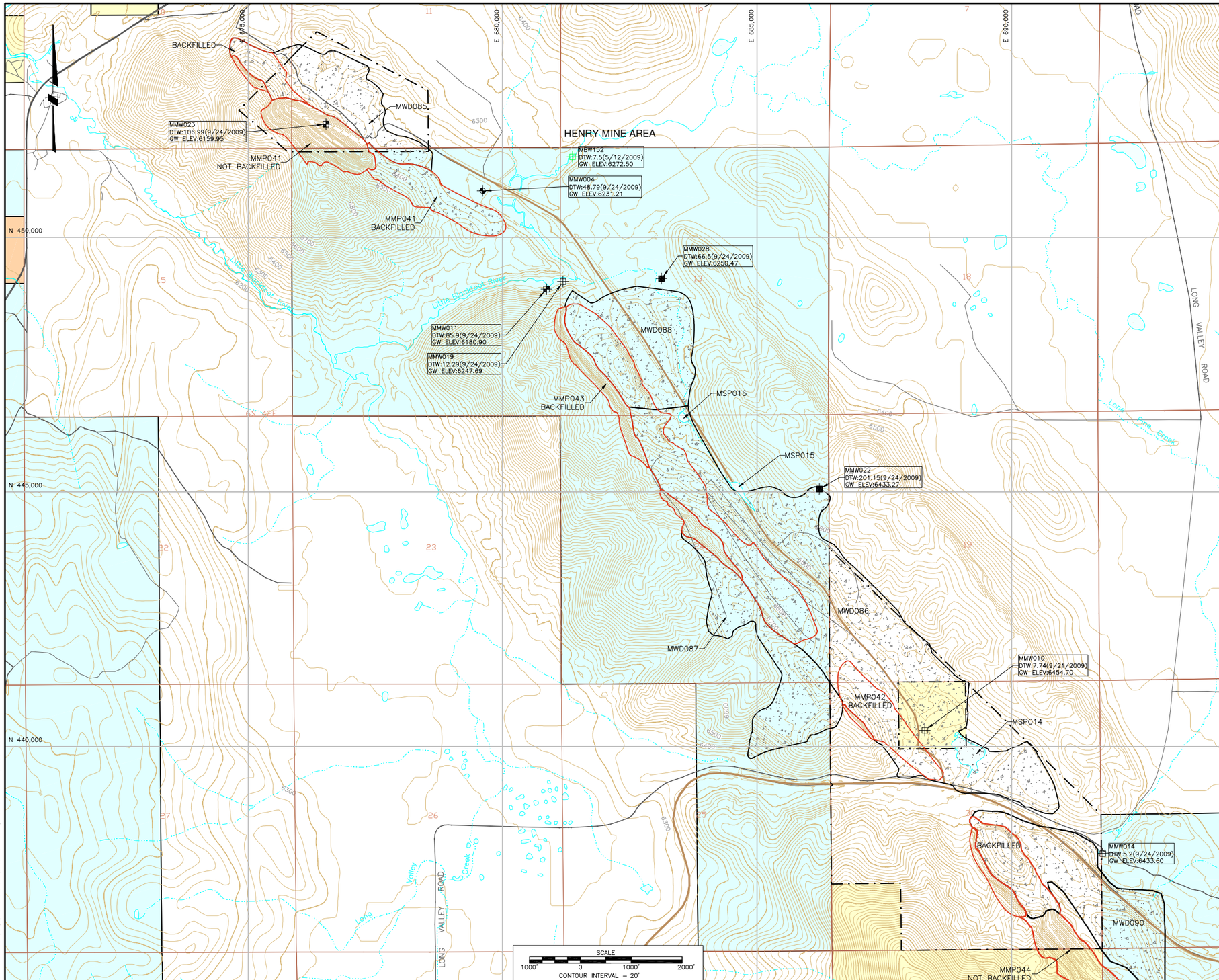

LEGEND:

- POST–MINE CONTOUR AND ELEVATION, FEET (APPROXIMATE)
- RIVER
- POND OR LAKE
- NATURAL DRAINAGE – PERENNIAL
- NATURAL DRAINAGE – INTERMITTENT
- HIGHWAY
- ROAD
- MONSANTO HAUL ROAD (ACTIVE & INACTIVE)
- RAILROAD
- MINE PIT LOCATION (APPROXIMATE WHERE COVERED BY BACKFILL)
- WASTE ROCK DUMP LOCATION (APPROXIMATE)
- WASTE ROCK DUMP LOCATION OR PIT BACKFILL (APPROXIMATE)
- APPROXIMATE OWNERSHIP BOUNDARY
- SECTION LINES
- 20 SECTION NUMBER
- BLM LANDS
- US NATIONAL FORESTS
- STATE LANDS
- NON FEDERAL LANDS

STATION TYPE:

- MMW = ALLUVIAL AQUIFER MONITORING WELL
- MMW = INTERMEDIATE AQUIFER MONITORING WELL (GENERALLY DINWOODY FM.)
- MMW = REGIONAL AQUIFER MONITORING WELL (WELLS FM.)
- MMW = AQUIFER MONITORING WELL (UNKNOWN OR MULTIPLE AQUIFERS SCREENED)
- MBW = DIRECT–PUSH ALLUVIAL AQUIFER WELL

KEY:

MMP = MINE PIT
MWD = WASTE ROCK DUMP
MSP = POND

MMW029 / DTW:24.85(9/21/2009) / GW ELEV:6474.26 — GROUNDWATER STATION ID; GROUNDWATER SAMPLING DTW RESULT (mg/L)

ISSUE REV	DESCRIPTION	TECH	ENG	DATE
A	DRAFT	CHF	LTF	01/27/10

DISCLAIMER:
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- SURVEY DATA FOR HENRY MINE AREA PROVIDED BY OLYMPUS AERIAL SURVEYS, INC. DATED: NOVEMBER 2008.
- SURVEY DATA FOR ENOCH VALLEY MINE AREA PROVIDED BY P4 PRODUCTION DATED: DECEMBER 2007.
- US CENSUS BUREAU 2007 TIGER LINE DATA

PROJECTION: STATE PLANE COORDINATE SYSTEM
ZONE: IDAHO EAST
HORIZONTAL DATUM: NAD27
VERTICAL DATUM: NGVD29
UNITS: U.S. FEET

DESIGNED BY	L FUHRIG	01/27/10
DRAWN BY	C FOWLER	01/27/10
CHECKED BY	E MARKS	01/27/10
APPROVED BY	C FOULK	01/27/10
PROJECT MANAGER	C FOULK	01/27/10
CLIENT APPROVAL		
CLIENT REFERENCE NO.		

P4 Production, LLC

PROJECT LOCATION: BALLARD, HENRY AND ENOCH VALLEY MINES
PROJECT: WELL TESTING TECHNICAL MEMO
TITLE: HENRY MINE AREA
2009 WELL LOCATIONS AND WATER LEVELS

MWH

SHEET: 2 of 3
REVISION: A
FILE NAME: 1005813D234

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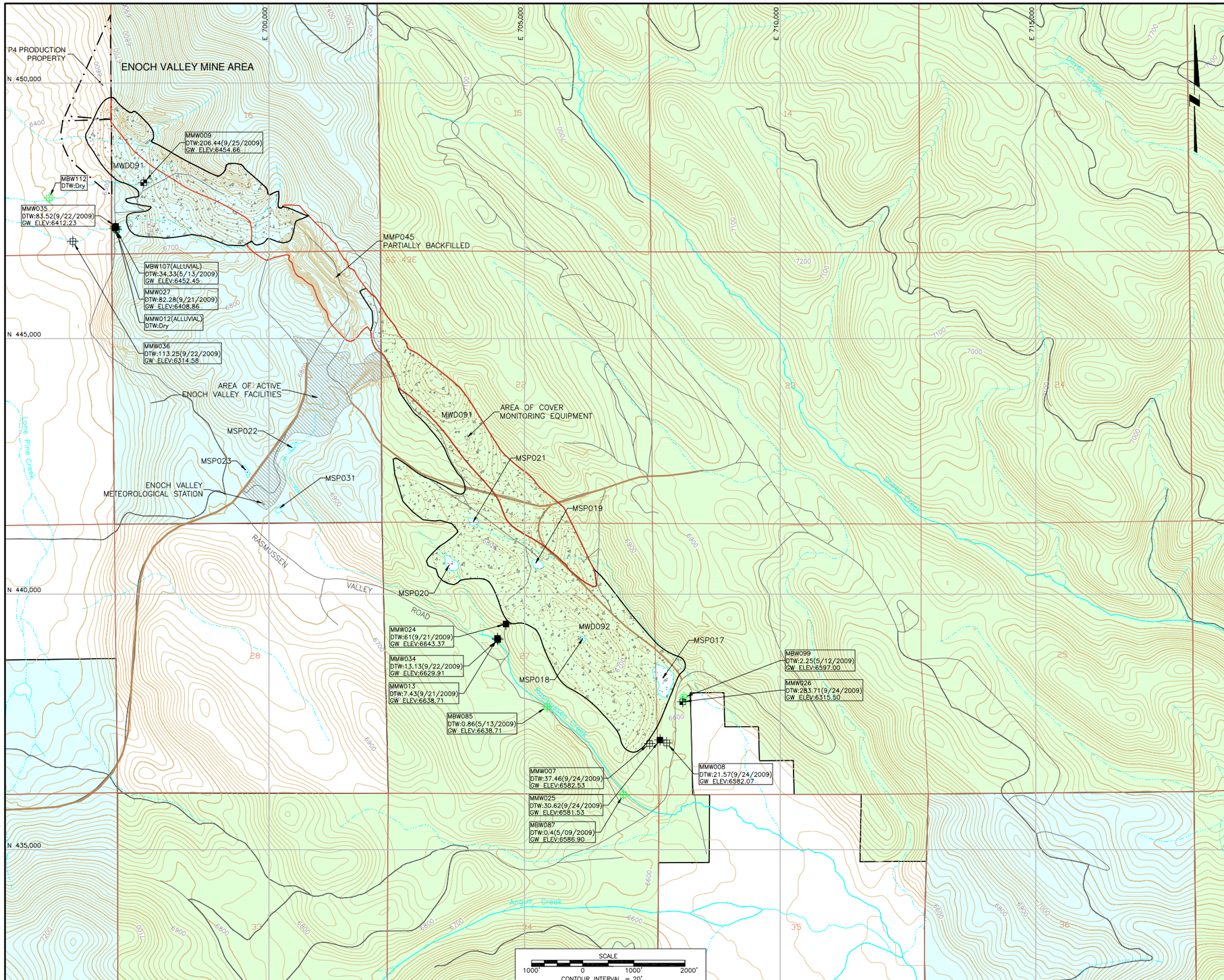

LEGEND:

- POST–MINE CONTOUR AND ELEVATION, FEET (APPROXIMATE)
- RIVER
- POND OR LAKE
- NATURAL DRAINAGE – PERENNIAL
- NATURAL DRAINAGE – INTERMITTENT
- HIGHWAY
- ROAD
- MONSANTO HAUL ROAD (ACTIVE & INACTIVE)
- RAILROAD
- MINE PIT LOCATION (APPROXIMATE WHERE COVERED BY BACKFILL)
- WASTE ROCK DUMP LOCATION (APPROXIMATE)
- WASTE ROCK DUMP LOCATION OR PIT BACKFILL (APPROXIMATE)
- APPROXIMATE OWNERSHIP BOUNDARY
- SECTION LINES
- SECTION NUMBER
- BLM LANDS
- US NATIONAL FORESTS
- STATE LANDS
- NON FEDERAL LANDS

STATION TYPE:

- MMW = ALLUVIAL AQUIFER MONITORING WELL
- MMW = INTERMEDIATE AQUIFER MONITORING WELL (GENERALLY DINWOODY FM.)
- MMW = REGIONAL AQUIFER MONITORING WELL (WELLS FM.)
- MMW = AQUIFER MONITORING WELL (UNKNOWN OR MULTIPLE AQUIFERS SCREENED)
- MBW = DIRECT–PUSH ALLUVIAL AQUIFER WELL

KEY:

MMP = MINE PIT
MWD = WASTE ROCK DUMP
MSP = POND

MMW029 DTW:24.85(9/21/2009) GW ELEV:6474.26	GROUNDWATER STATION ID GROUNDWATER SAMPLING DTW RESULT (mg/L)

ISSUE REV	DESCRIPTION	TECH	ENG	DATE
A	DRAFT	CHF	LTF	01/27/10

DISCLAIMER:
THIS DRAWING WAS DEVELOPED THROUGH THE APPLICATION OF PROFESSIONAL ENGINEERING SKILL AND PROPRIETARY METHODOLOGIES, PROCESSES AND KNOW HOW OF MWH AS AUTHOR ALL PURSUANT TO THE TERMS OF A CONTRACTUAL SCOPE OF WORK GOVERNING ITS PREPARATION. THIS DRAWING MAY NOT BE USED OR MODIFIED OTHER THAN IN STRICT ACCORDANCE WITH THE TERMS OF THE GOVERNING CONTRACT AND SCOPE OF WORK OR OTHERWISE ABSENT THE INVOLVEMENT AND CONSENT OF THE AUTHOR. ANY ALTERATION OR ADAPTATION OF THIS DRAWING SHALL BE CONSISTENT WITH THE AUTHOR'S CONTRACTUAL AND PROPRIETARY RIGHTS AND BE AT USER'S SOLE RISK AND WITHOUT ANY LIABILITY OR LEGAL RESPONSIBILITY OF MWH.

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- SURVEY DATA FOR HENRY MINE AREA PROVIDED BY OLYMPUS AERIAL SURVEYS, INC. DATED: NOVEMBER 2008.
- SURVEY DATA FOR ENOCH VALLEY MINE AREA PROVIDED BY P4 PRODUCTION DATED: DECEMBER 2007.
- US CENSUS BUREAU 2007 TIGER LINE DATA

PROJECTION:
STATE PLANE COORDINATE SYSTEM
ZONE:
IDAHO EAST
HORIZONTAL DATUM:
NAD27
VERTICAL DATUM:
NGVD29
UNITS:
U.S. FEET

DESIGNED BY	L FUHRIG	01/27/10
DRAWN BY	C FOWLER	01/27/10
CHECKED BY	E MARKS	01/27/10
APPROVED BY	C FOULK	01/27/10
PROJECT MANAGER	C FOULK	01/27/10
CLIENT APPROVAL		
CLIENT REFERENCE NO.		

P4 Production, LLC

PROJECT LOCATION
BALLARD, HENRY AND ENOCH VALLEY MINES
PROJECT
WELL TESTING TECHNICAL MEMO
TITLE
ENOCH VALLEY MINE AREA
2009 WELL LOCATIONS AND WATER LEVELS

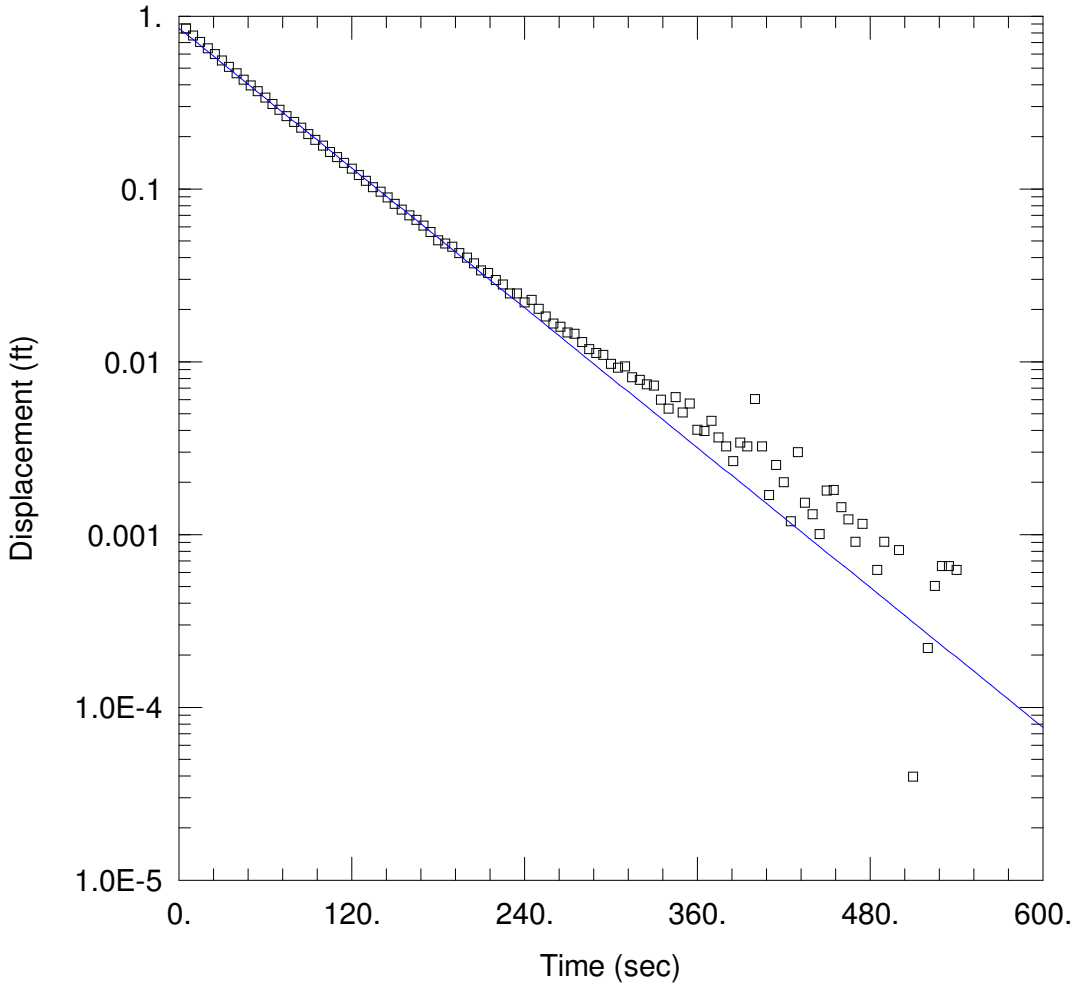
MWH

SHEET 3 of 3
REVISION A
FILE NAME 1005813D235

N:\Design–Drafting\Clients_J–P\Monsanto Company\013–Sheet Set\2009 Well Testing Technical Memo\1005813D235

ATTACHMENT A

AQTESOLV OUTPUTS



MMW006 SLUG TEST: FALLING 1

Data Set: C:\...\MMW006f1.aqt
Date: 12/15/09 Time: 20:59:57

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW006
Test Date: 10/6/09

AQUIFER DATA

Saturated Thickness: 75. ft Anisotropy Ratio (Kz/Kr): 1.

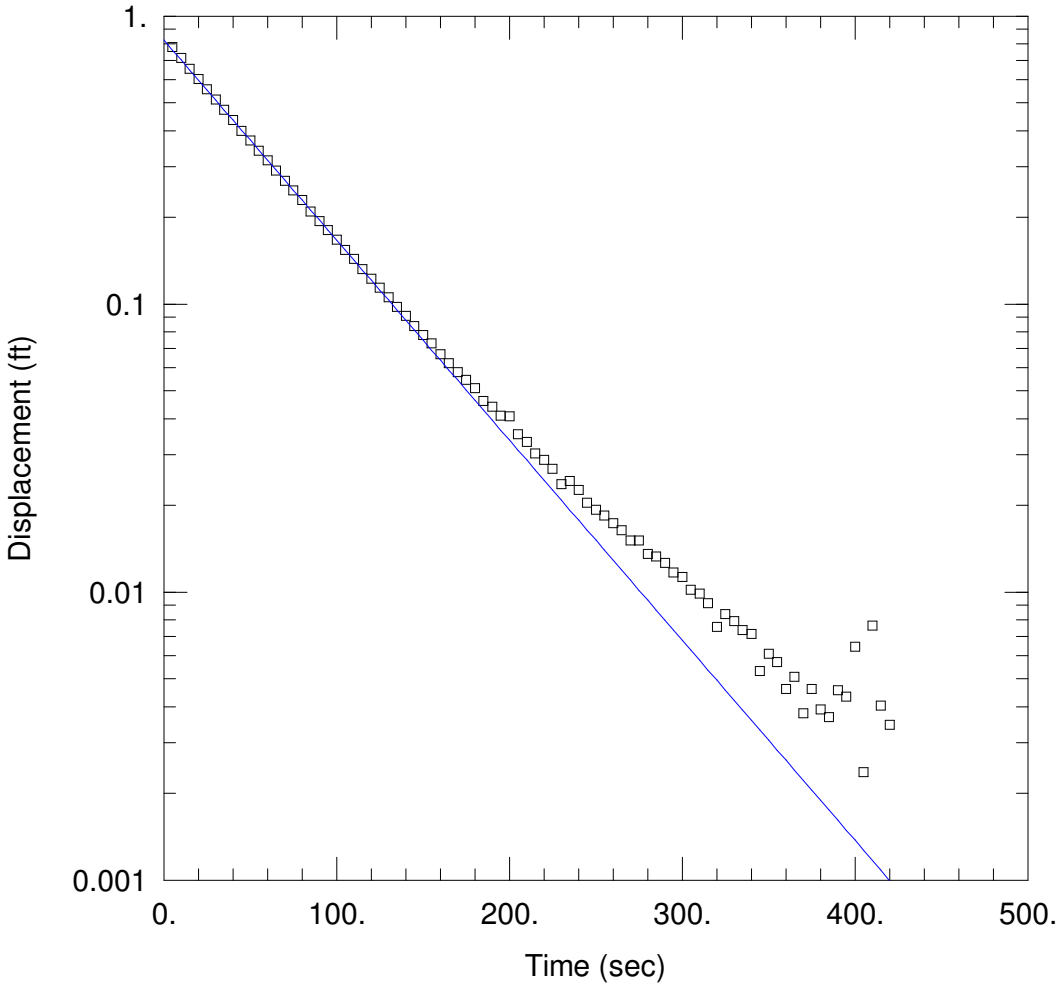
WELL DATA (MMW006)

Initial Displacement: 1.9 ft Static Water Column Height: 75. ft
Total Well Penetration Depth: 75. ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 4.14E-5 ft/sec y0 = 0.8501 ft



MMW006: SLUG TEST, FALLING 2

Data Set: C:\...\MMW006f2.aqt
Date: 12/15/09 Time: 21:00:36

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW006
Test Date: 10/6/09

AQUIFER DATA

Saturated Thickness: 75. ft Anisotropy Ratio (Kz/Kr): 1.

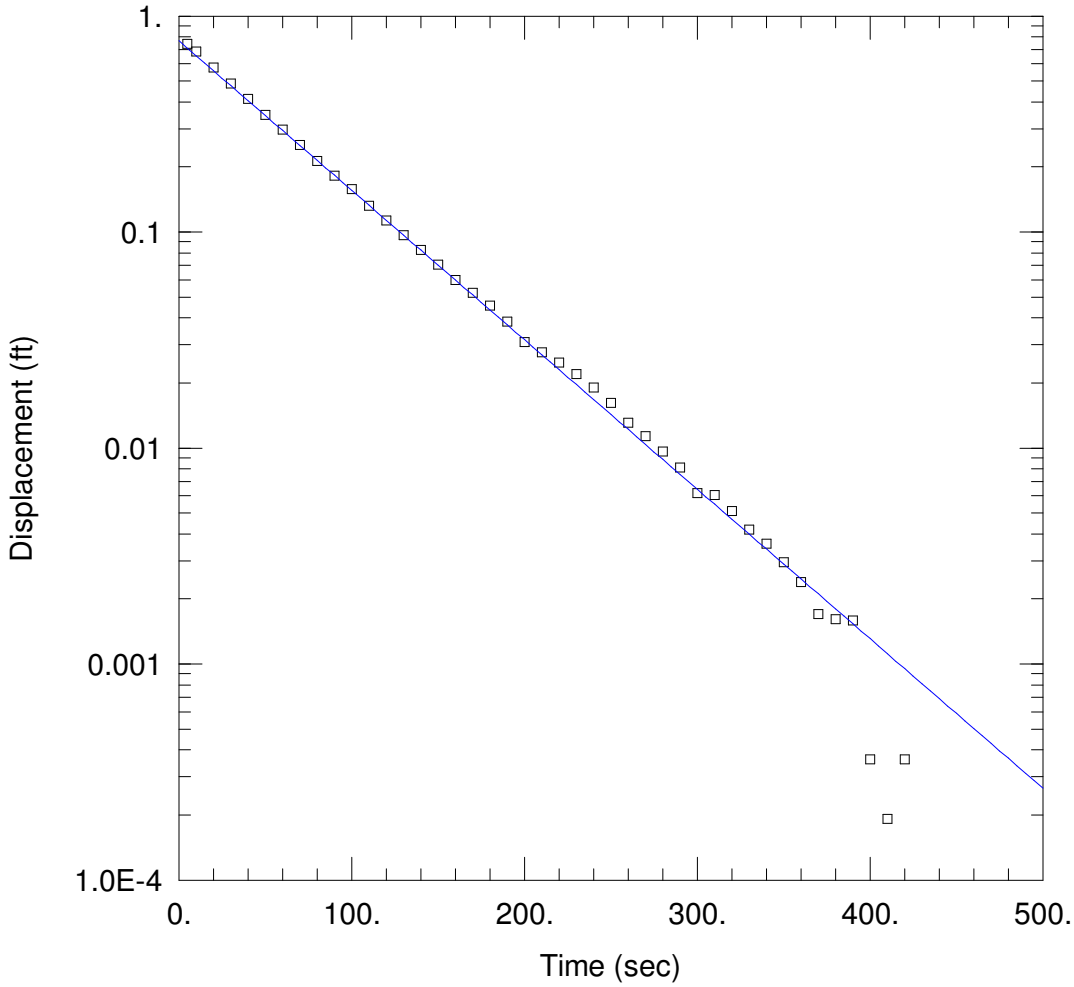
WELL DATA (MMW006)

Initial Displacement: 1.9 ft
Total Well Penetration Depth: 75. ft
Casing Radius: 0.168 ft
Static Water Column Height: 75. ft
Screen Length: 20. ft
Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 4.265E-5 ft/sec
y0 = 0.8247 ft



MMW006: SLUG TEST, FALLING 3

Data Set: C:\...\MMW006f3.aqt
Date: 12/15/09 Time: 21:01:13

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW006
Test Date: 10/6/09

AQUIFER DATA

Saturated Thickness: 75. ft Anisotropy Ratio (Kz/Kr): 1.

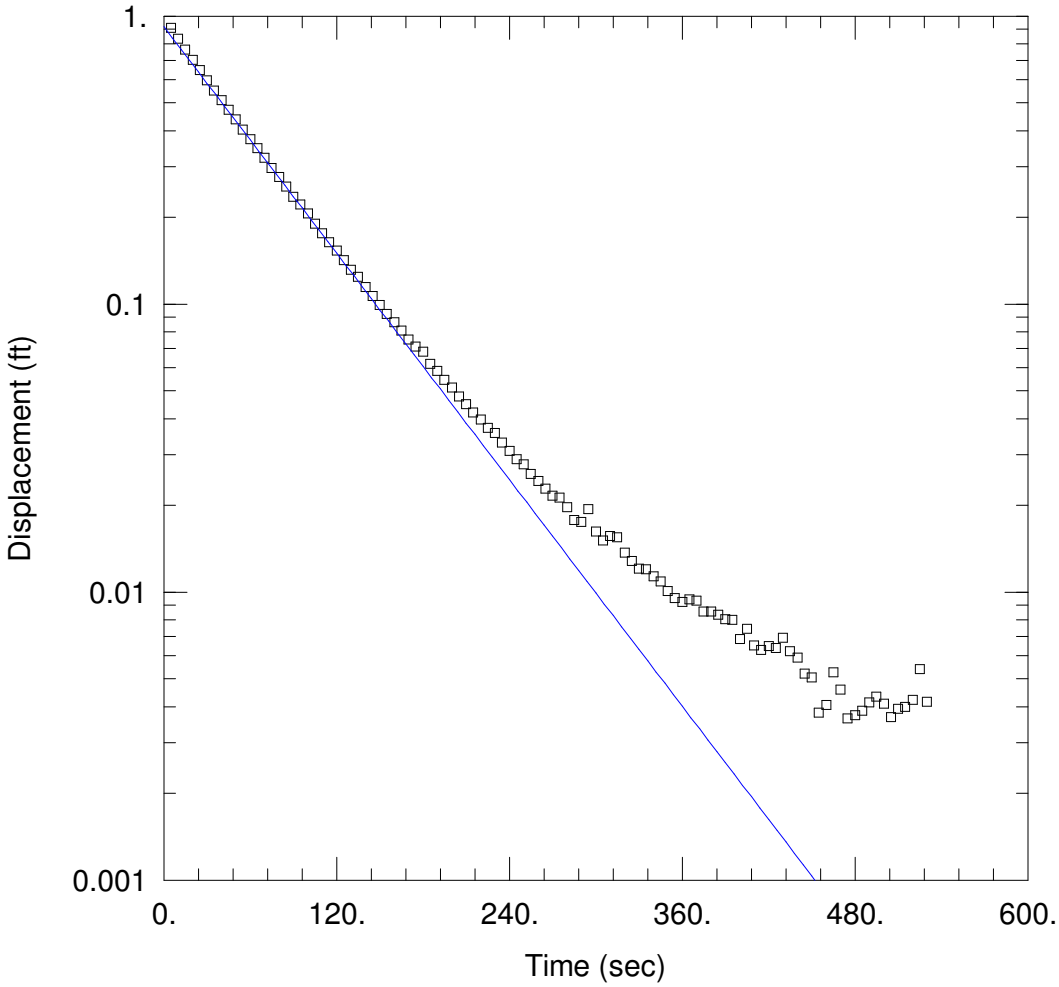
WELL DATA (MMW006)

Initial Displacement: 1.9 ft Static Water Column Height: 75. ft
Total Well Penetration Depth: 75. ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 4.25E-5 ft/sec y0 = 0.7677 ft



MMW006 SLUG TEST - RISING 1

Data Set: C:\...\MMW006r1.aqt
Date: 12/15/09 Time: 21:01:37

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW006
Test Date: 10/6/09

AQUIFER DATA

Saturated Thickness: 75. ft Anisotropy Ratio (Kz/Kr): 1.

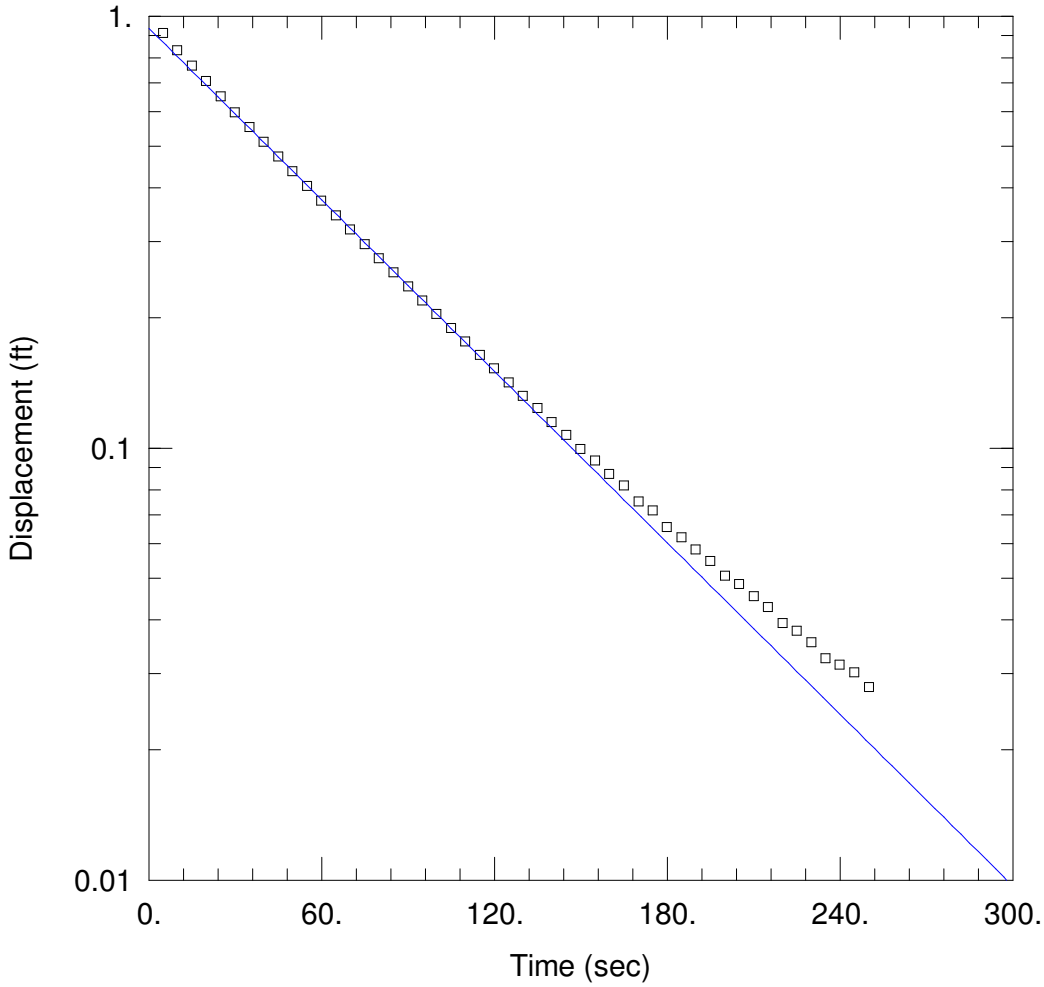
WELL DATA (MMW006)

Initial Displacement: 1.9 ft Static Water Column Height: 75. ft
Total Well Penetration Depth: 75. ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 4.024E-5 ft/sec y0 = 0.9178 ft



MMW006: SLUG TEST, RISING 2

Data Set: C:\...\MMW006r2.aqt
Date: 12/15/09 Time: 21:02:04

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW006
Test Date: 10/6/09

AQUIFER DATA

Saturated Thickness: 75. ft Anisotropy Ratio (Kz/Kr): 1.

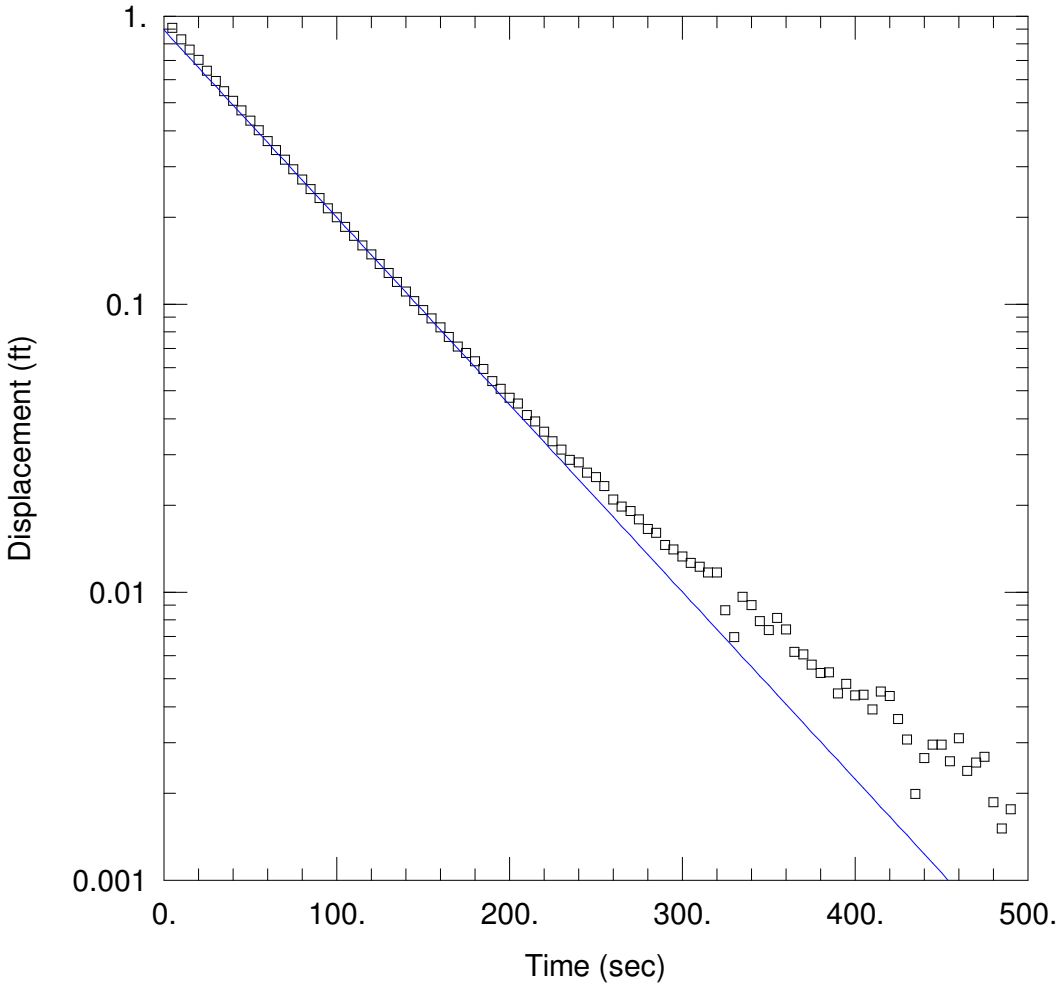
WELL DATA (MMW006)

Initial Displacement: 1.9 ft Static Water Column Height: 75. ft
Total Well Penetration Depth: 75. ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 4.064E-5 ft/sec y0 = 0.9368 ft



MMW006: SLUG TEST, RISING 3

Data Set: C:\...\MMW006r3.aqt
Date: 12/15/09 Time: 21:02:38

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW006
Test Date: 10/6/09

AQUIFER DATA

Saturated Thickness: 75. ft Anisotropy Ratio (Kz/Kr): 1.

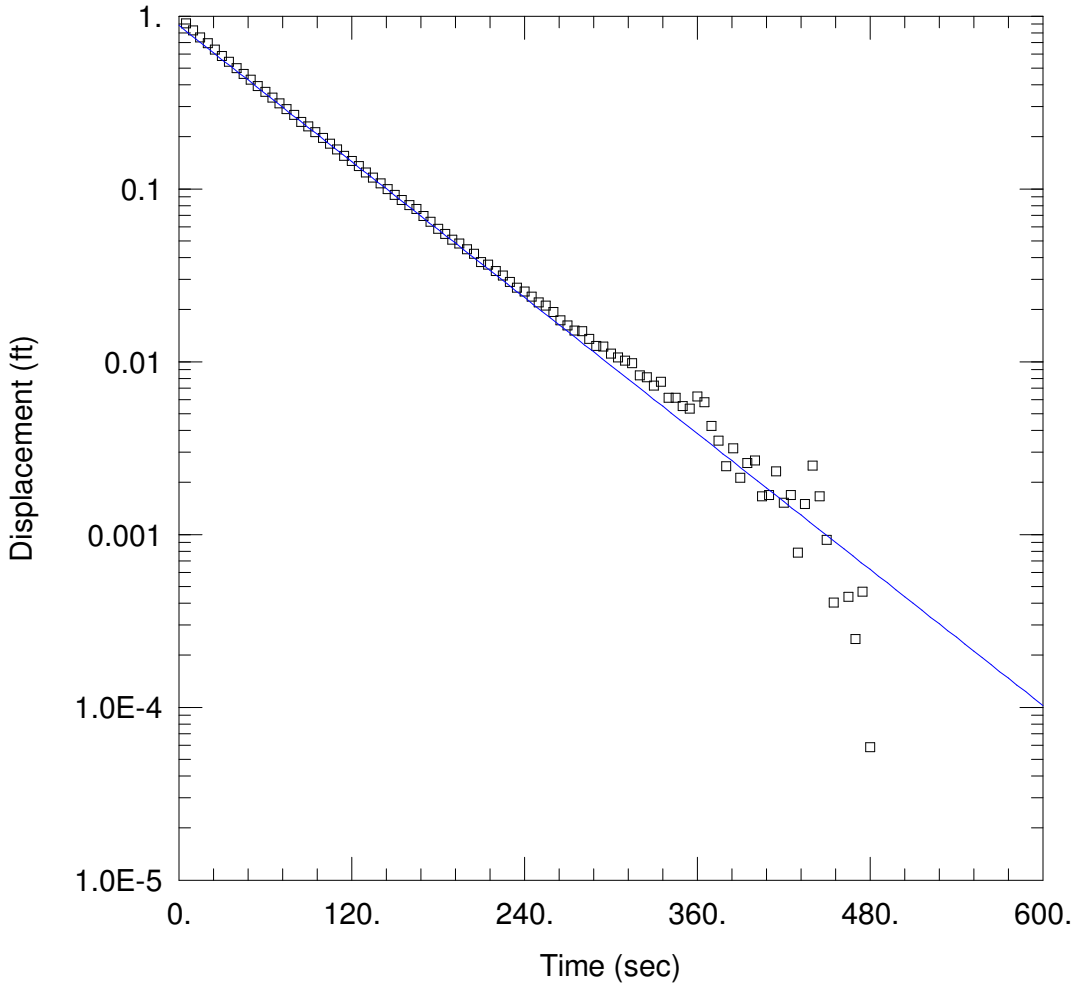
WELL DATA (MMW006)

Initial Displacement: 1.9 ft Static Water Column Height: 75. ft
Total Well Penetration Depth: 75. ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 3.992E-5 ft/sec y0 = 0.8936 ft



MMW006: SLUG TEST, RISING 4

Data Set: C:\...\MMW006r4.aqt
Date: 12/15/09 Time: 21:03:08

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW006
Test Date: 10/6/09

AQUIFER DATA

Saturated Thickness: 75. ft Anisotropy Ratio (Kz/Kr): 1.

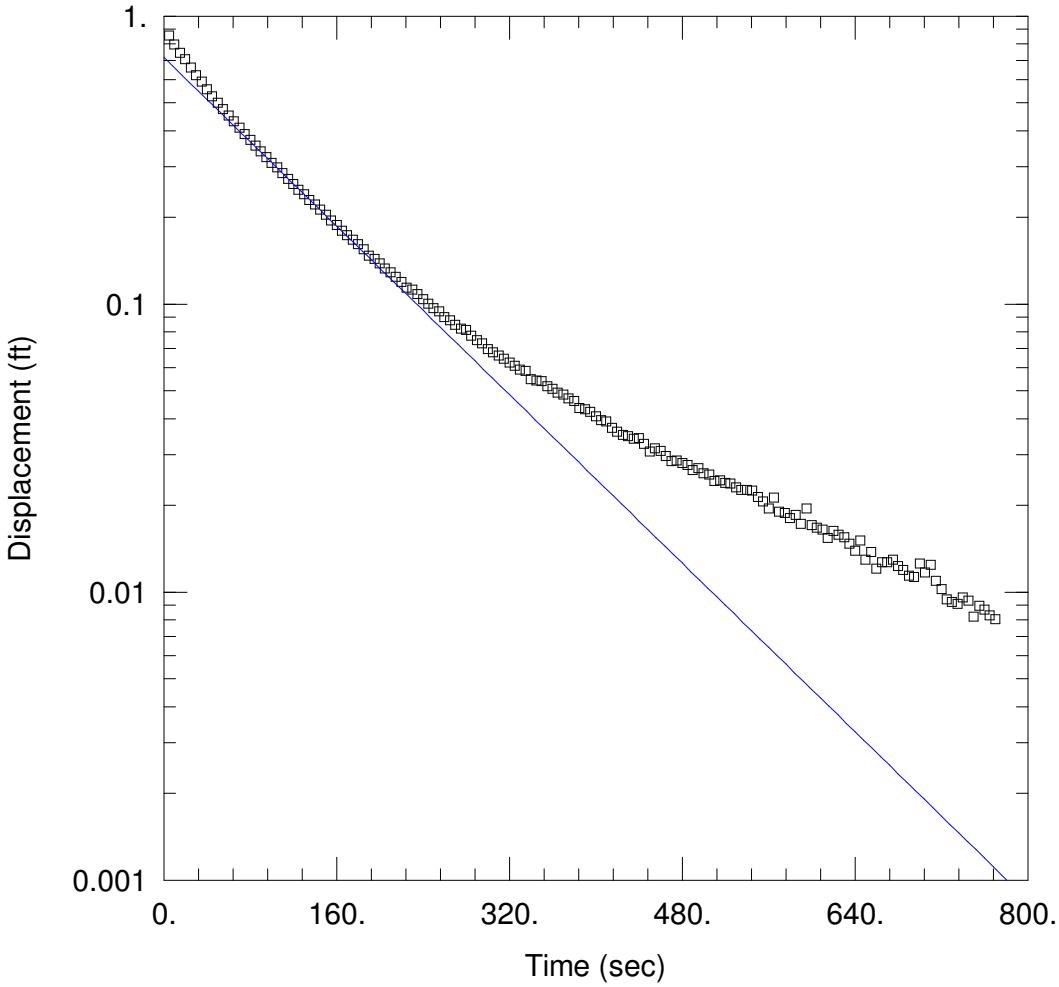
WELL DATA (MMW006)

Initial Displacement: 1.9 ft Static Water Column Height: 75. ft
Total Well Penetration Depth: 75. ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 4.027E-5 ft/sec y0 = 0.8801 ft



MMW006: SLUG TEST, FALLING 1

Data Set: C:\...\MMW011f1.aqt
Date: 12/15/09 Time: 21:15:22

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW011
Test Date: 10/7/09

AQUIFER DATA

Saturated Thickness: 28.6 ft Anisotropy Ratio (Kz/Kr): 1.

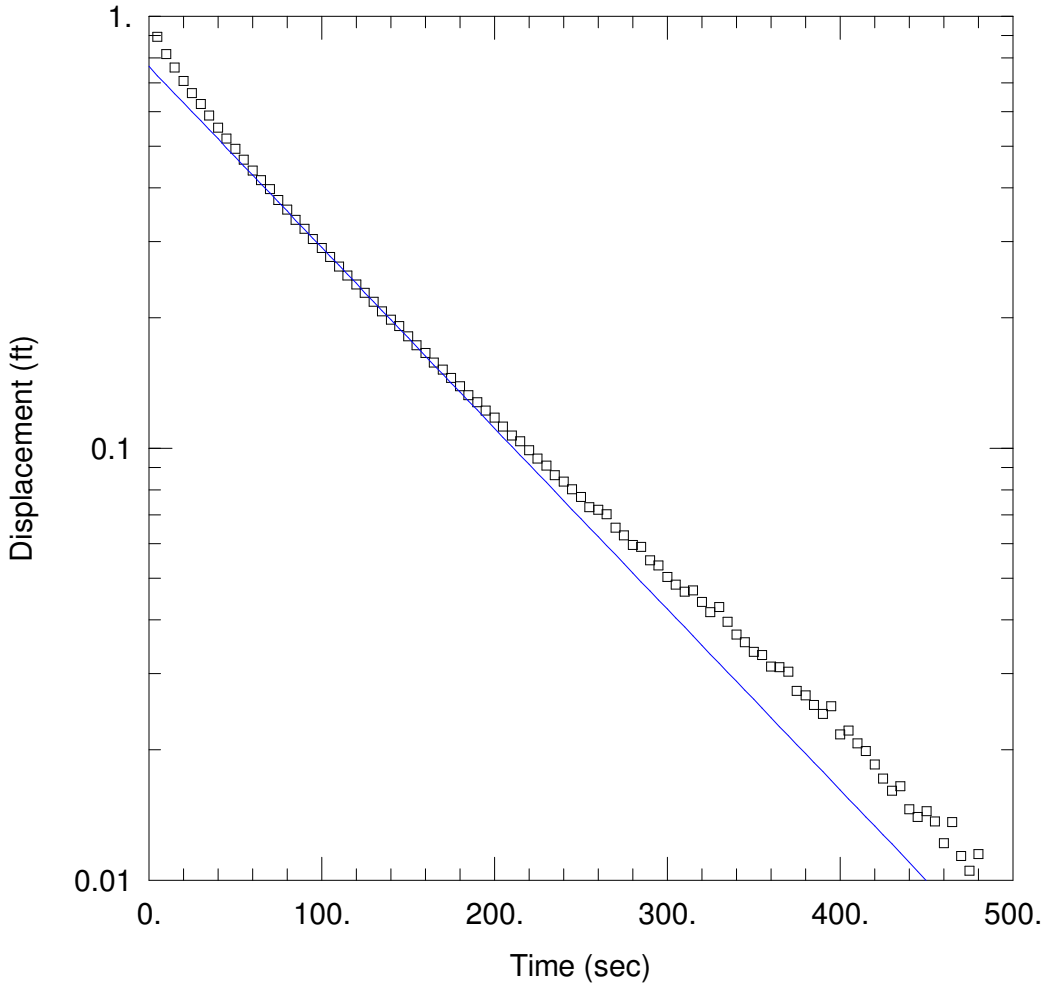
WELL DATA (MMW011)

Initial Displacement: 1.9 ft Static Water Column Height: 28.2 ft
Total Well Penetration Depth: 28.2 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 1.854E-5 ft/sec y0 = 0.7178 ft



MMW011: SLUG TEST, FALLING 2

Data Set: C:\...\MMW011f2.aqt
Date: 12/15/09 Time: 21:17:05

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW011
Test Date: 10/7/09

AQUIFER DATA

Saturated Thickness: 28.6 ft Anisotropy Ratio (Kz/Kr): 1.

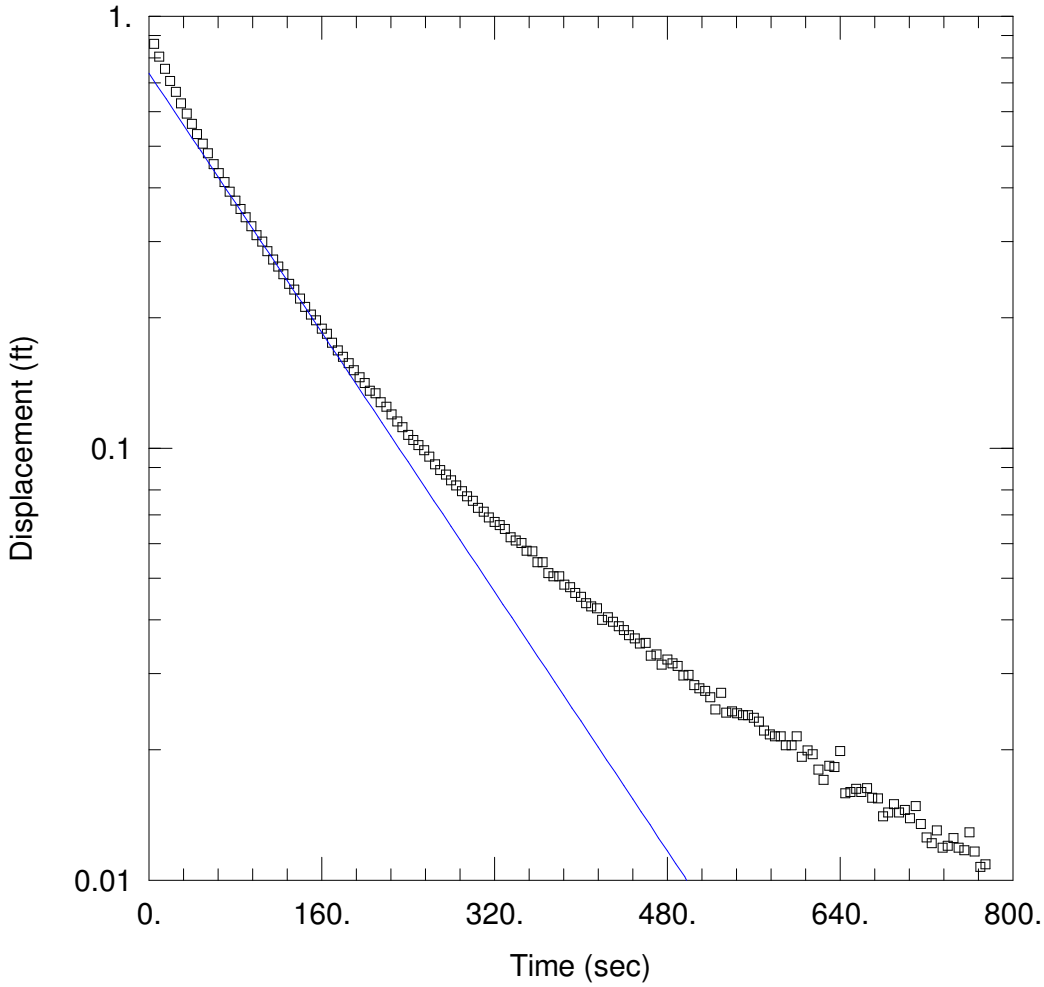
WELL DATA (MMW011)

Initial Displacement: 1.9 ft Static Water Column Height: 28.6 ft
Total Well Penetration Depth: 28.2 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 2.121E-5 ft/sec y0 = 0.7638 ft



MMW011: SLUG TEST, FALLING 3

Data Set: C:\...\MMW011f3.aqt
Date: 12/15/09 Time: 21:17:35

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW011
Test Date: 10/7/09

AQUIFER DATA

Saturated Thickness: 28.6 ft
Anisotropy Ratio (Kz/Kr): 1.

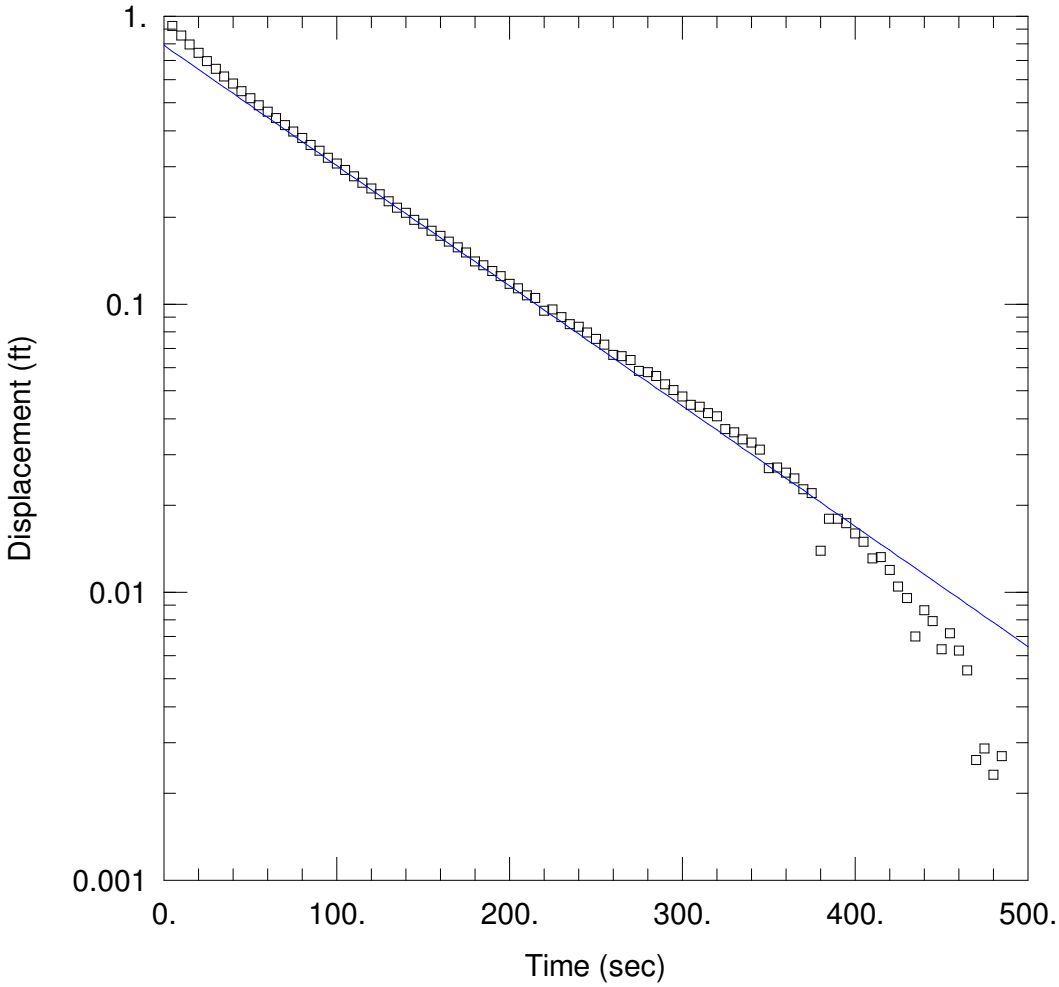
WELL DATA (MMW011)

Initial Displacement: 1.9 ft
Total Well Penetration Depth: 28.2 ft
Casing Radius: 0.168 ft
Static Water Column Height: 28.6 ft
Screen Length: 20. ft
Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 1.901E-5 ft/sec
y0 = 0.738 ft



MMW011: SLUG TEST, RISING 1

Data Set: C:\...\MMW011r1.aqt
Date: 12/15/09 Time: 21:18:10

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW011
Test Date: 10/7/09

AQUIFER DATA

Saturated Thickness: 28.6 ft Anisotropy Ratio (Kz/Kr): 1.

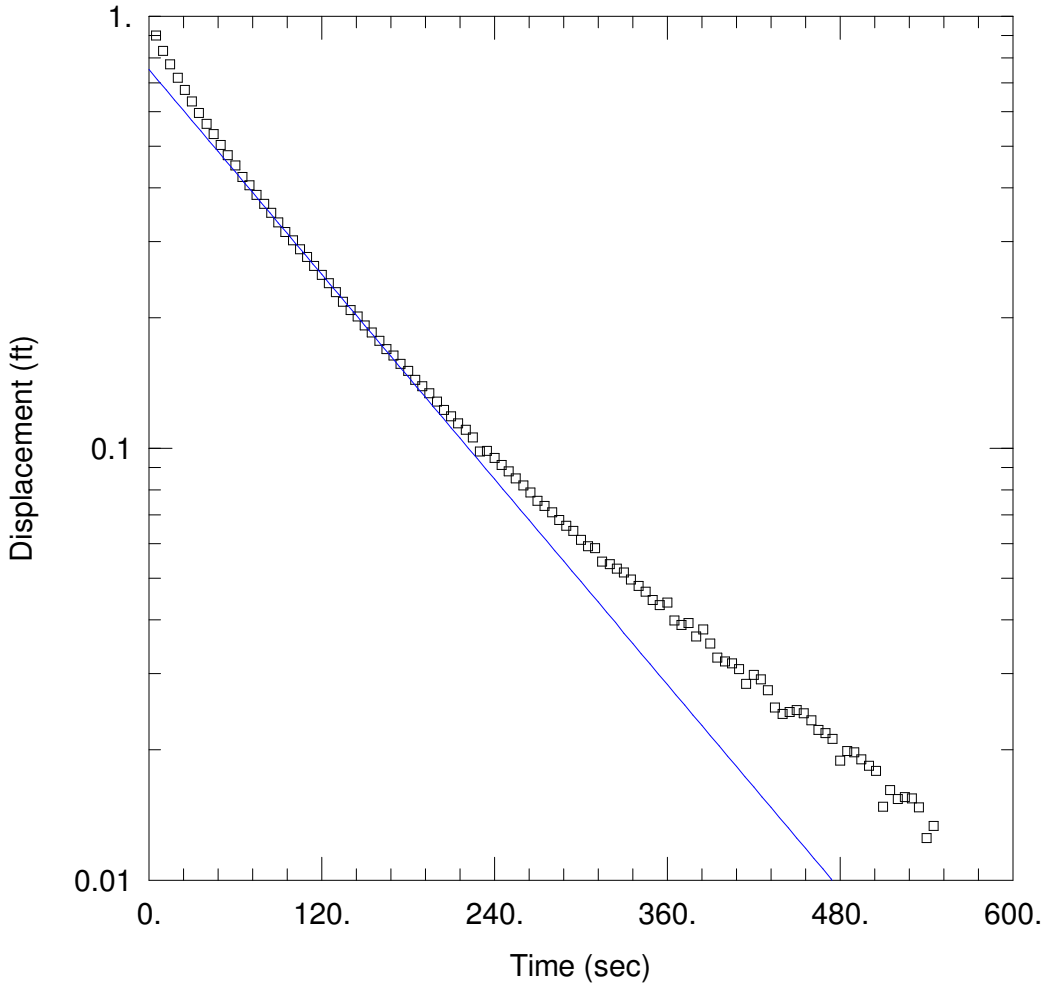
WELL DATA (MMW011)

Initial Displacement: 1.9 ft Static Water Column Height: 28.6 ft
Total Well Penetration Depth: 28.2 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 2.116E-5 ft/sec y0 = 0.7911 ft



MMW011: SLUG TEST, RISING 2

Data Set: C:\...\MMW011r2.aqt
Date: 12/15/09 Time: 21:18:33

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW011
Test Date: 10/7/09

AQUIFER DATA

Saturated Thickness: 28.6 ft Anisotropy Ratio (Kz/Kr): 1.

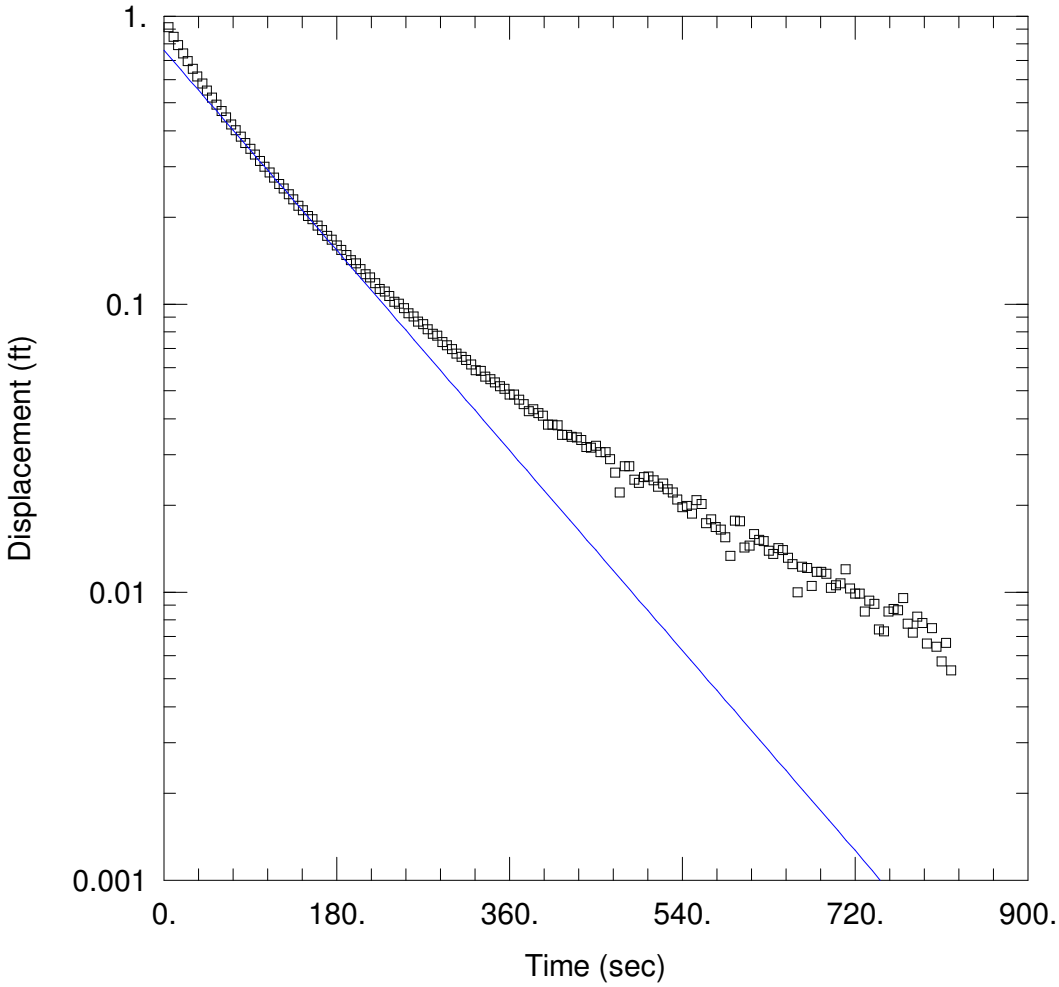
WELL DATA (MMW011)

Initial Displacement: 1.9 ft Static Water Column Height: 28.6 ft
Total Well Penetration Depth: 28.2 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 2.004E-5 ft/sec y0 = 0.7522 ft



MMW011: SLUG TEST, RISING 3

Data Set: C:\...\MMW011r3.aqt
Date: 12/15/09 Time: 21:19:28

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW011
Test Date: 10/7/09

AQUIFER DATA

Saturated Thickness: 28.6 ft Anisotropy Ratio (Kz/Kr): 1.

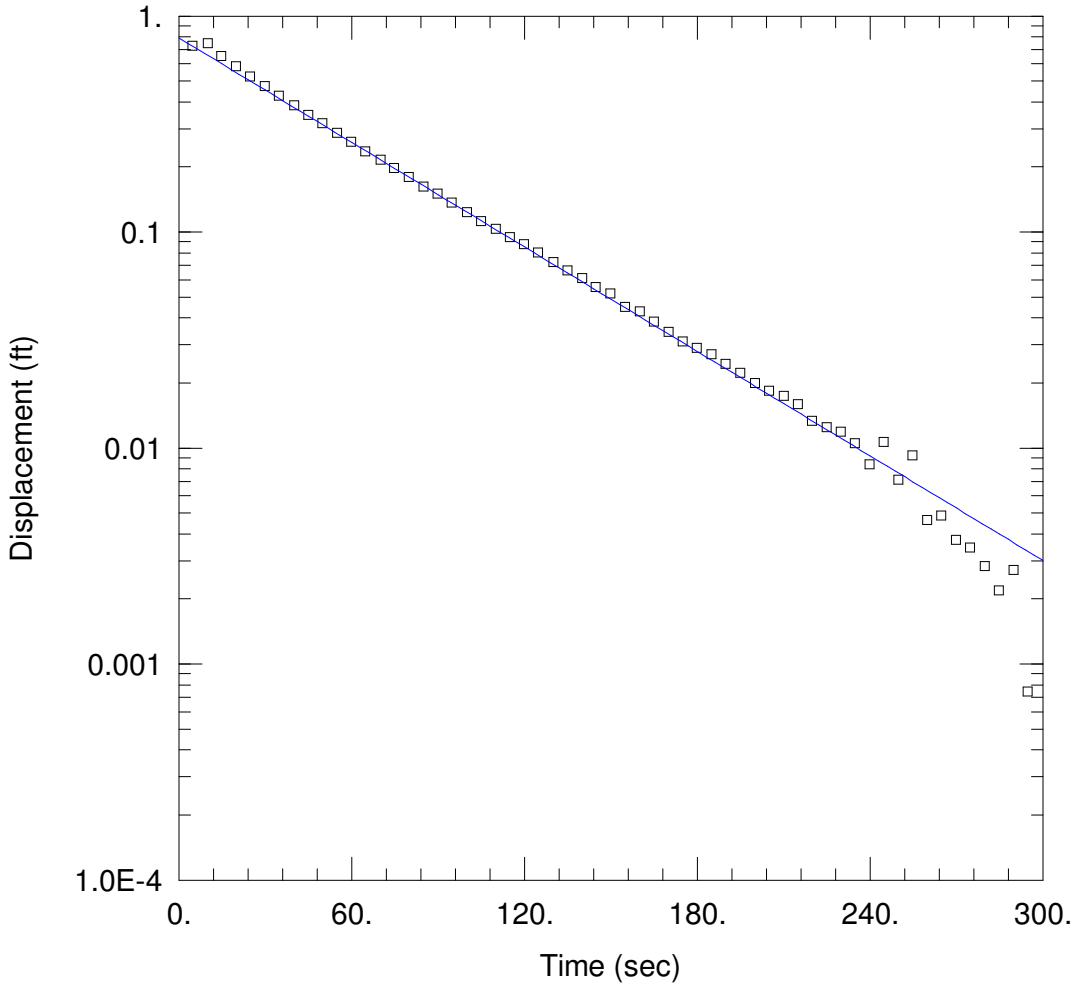
WELL DATA (MMW011)

Initial Displacement: 1.9 ft Static Water Column Height: 28.6 ft
Total Well Penetration Depth: 28.2 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 1.957E-5 ft/sec y0 = 0.762 ft



MMW021: SLUG TEST, FALLING 2

Data Set: C:\...\MMW021f2.aqt
Date: 12/15/09 Time: 21:20:25

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW021
Test Date: 10/6/09

AQUIFER DATA

Saturated Thickness: 37.6 ft Anisotropy Ratio (Kz/Kr): 1.

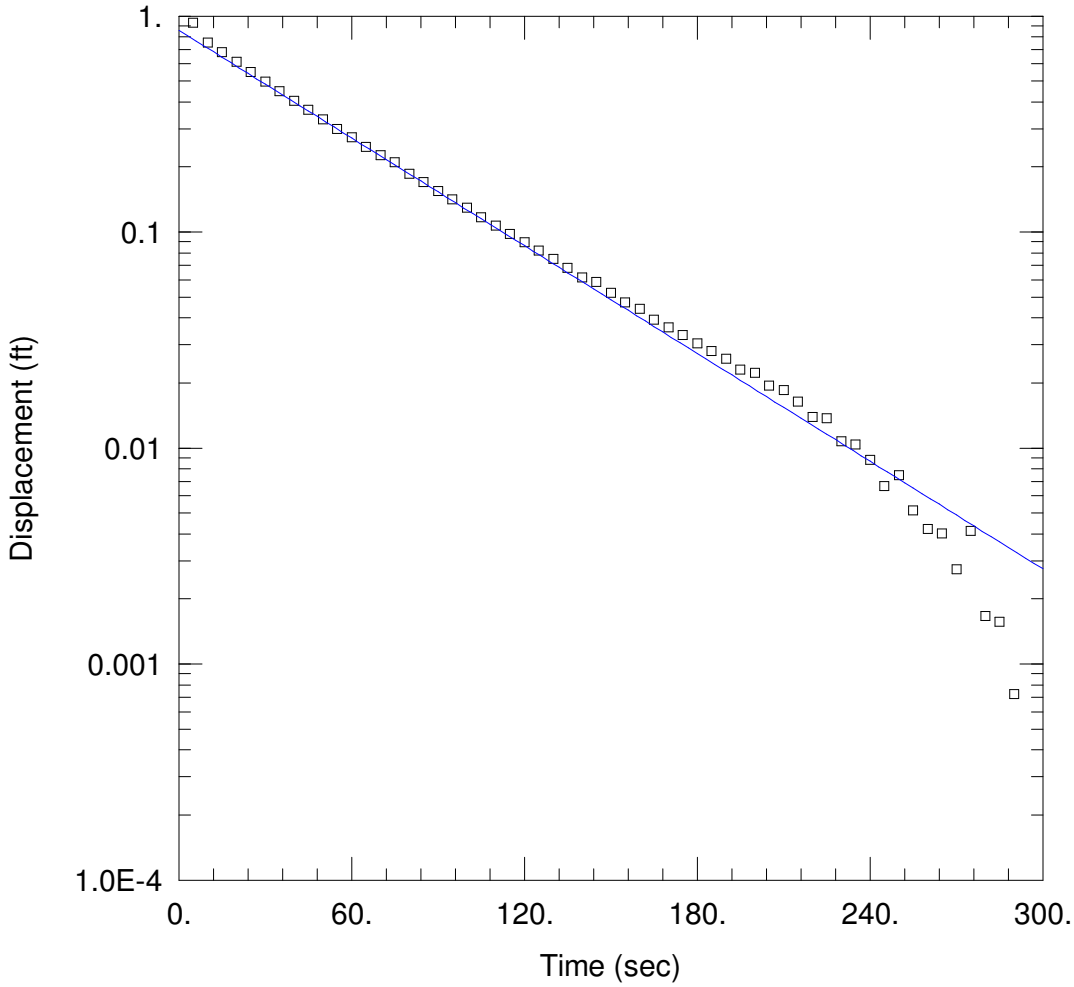
WELL DATA (MMW021)

Initial Displacement: 1.9 ft Static Water Column Height: 37.6 ft
Total Well Penetration Depth: 37.6 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 4.427E-5 ft/sec y0 = 0.7921 ft



MMW021: SLUG TEST, FALLING 3

Data Set: C:\...\MMW021f3.aqt
Date: 12/15/09 Time: 21:21:52

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW021
Test Date: 10/6/09

AQUIFER DATA

Saturated Thickness: 37.6 ft Anisotropy Ratio (Kz/Kr): 1.

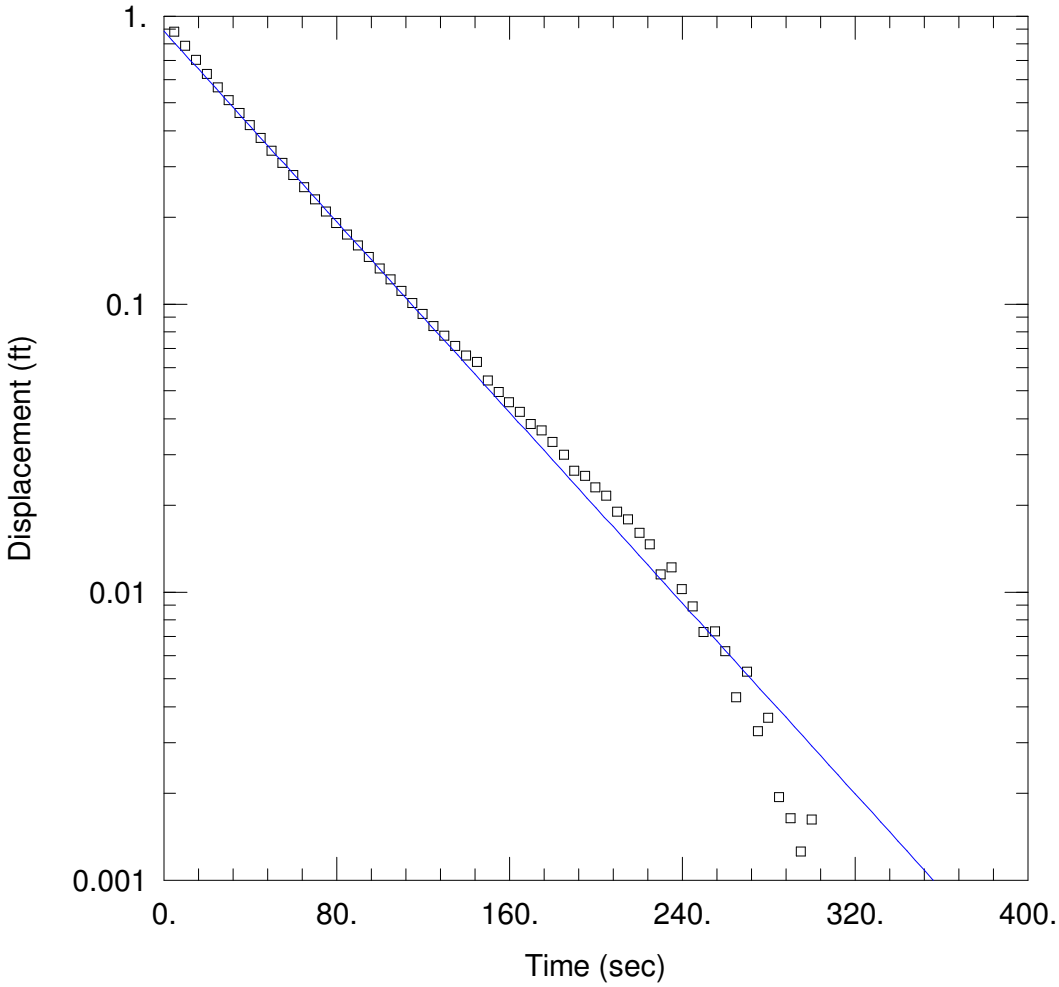
WELL DATA (MMW021)

Initial Displacement: 1.9 ft Static Water Column Height: 37.6 ft
Total Well Penetration Depth: 37.6 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 4.563E-5 ft/sec y0 = 0.8587 ft



MMW021: SLUG TEST, RISING 1

Data Set: C:\...\MMW021r1.aqt
Date: 12/15/09 Time: 21:22:24

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW021
Test Date: 10/6/09

AQUIFER DATA

Saturated Thickness: 37.6 ft Anisotropy Ratio (Kz/Kr): 1.

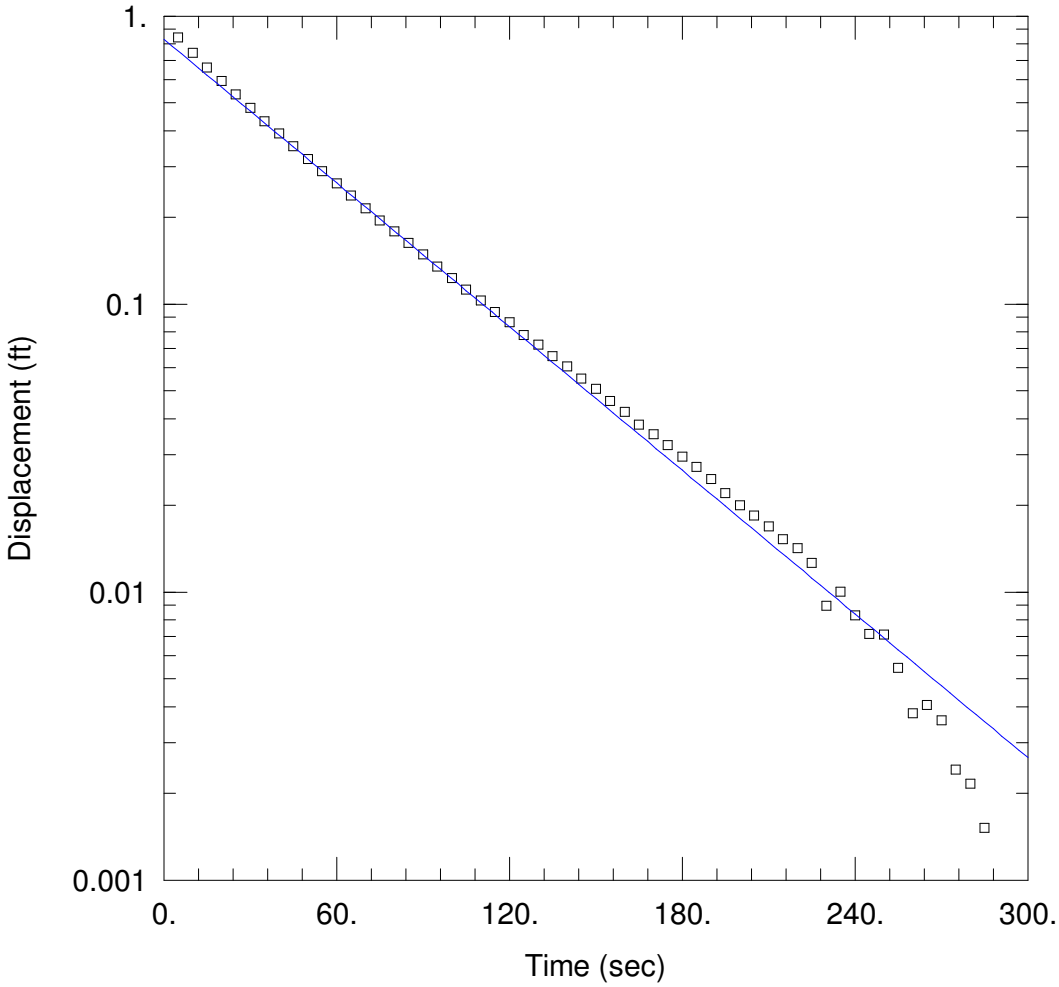
WELL DATA (MMW021)

Initial Displacement: 1.9 ft Static Water Column Height: 37.6 ft
Total Well Penetration Depth: 37.6 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 4.543E-5 ft/sec y0 = 0.8872 ft



MMW021: SLUG TEST, RISING 2

Data Set: C:\...\MMW021r2.aqt
Date: 12/15/09 Time: 21:37:54

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW021
Test Date: 10/6/09

AQUIFER DATA

Saturated Thickness: 37.6 ft Anisotropy Ratio (Kz/Kr): 1.

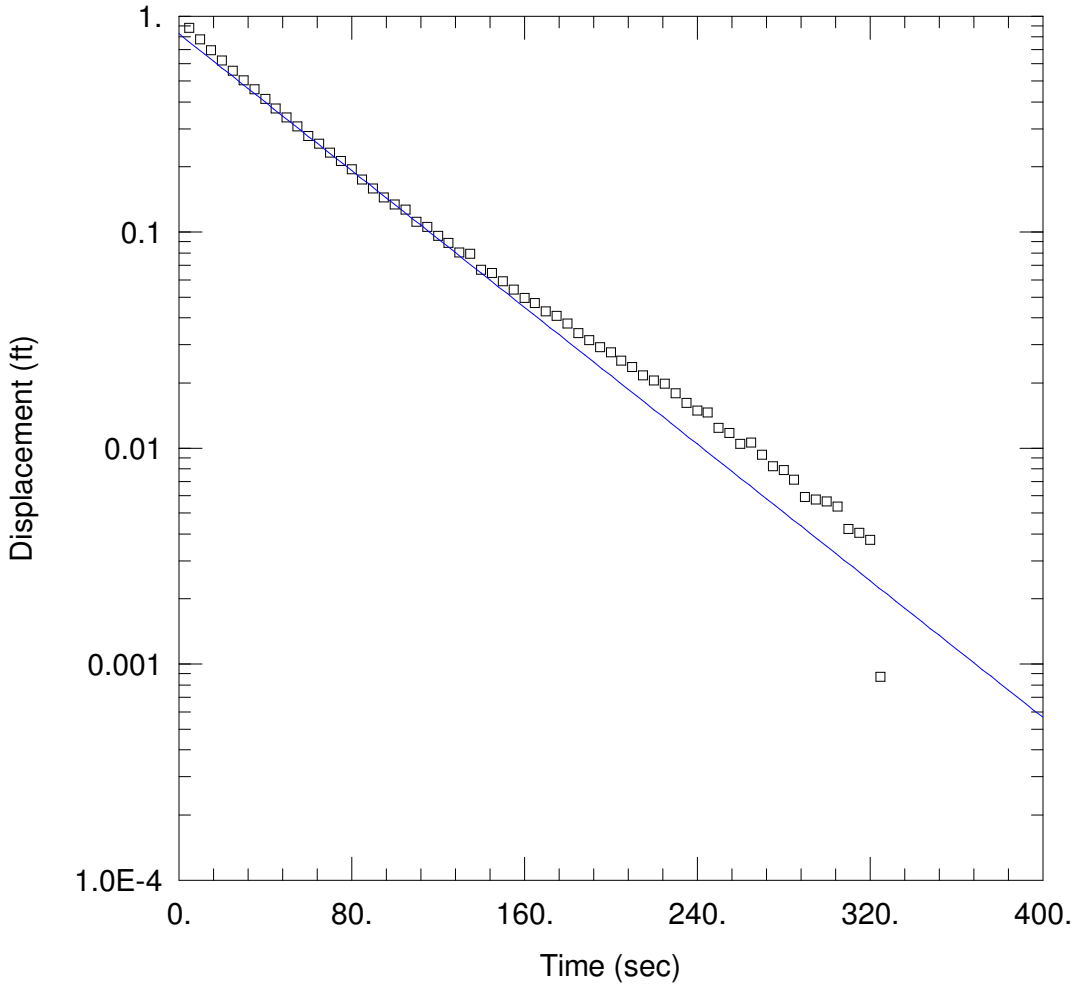
WELL DATA (MMW021)

Initial Displacement: 1.9 ft Static Water Column Height: 37.6 ft
Total Well Penetration Depth: 37.6 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 4.565E-5 ft/sec y0 = 0.8304 ft



MMW021: SLUG TEST, RISING 3

Data Set: C:\...\MMW021r3.aqt
Date: 12/15/09 Time: 21:38:38

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW021
Test Date: 10/6/09

AQUIFER DATA

Saturated Thickness: 37.6 ft Anisotropy Ratio (Kz/Kr): 1.

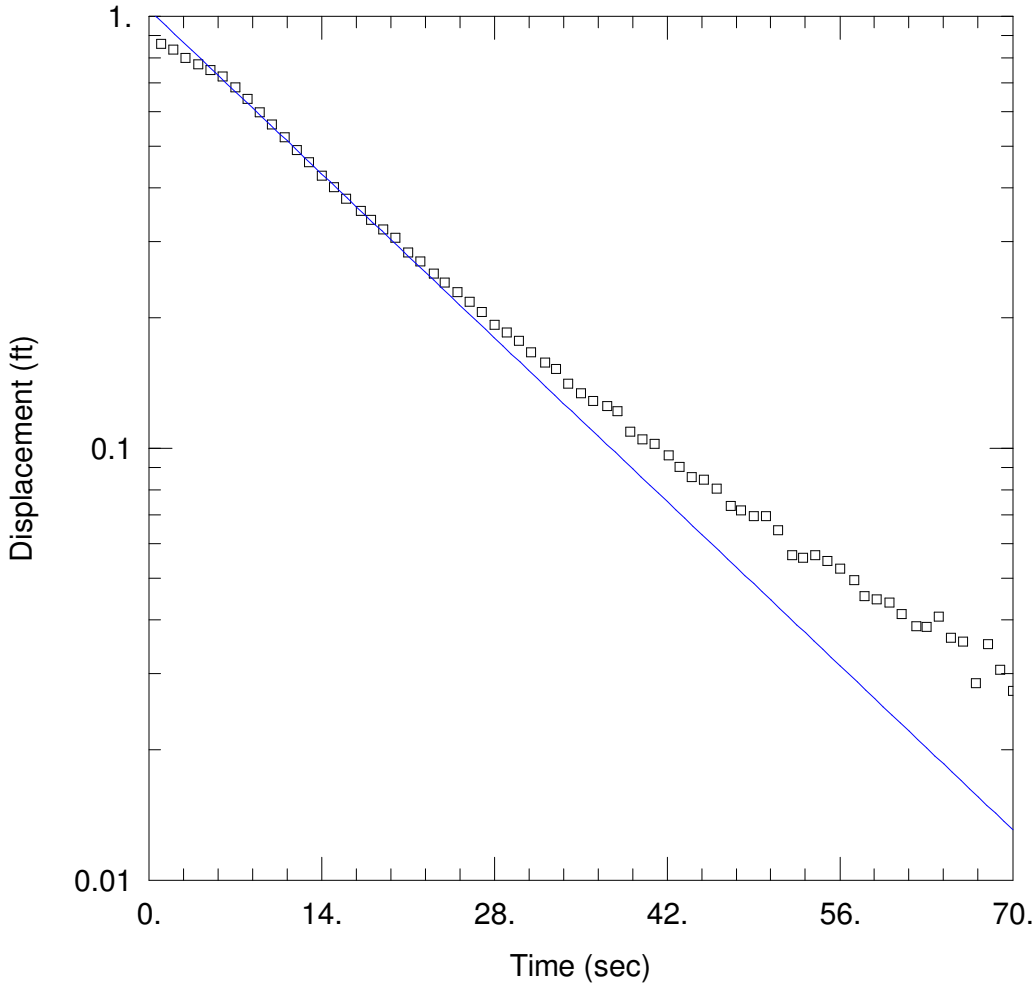
WELL DATA (MMW021)

Initial Displacement: 1.9 ft Static Water Column Height: 37.6 ft
Total Well Penetration Depth: 37.6 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 4.343E-5 ft/sec y0 = 0.8269 ft



MMW023: SLUG TEST, FALLING 1

Data Set: C:\...\MMW023f1.aqt
Date: 12/15/09 Time: 21:39:46

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW023
Test Date: 10/7/09

AQUIFER DATA

Saturated Thickness: 249.8 ft Anisotropy Ratio (Kz/Kr): 1.

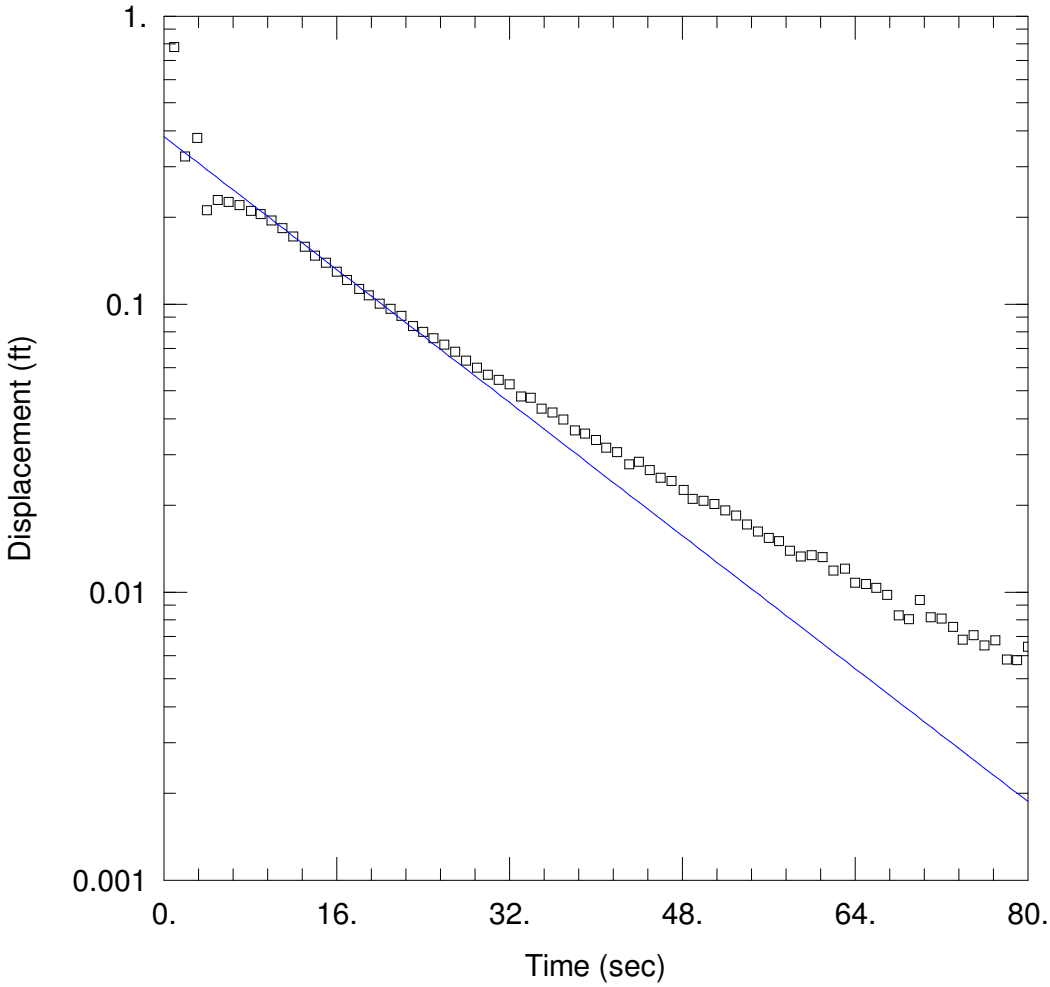
WELL DATA (MMW023)

Initial Displacement: 1.9 ft Static Water Column Height: 249.8 ft
Total Well Penetration Depth: 249.8 ft Screen Length: 5. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0006284 ft/sec y0 = 1.035 ft



MMW023: SLUG TEST, FALLING 2

Data Set: C:\...\MMW023f2.aqt
Date: 12/15/09 Time: 21:40:55

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW023
Test Date: 10/7/09

AQUIFER DATA

Saturated Thickness: 249.8 ft Anisotropy Ratio (Kz/Kr): 1.

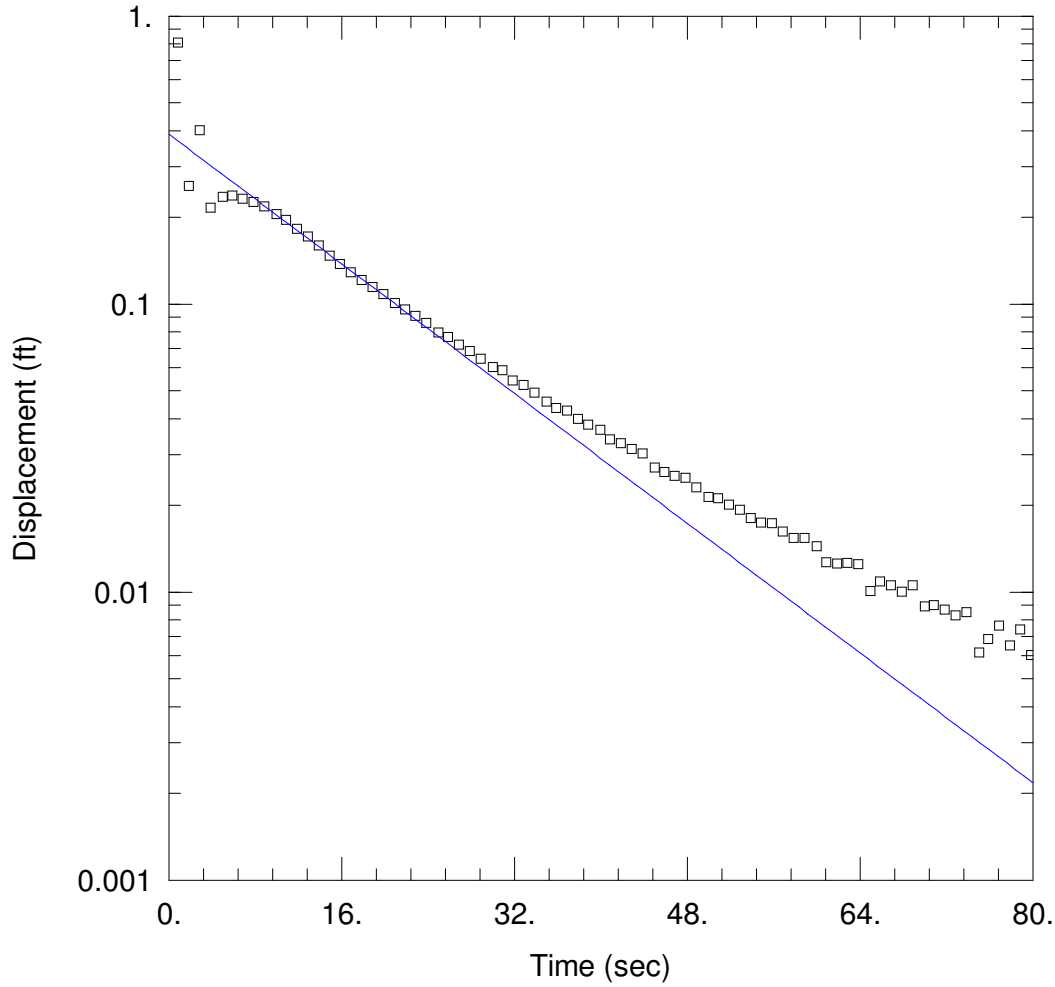
WELL DATA (MMW023)

Initial Displacement: 1.9 ft Static Water Column Height: 249.8 ft
Total Well Penetration Depth: 249.8 ft Screen Length: 5. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0006685 ft/sec y0 = 0.3816 ft



MMW023: SLUG TEST, FALLING 3

Data Set: C:\...\MMW023f3.aqt
Date: 12/15/09 Time: 21:41:30

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW023
Test Date: 10/7/09

AQUIFER DATA

Saturated Thickness: 249.8 ft Anisotropy Ratio (Kz/Kr): 1.

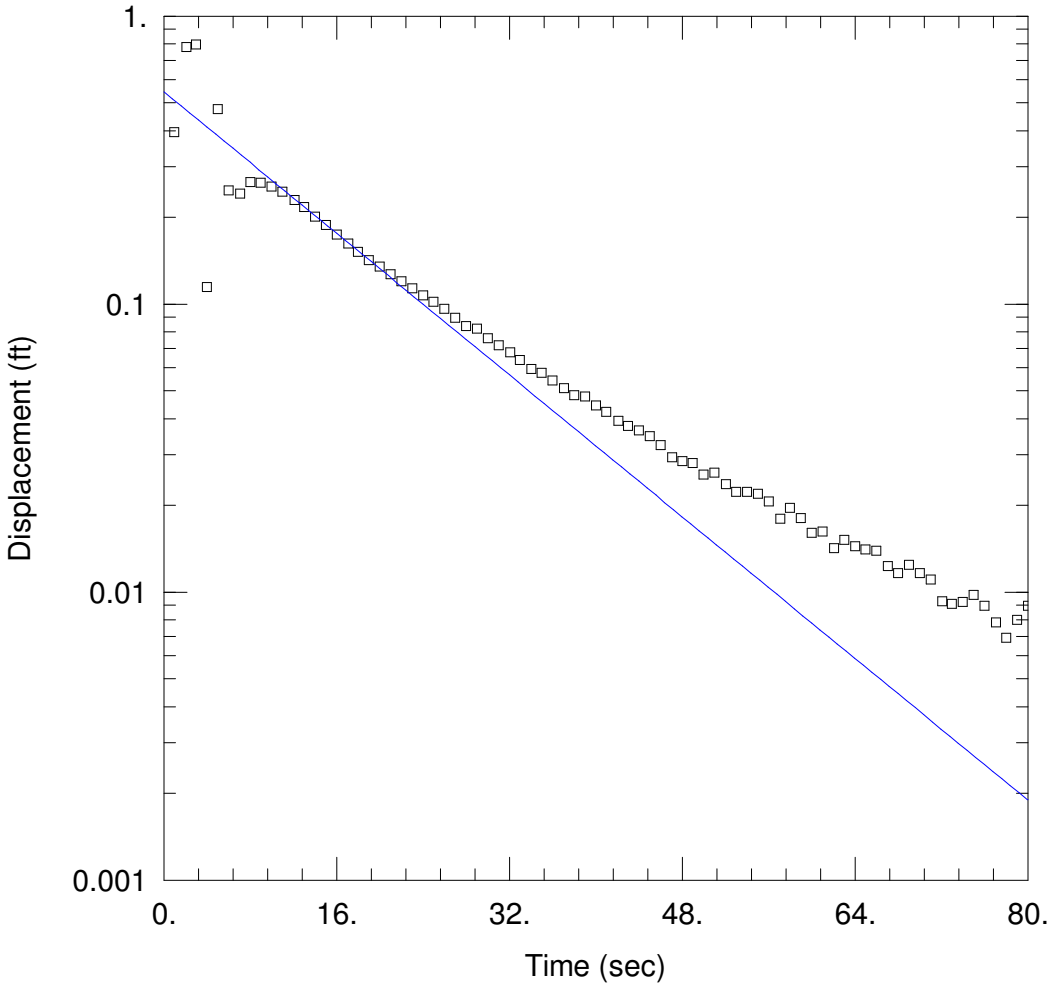
WELL DATA (MMW023)

Initial Displacement: 1.9 ft Static Water Column Height: 249.8 ft
Total Well Penetration Depth: 249.8 ft Screen Length: 5. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0006518 ft/sec y0 = 0.3887 ft



MMW023: SLUG TEST, FALLING 4

Data Set: C:\...\MMW023f4.aqt
Date: 12/15/09 Time: 21:42:30

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW023
Test Date: 10/7/09

AQUIFER DATA

Saturated Thickness: 249.8 ft Anisotropy Ratio (Kz/Kr): 1.

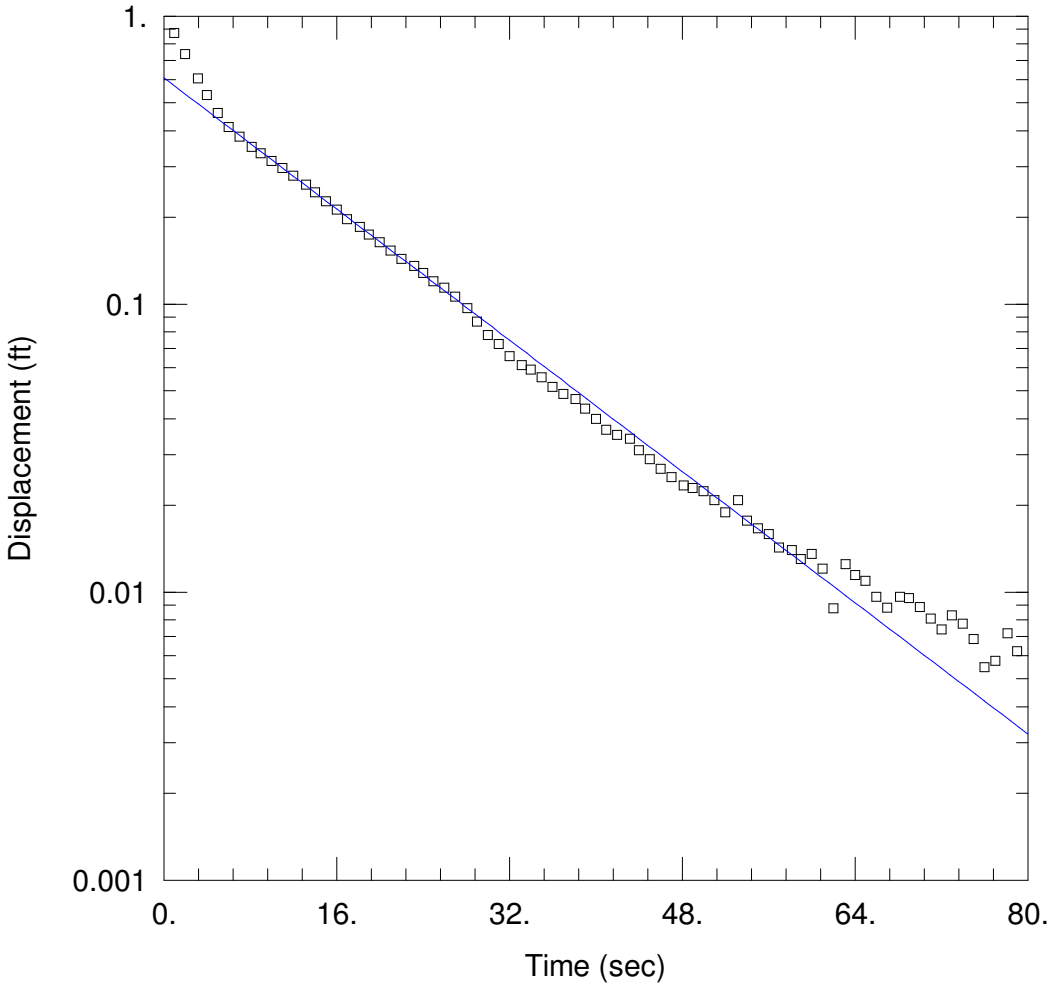
WELL DATA (MMW023)

Initial Displacement: 1.9 ft Static Water Column Height: 249.8 ft
Total Well Penetration Depth: 249.8 ft Screen Length: 5. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0007121 ft/sec y0 = 0.5459 ft



MMW023: SLUG TEST, RISING 1

Data Set: C:\...\MMW023r1.aqt
Date: 12/15/09 Time: 21:43:00

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW023
Test Date: 10/7/09

AQUIFER DATA

Saturated Thickness: 249.8 ft Anisotropy Ratio (Kz/Kr): 1.

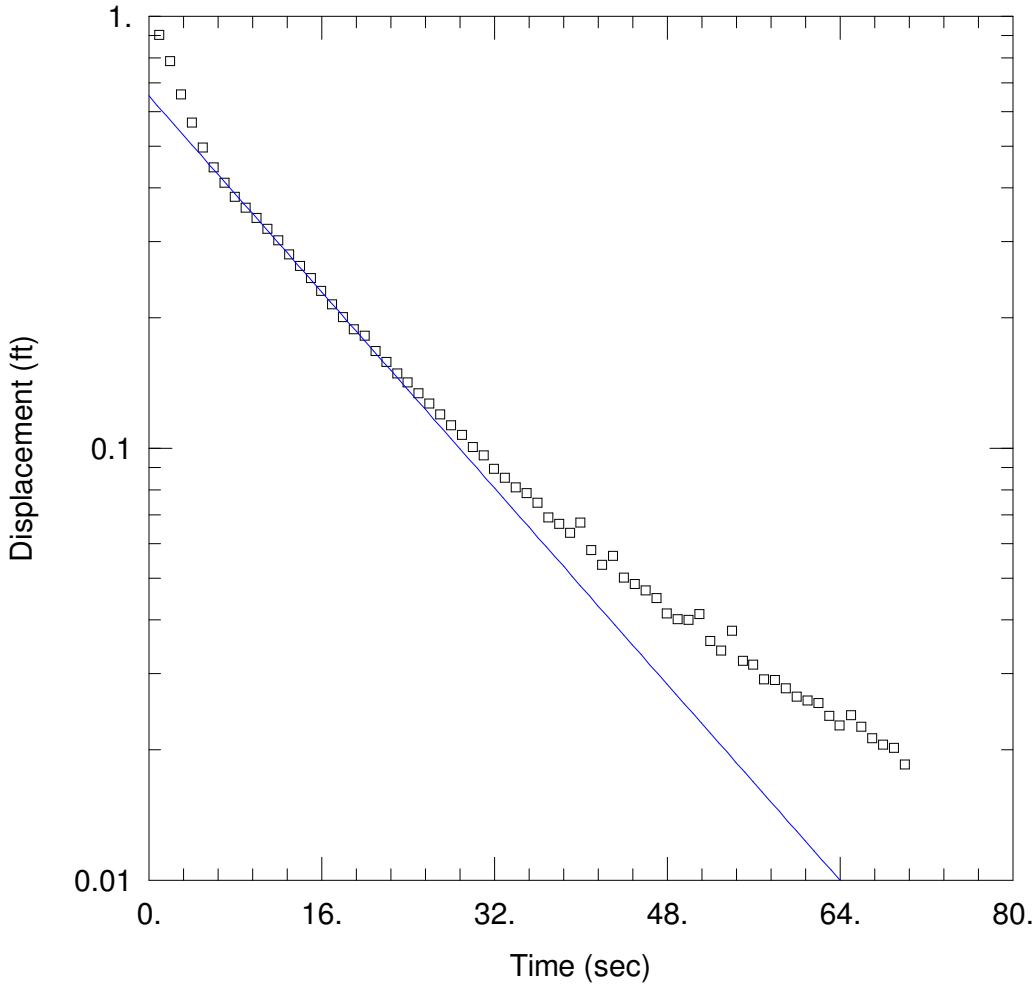
WELL DATA (MMW023)

Initial Displacement: 1.9 ft Static Water Column Height: 26.6 ft
Total Well Penetration Depth: 249.8 ft Screen Length: 5. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0006596 ft/sec y0 = 0.6102 ft



MMW023: SLUG TEST, RISING 2

Data Set: C:\...\MMW023r2.aqt
Date: 12/15/09 Time: 21:43:28

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW023
Test Date: 10/7/09

AQUIFER DATA

Saturated Thickness: 249.8 ft Anisotropy Ratio (Kz/Kr): 1.

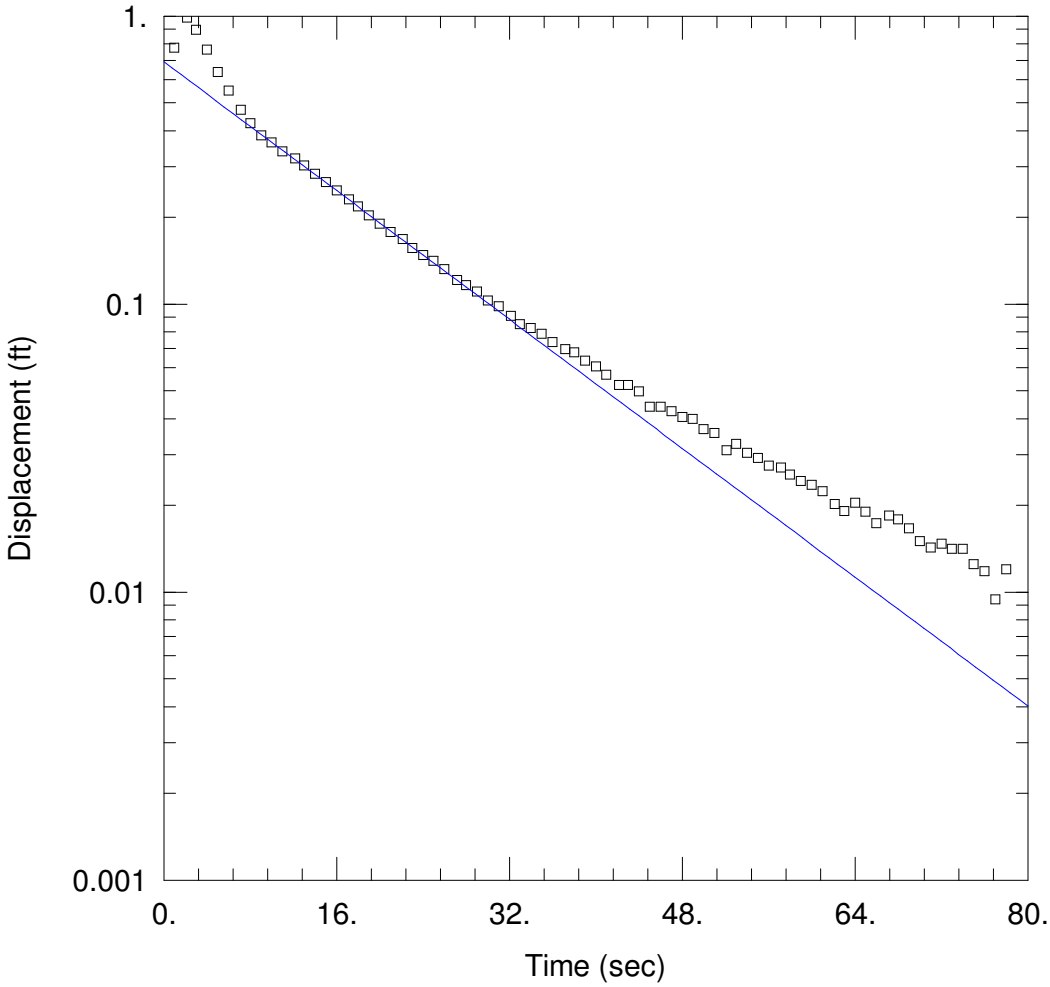
WELL DATA (MMW023)

Initial Displacement: 1.9 ft Static Water Column Height: 249.8 ft
Total Well Penetration Depth: 249.8 ft Screen Length: 5. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0006571 ft/sec y0 = 0.6531 ft



MMW023: SLUG TEST, RISING 3

Data Set: C:\...\MMW023r3.aqt
Date: 12/15/09 Time: 21:44:38

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW023
Test Date: 10/7/09

AQUIFER DATA

Saturated Thickness: 249.8 ft Anisotropy Ratio (Kz/Kr): 1.

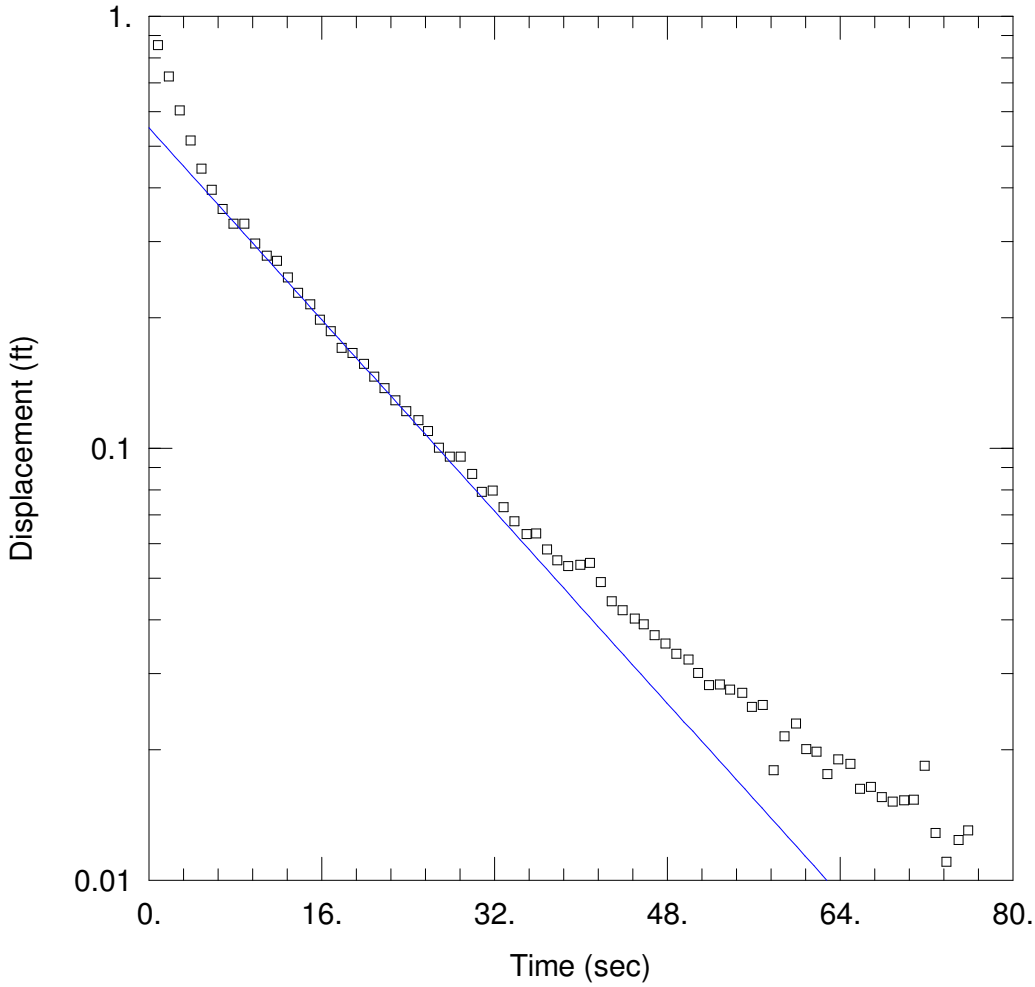
WELL DATA (MMW023)

Initial Displacement: 1.9 ft Static Water Column Height: 249.8 ft
Total Well Penetration Depth: 249.8 ft Screen Length: 5. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0006473 ft/sec y0 = 0.693 ft



MMW023: SLUG TEST, RISING 4

Data Set: C:\...\MMW023r4.aqt
Date: 12/15/09 Time: 21:45:11

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW023
Test Date: 10/7/09

AQUIFER DATA

Saturated Thickness: 249.8 ft Anisotropy Ratio (Kz/Kr): 1.

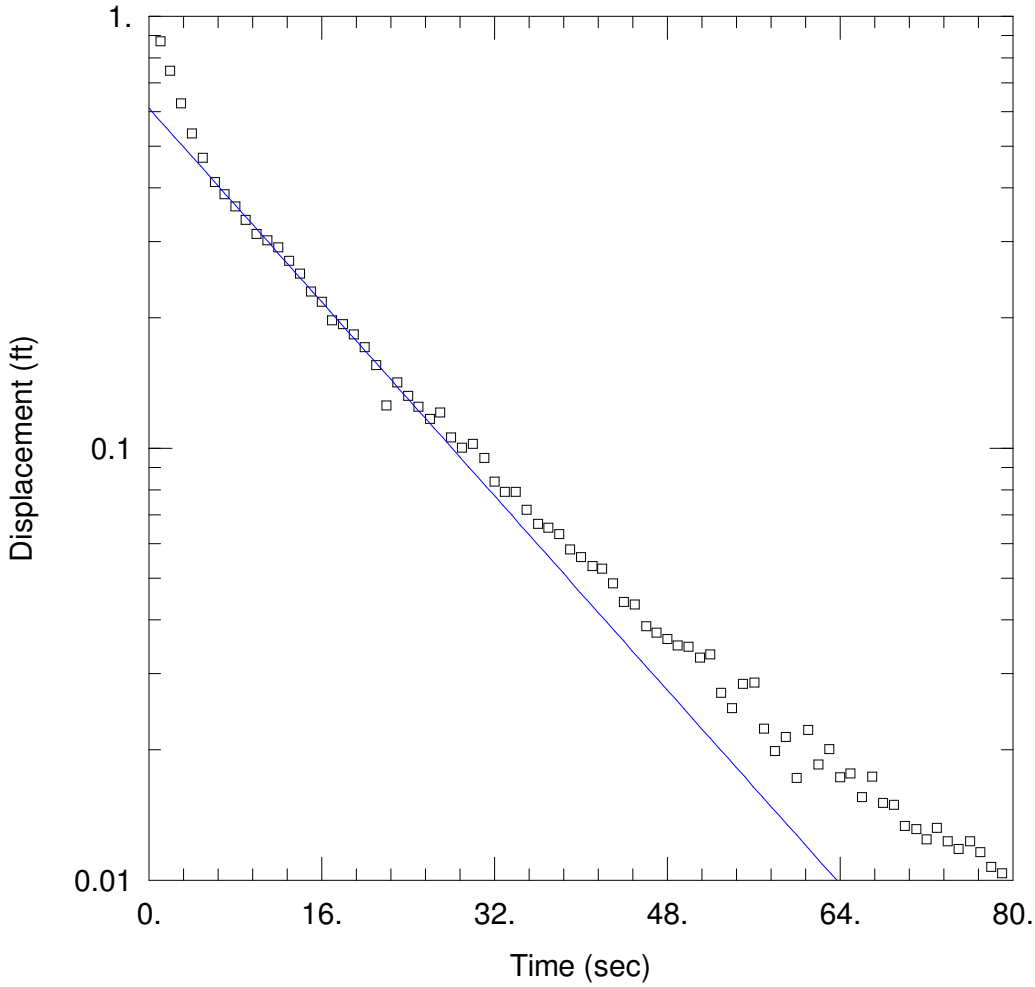
WELL DATA (MMW023)

Initial Displacement: 1.9 ft Static Water Column Height: 249.8 ft
Total Well Penetration Depth: 249.8 ft Screen Length: 5. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0006424 ft/sec y0 = 0.5511 ft



MMW023: SLUG TEST, RISING 5

Data Set: C:\...\MMW023r5.aqt
Date: 12/15/09 Time: 21:45:44

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW023
Test Date: 10/7/09

AQUIFER DATA

Saturated Thickness: 249.8 ft Anisotropy Ratio (Kz/Kr): 1.

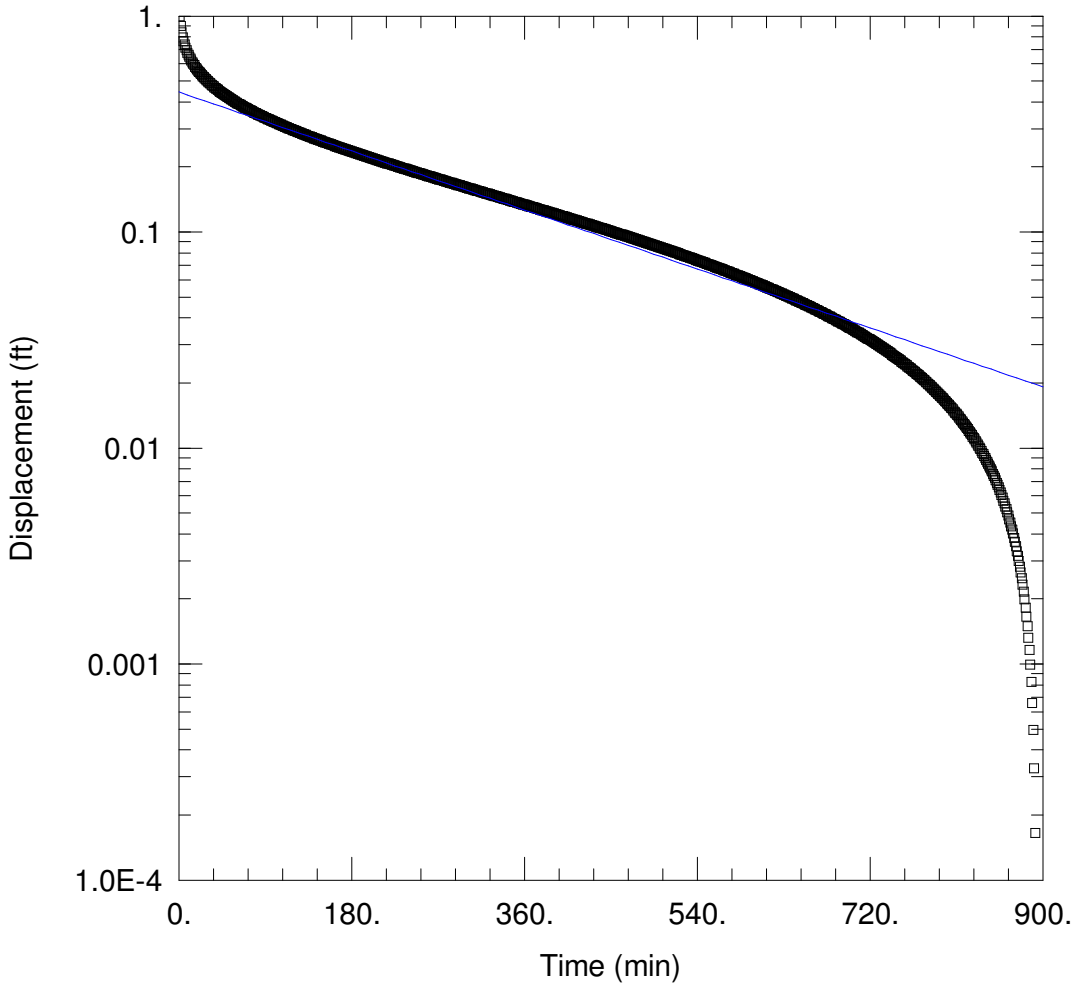
WELL DATA (MMW023)

Initial Displacement: 1.9 ft Static Water Column Height: 249.8 ft
Total Well Penetration Depth: 249.8 ft Screen Length: 5. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0006498 ft/sec y0 = 0.612 ft



MMW032: PUMPING TEST

Data Set: C:\...\MMW032slug.aqt
Date: 12/15/09 Time: 19:44:15

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW032
Test Date: 10/12/09

AQUIFER DATA

Saturated Thickness: 47.7 ft Anisotropy Ratio (Kz/Kr): 1.

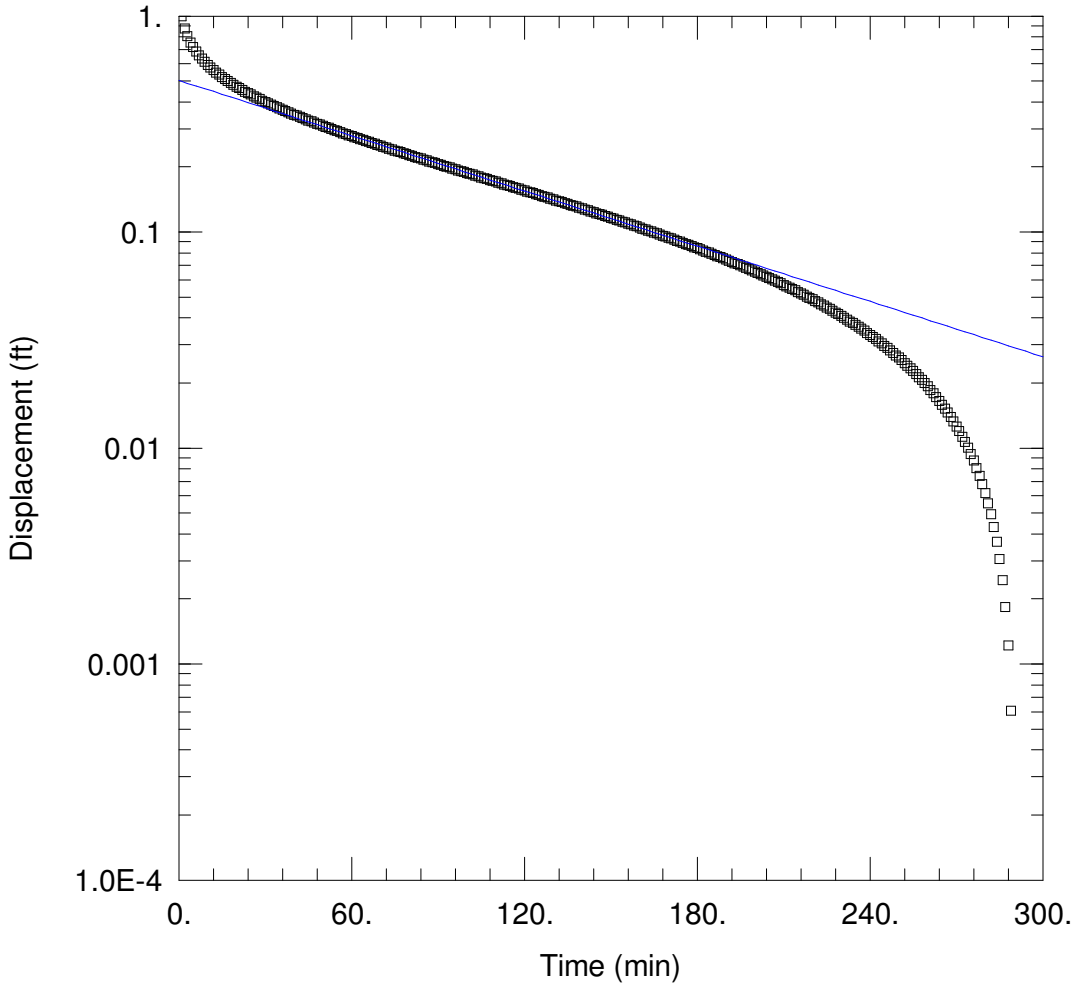
WELL DATA (MMW032)

Initial Displacement: 43.73 ft Static Water Column Height: 47.7 ft
Total Well Penetration Depth: 47.7 ft Screen Length: 10. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 2.722E-7 ft/sec y0 = 0.4445 ft



MMW033

Data Set: C:\...\MMW033slug.aqt
Date: 12/15/09 Time: 19:45:07

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW033
Test Date: 10/12/09

AQUIFER DATA

Saturated Thickness: 136.8 ft Anisotropy Ratio (Kz/Kr): 1.

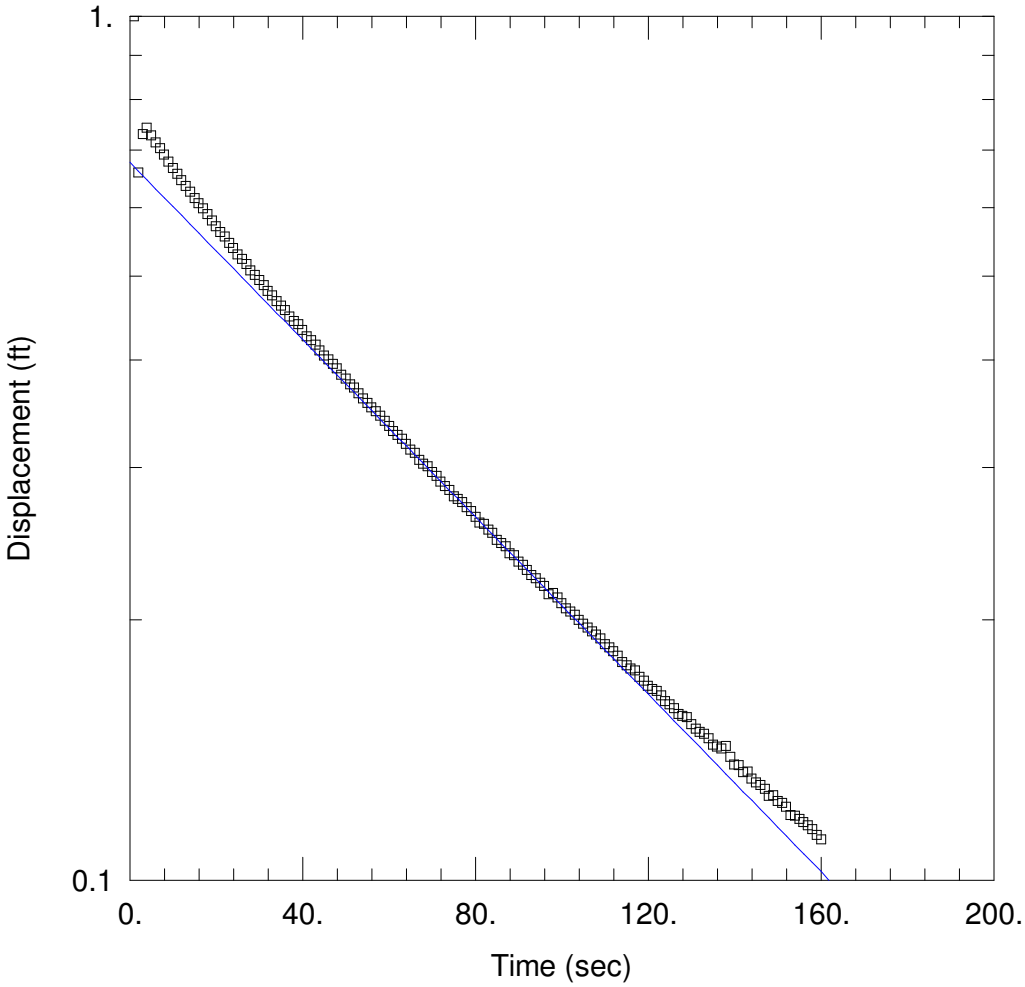
WELL DATA (MMW033)

Initial Displacement: 130.8 ft Static Water Column Height: 136.8 ft
Total Well Penetration Depth: 134.8 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 4.314E-7 ft/sec y0 = 0.5031 ft



MMW034: SLUG TEST, FALLING 1

Data Set: C:\...\MMW034f1.aqt
Date: 12/15/09 Time: 21:46:44

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW034
Test Date: 10/7/09

AQUIFER DATA

Saturated Thickness: 141.5 ft Anisotropy Ratio (Kz/Kr): 1.

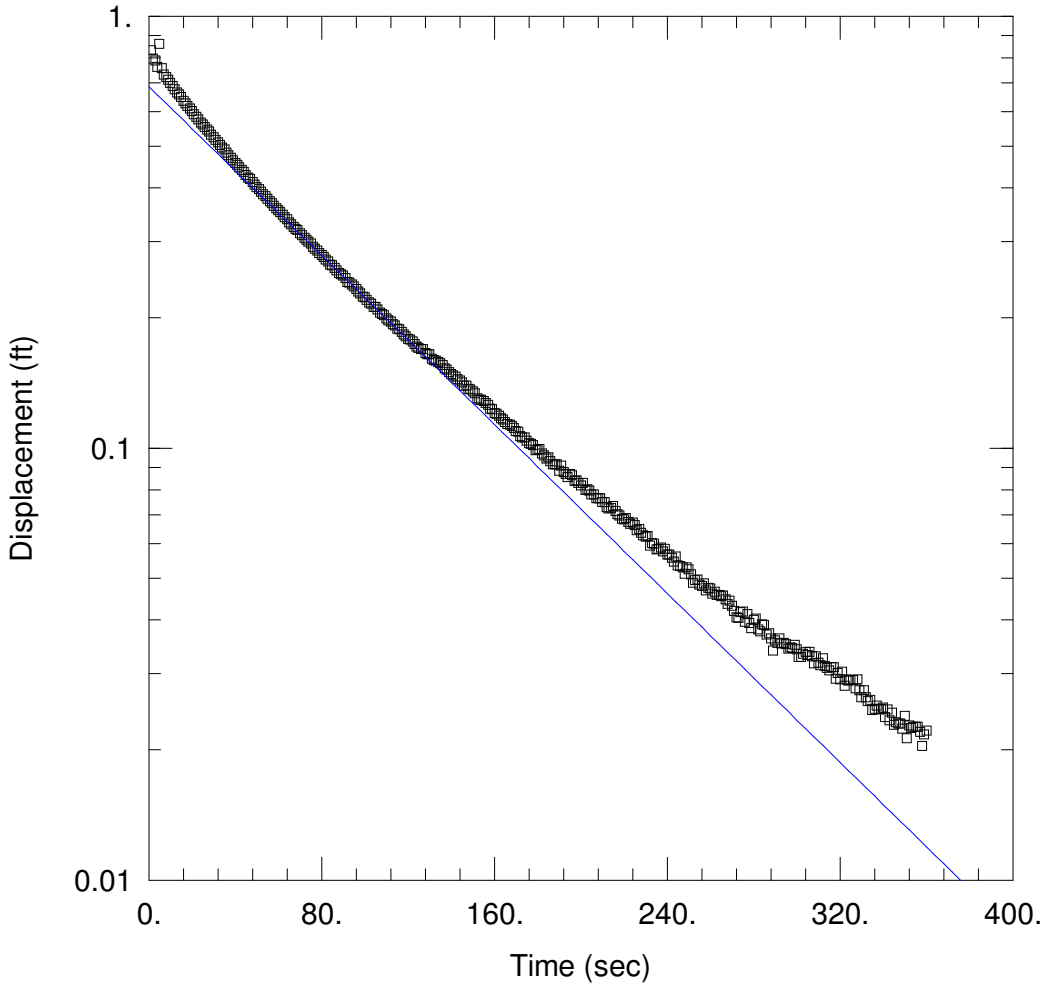
WELL DATA (MMW034)

Initial Displacement: 1.9 ft Static Water Column Height: 141.5 ft
Total Well Penetration Depth: 141.5 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 3.443E-5 ft/sec y0 = 0.6771 ft



MMW034: SLUG TEST, FALLING 2

Data Set: C:\...\MMW034f2.aqt
Date: 12/15/09 Time: 21:50:33

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW034
Test Date: 10/7/09

AQUIFER DATA

Saturated Thickness: 141.5 ft Anisotropy Ratio (Kz/Kr): 1.

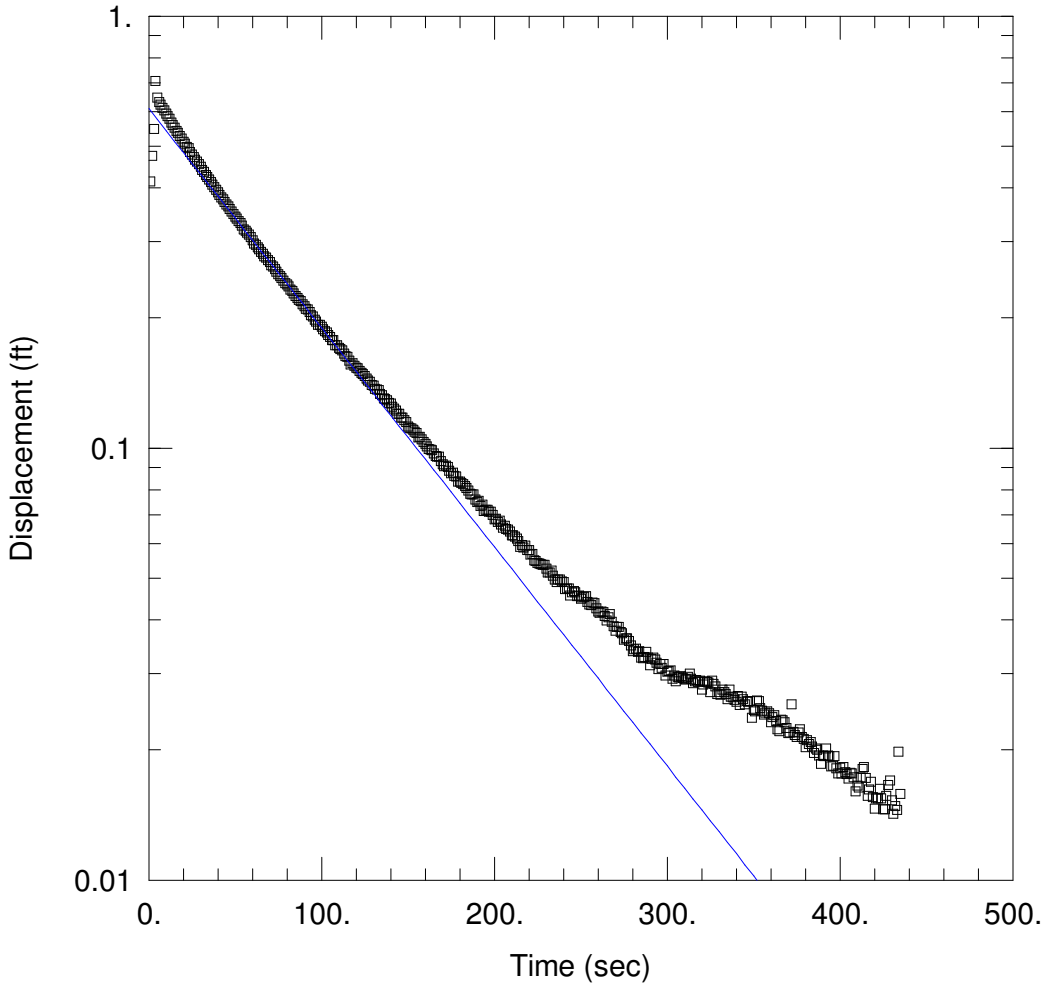
WELL DATA (MMW034)

Initial Displacement: 1.9 ft Static Water Column Height: 141.5 ft
Total Well Penetration Depth: 141.5 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 3.281E-5 ft/sec y0 = 0.6867 ft



MMW034:SLUG TEST, FALLING 3

Data Set: C:\...\MMW034f3.aqt
Date: 12/15/09 Time: 21:50:59

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW034
Test Date: 10/7/09

AQUIFER DATA

Saturated Thickness: 141.5 ft Anisotropy Ratio (Kz/Kr): 1.

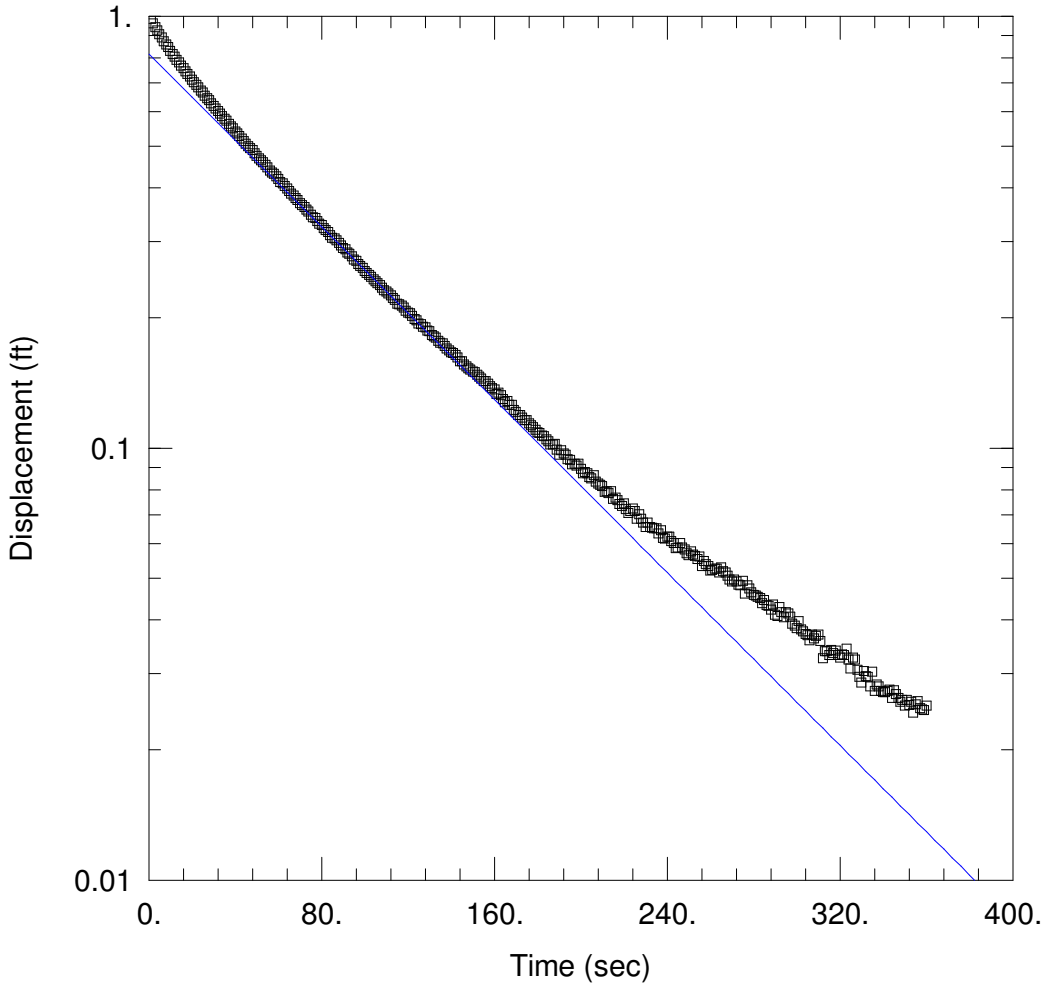
WELL DATA (MMW034)

Initial Displacement: 1.9 ft Static Water Column Height: 141.5 ft
Total Well Penetration Depth: 141.5 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 3.404E-5 ft/sec y0 = 0.6102 ft



MMW034: SLUG TEST, RISING 1

Data Set: C:\...\MMW034r1.aqt
Date: 12/15/09 Time: 21:51:21

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW034
Test Date: 10/7/09

AQUIFER DATA

Saturated Thickness: 141.5 ft Anisotropy Ratio (Kz/Kr): 1.

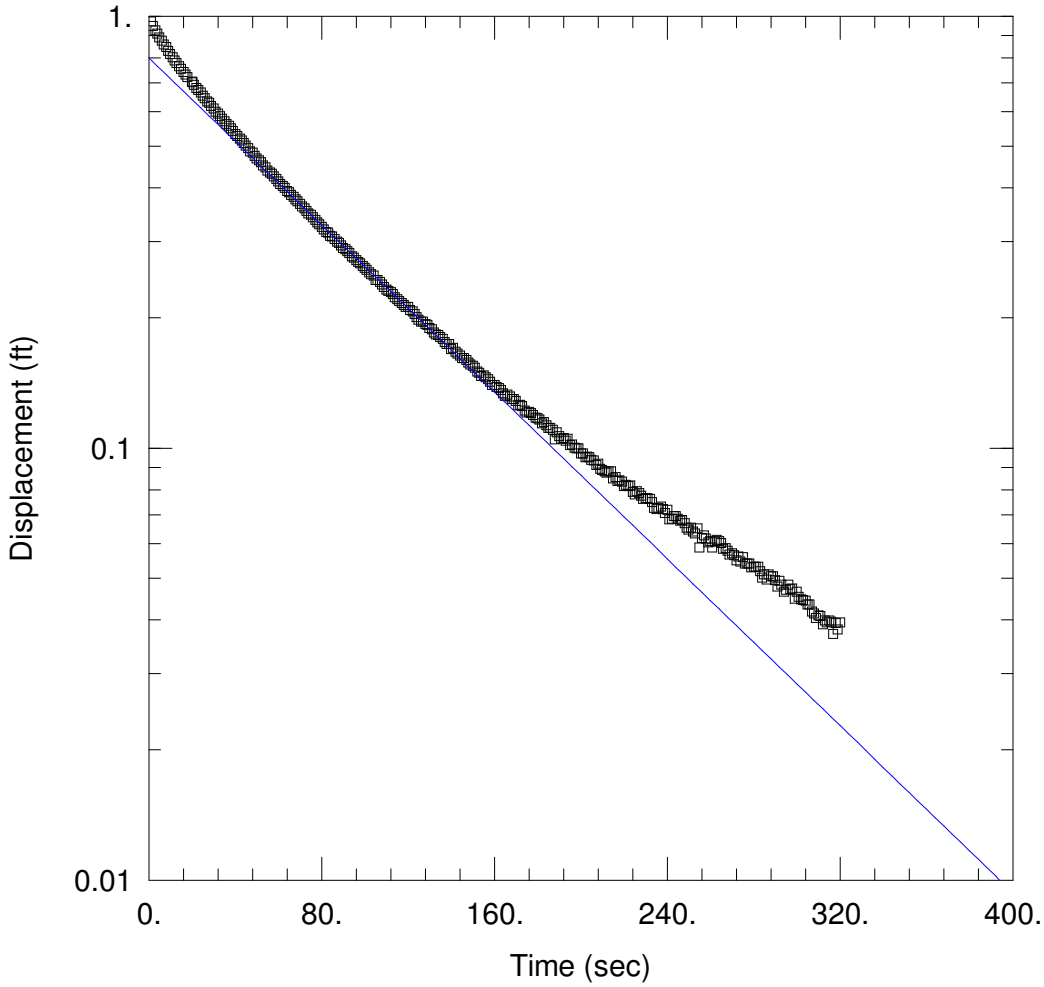
WELL DATA (MMW034)

Initial Displacement: 1.9 ft Static Water Column Height: 141.5 ft
Total Well Penetration Depth: 141.5 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 3.356E-5 ft/sec y0 = 0.8167 ft



MMW034: SLUG TEST, RISING 2

Data Set: C:\...\MMW034r2.aqt
Date: 12/15/09 Time: 22:22:18

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW034
Test Date: 10/7/09

AQUIFER DATA

Saturated Thickness: 141.5 ft Anisotropy Ratio (Kz/Kr): 1.

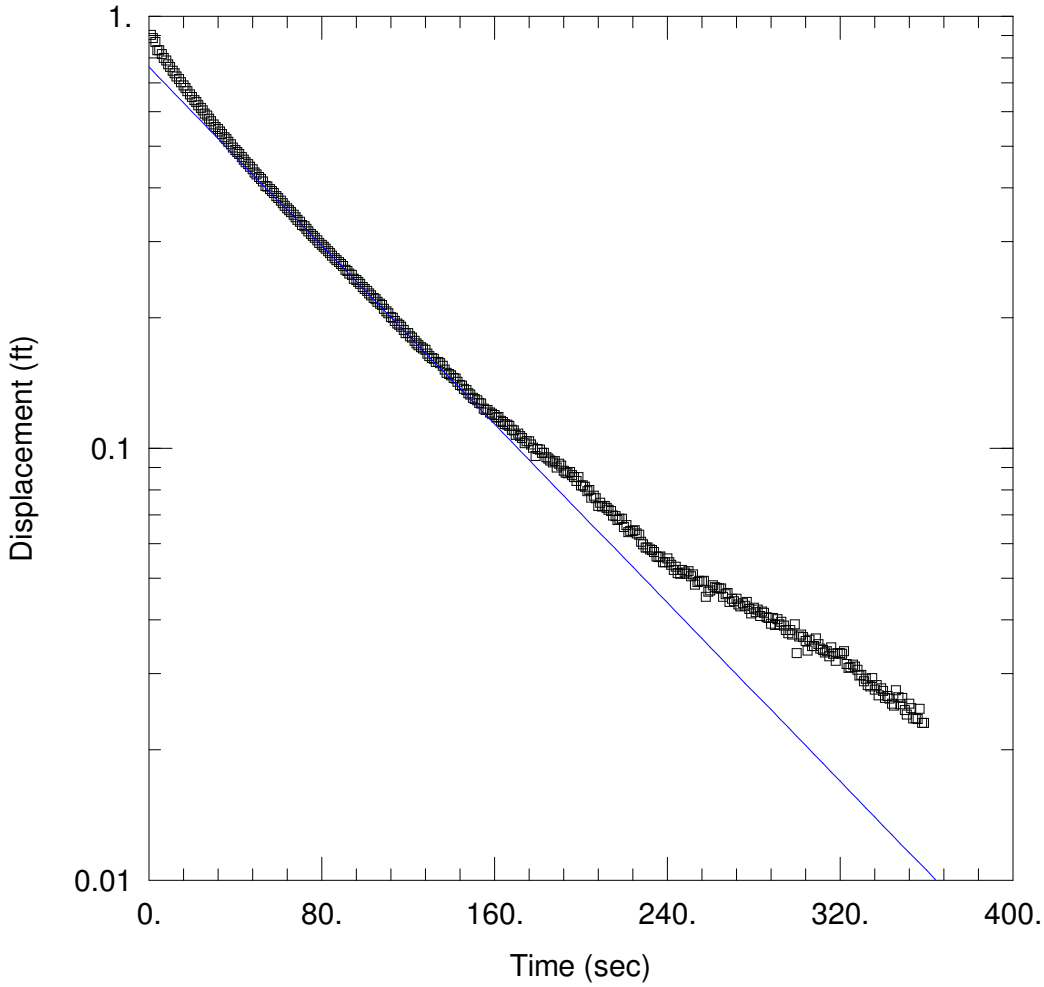
WELL DATA (MMW034)

Initial Displacement: 1.9 ft Static Water Column Height: 141.5 ft
Total Well Penetration Depth: 141.5 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 3.242E-5 ft/sec y0 = 0.7998 ft



MMW034: SLUG TEST, RISING 3

Data Set: C:\...\MMW034r3.aqt
Date: 12/15/09 Time: 22:22:40

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW034
Test Date: 10/7/09

AQUIFER DATA

Saturated Thickness: 141.5 ft Anisotropy Ratio (Kz/Kr): 1.

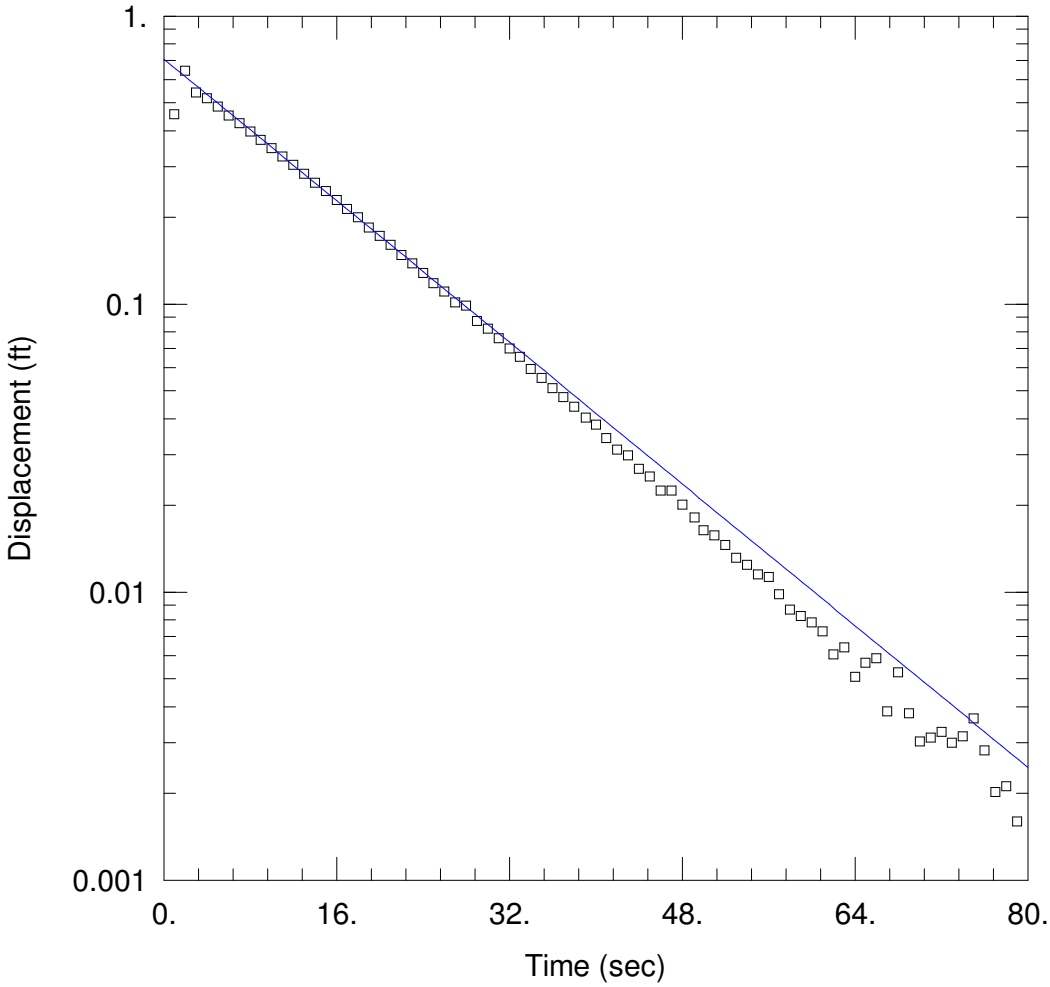
WELL DATA (MMW034)

Initial Displacement: 1.9 ft Static Water Column Height: 141.5 ft
Total Well Penetration Depth: 141.5 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 3.466E-5 ft/sec y0 = 0.7615 ft



MMW035: SLUG TEST, FALLING 1

Data Set: C:\...\MMW035f1.aqt
Date: 12/15/09 Time: 22:23:35

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW035
Test Date: 10/8/09

AQUIFER DATA

Saturated Thickness: 112.5 ft Anisotropy Ratio (Kz/Kr): 1.

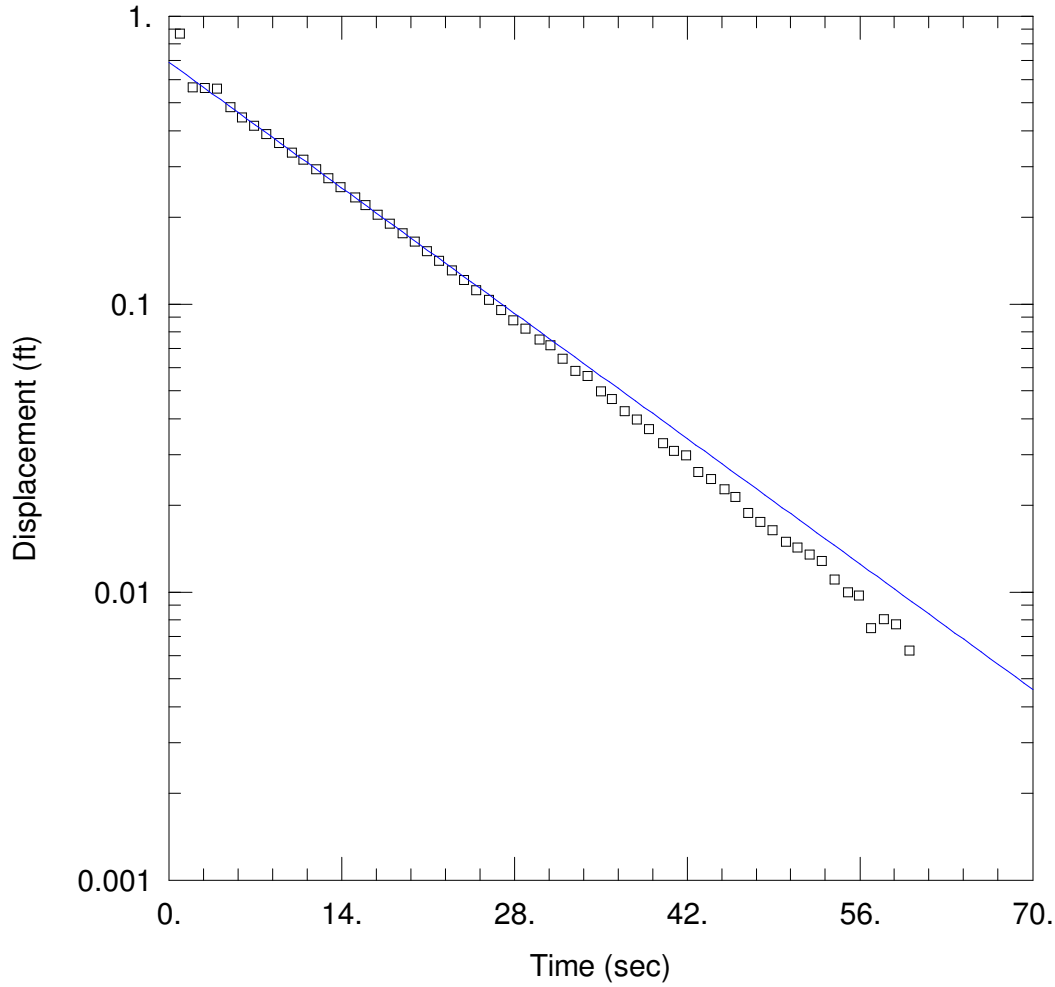
WELL DATA (MMW035)

Initial Displacement: 1.9 ft Static Water Column Height: 112.5 ft
Total Well Penetration Depth: 112.5 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0002 ft/sec y0 = 0.7091 ft



MMW035: SLUG TEST, FALLING 2

Data Set: C:\...\MMW035f2.aqt
Date: 12/15/09 Time: 22:24:48

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW035
Test Date: 10/8/09

AQUIFER DATA

Saturated Thickness: 112.5 ft Anisotropy Ratio (Kz/Kr): 1.

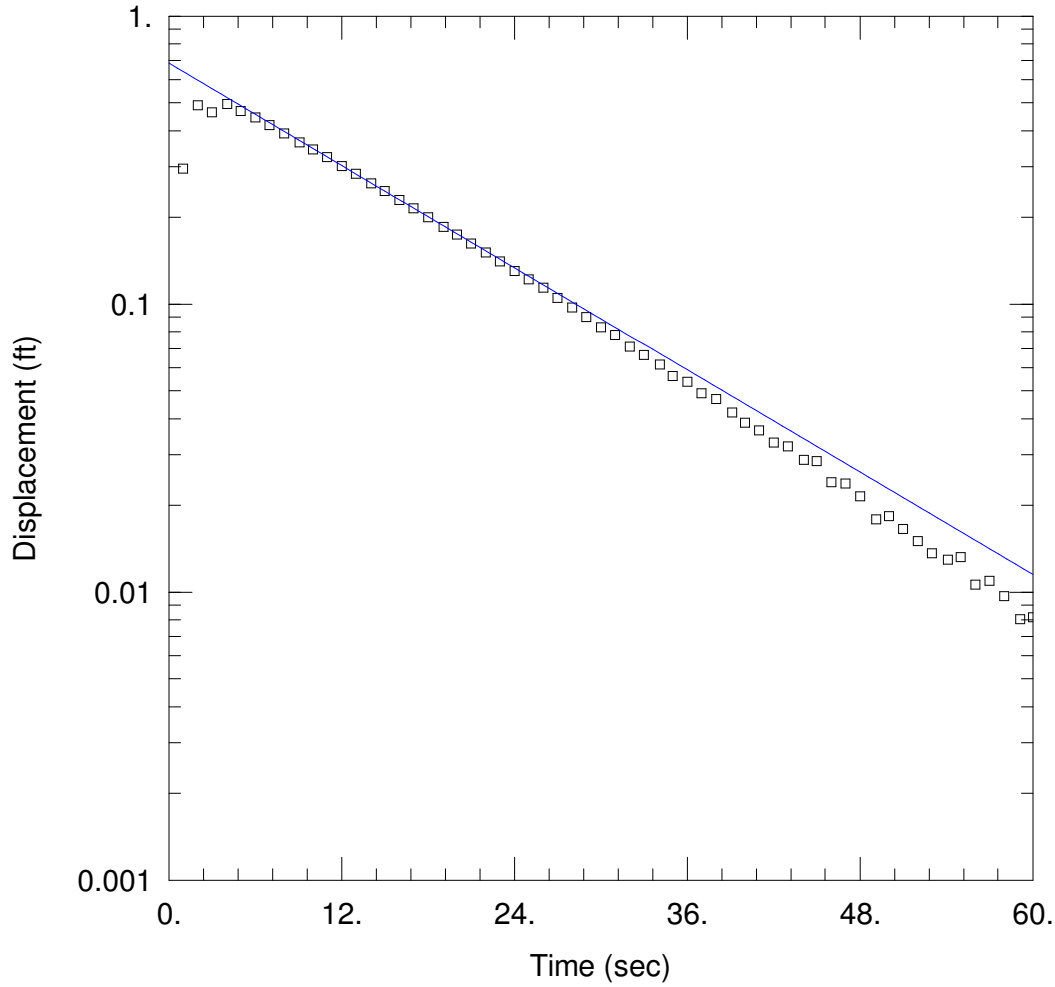
WELL DATA (MMW035)

Initial Displacement: 1.9 ft Static Water Column Height: 112.5 ft
Total Well Penetration Depth: 112.5 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0002025 ft/sec y0 = 0.6918 ft



MMW035: SLUG TEST, FALLING 3

Data Set: C:\...\MMW035f3.aqt
Date: 12/15/09 Time: 22:33:58

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW035
Test Date: 10/8/09

AQUIFER DATA

Saturated Thickness: 112.5 ft Anisotropy Ratio (Kz/Kr): 1.

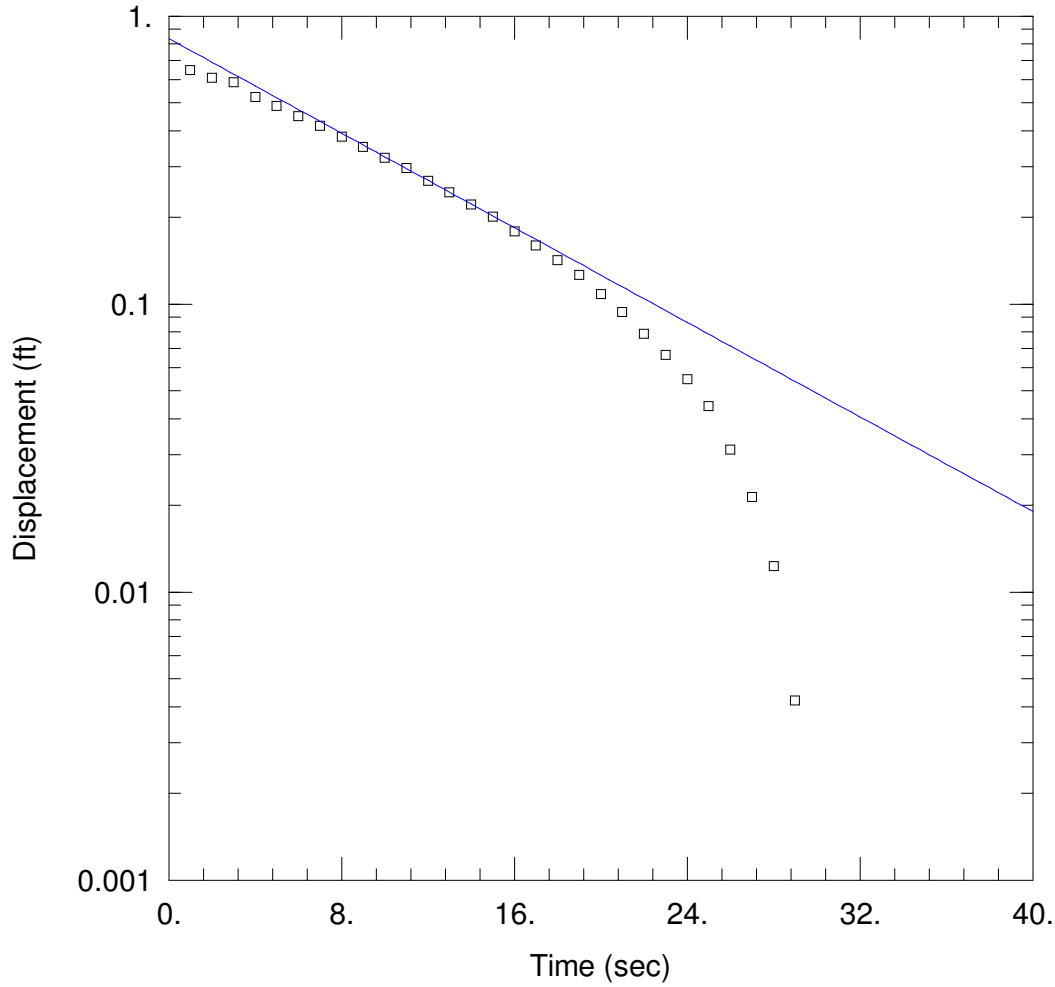
WELL DATA (MMW035)

Initial Displacement: 1.9 ft Static Water Column Height: 112.5 ft
Total Well Penetration Depth: 112.5 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0001925 ft/sec y0 = 0.6852 ft



MMW035: SLUG TEST, FALLING 4

Data Set: C:\...\MMW035f4.aqt
Date: 12/15/09 Time: 22:34:29

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW035
Test Date: 10/8/09

AQUIFER DATA

Saturated Thickness: 112.5 ft Anisotropy Ratio (Kz/Kr): 1.

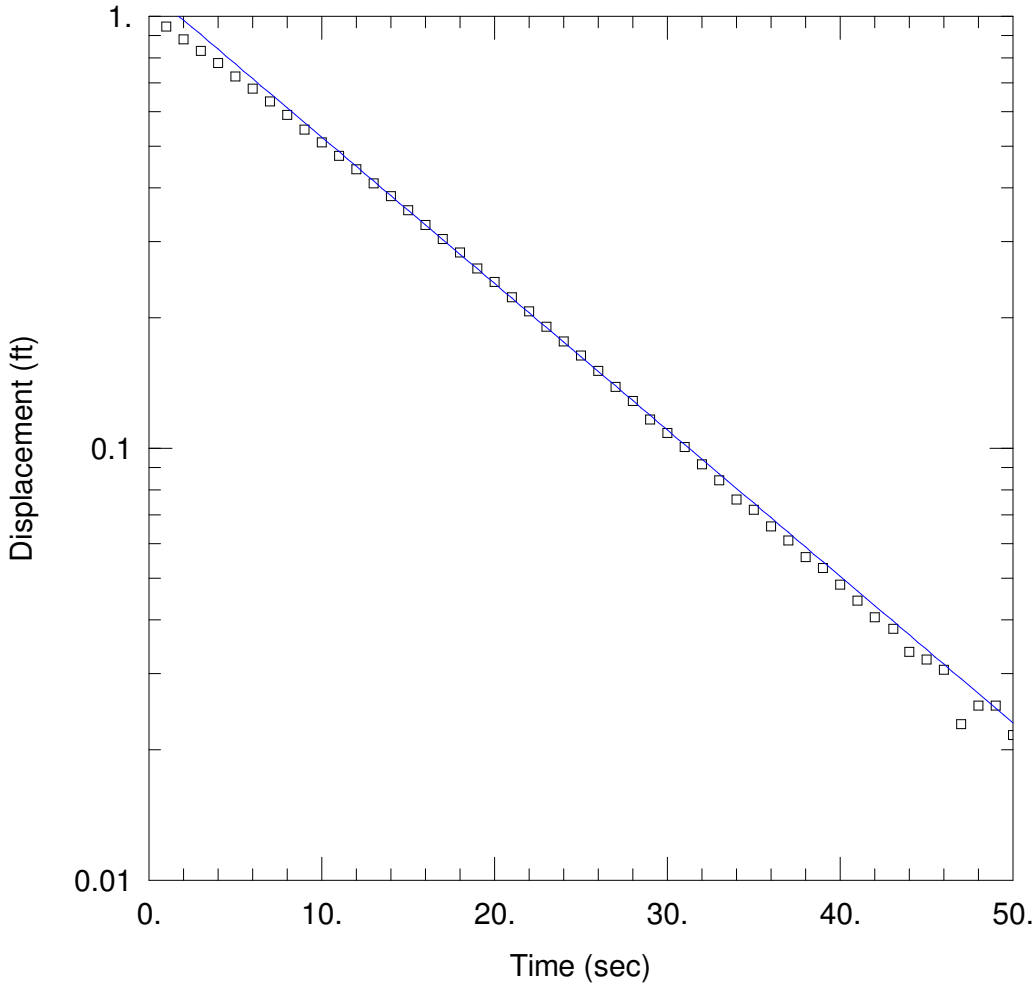
WELL DATA (MMW035)

Initial Displacement: 1.9 ft Static Water Column Height: 112.5 ft
Total Well Penetration Depth: 112.5 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.000267 ft/sec y0 = 0.8341 ft



MMW035: SLUG TEST, RISING 1

Data Set: C:\...\MMW035r1.aqt
Date: 12/15/09 Time: 22:37:05

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW035
Test Date: 10/8/09

AQUIFER DATA

Saturated Thickness: 112.5 ft Anisotropy Ratio (Kz/Kr): 1.

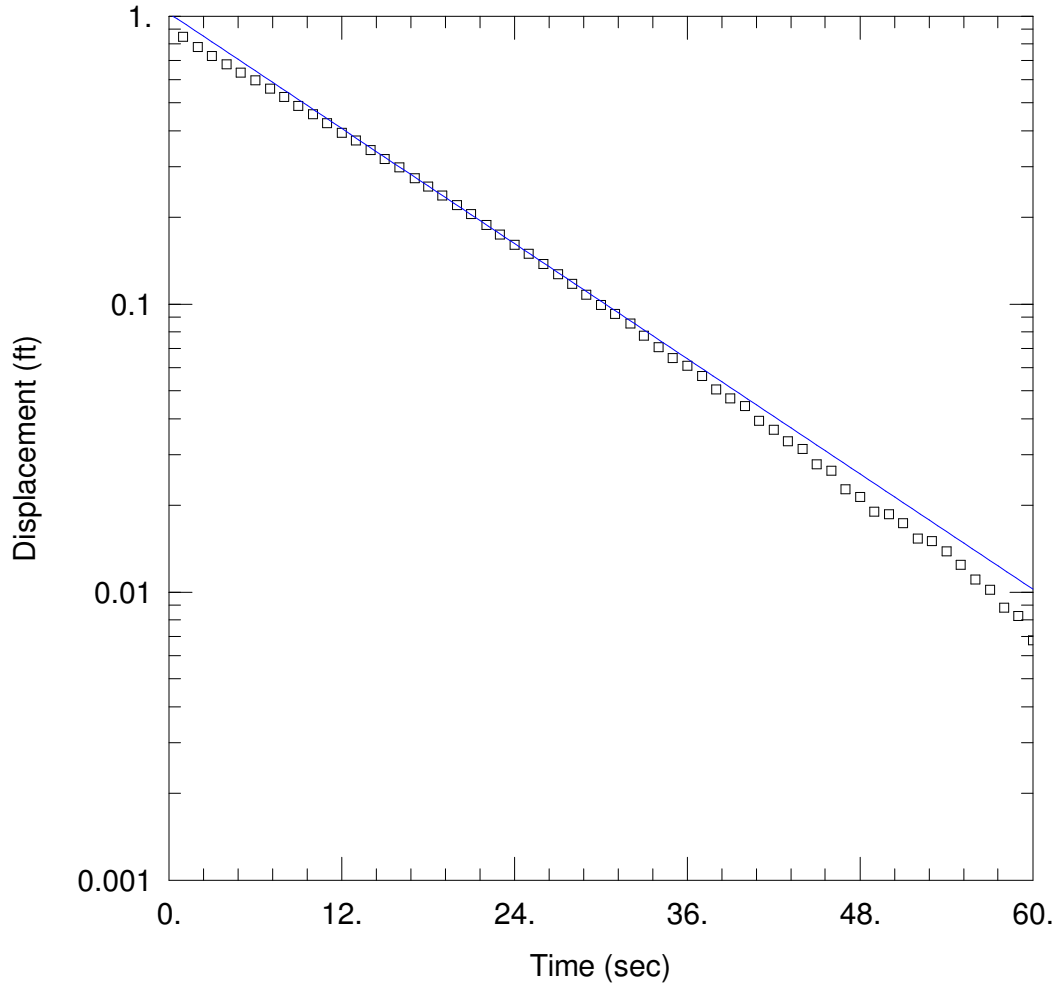
WELL DATA (MMW035)

Initial Displacement: 1.9 ft Static Water Column Height: 112.5 ft
Total Well Penetration Depth: 112.5 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0002206 ft/sec y0 = 1.145 ft



MMW035: SLUG TEST, RISING 2

Data Set: C:\...\MMW035r2.aqt
Date: 12/15/09 Time: 22:37:54

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW035
Test Date: 10/8/09

AQUIFER DATA

Saturated Thickness: 112.5 ft Anisotropy Ratio (Kz/Kr): 1.

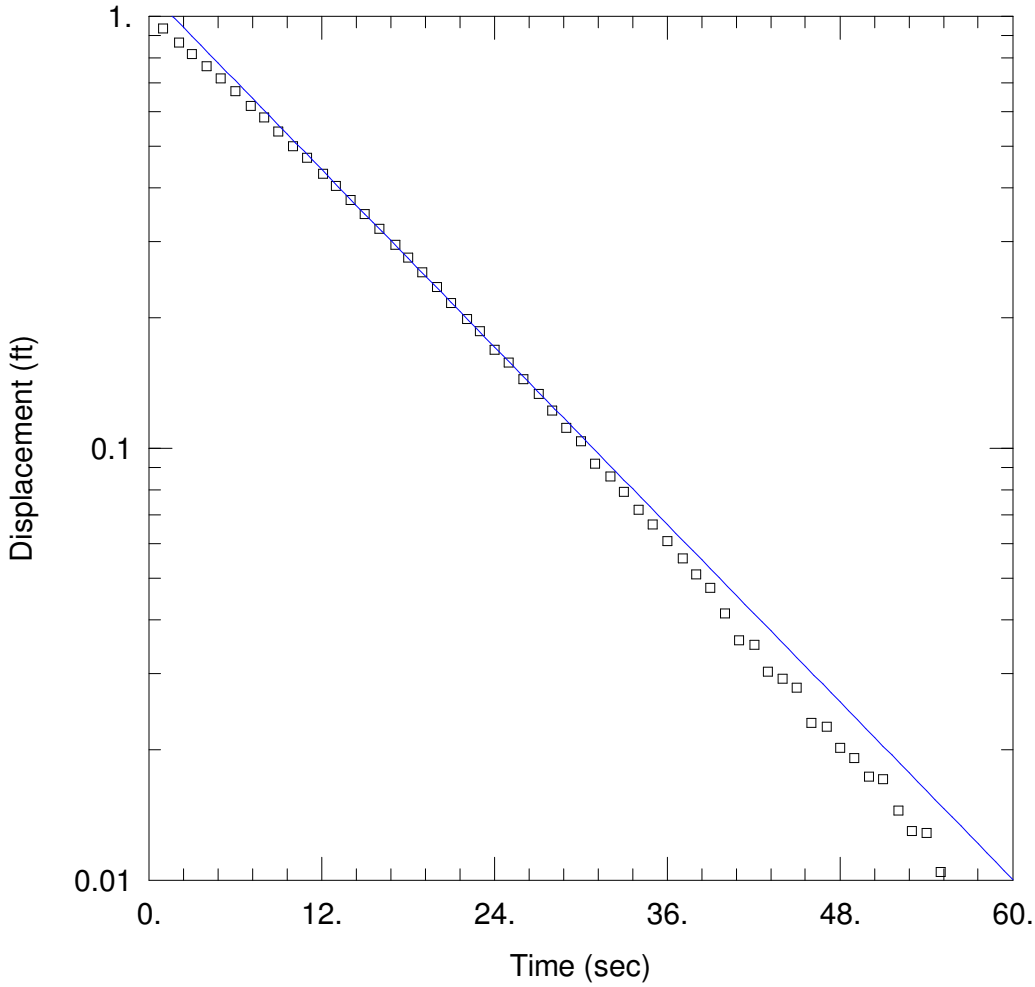
WELL DATA (MMW035)

Initial Displacement: 1.9 ft Static Water Column Height: 112.5 ft
Total Well Penetration Depth: 112.5 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.000217 ft/sec y0 = 1.023 ft



MMW035: SLUG TEST, RISING 3

Data Set: C:\...\MMW035r3.aqt
Date: 12/15/09 Time: 22:38:47

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW035
Test Date: 10/8/09

AQUIFER DATA

Saturated Thickness: 112.5 ft Anisotropy Ratio (Kz/Kr): 1.

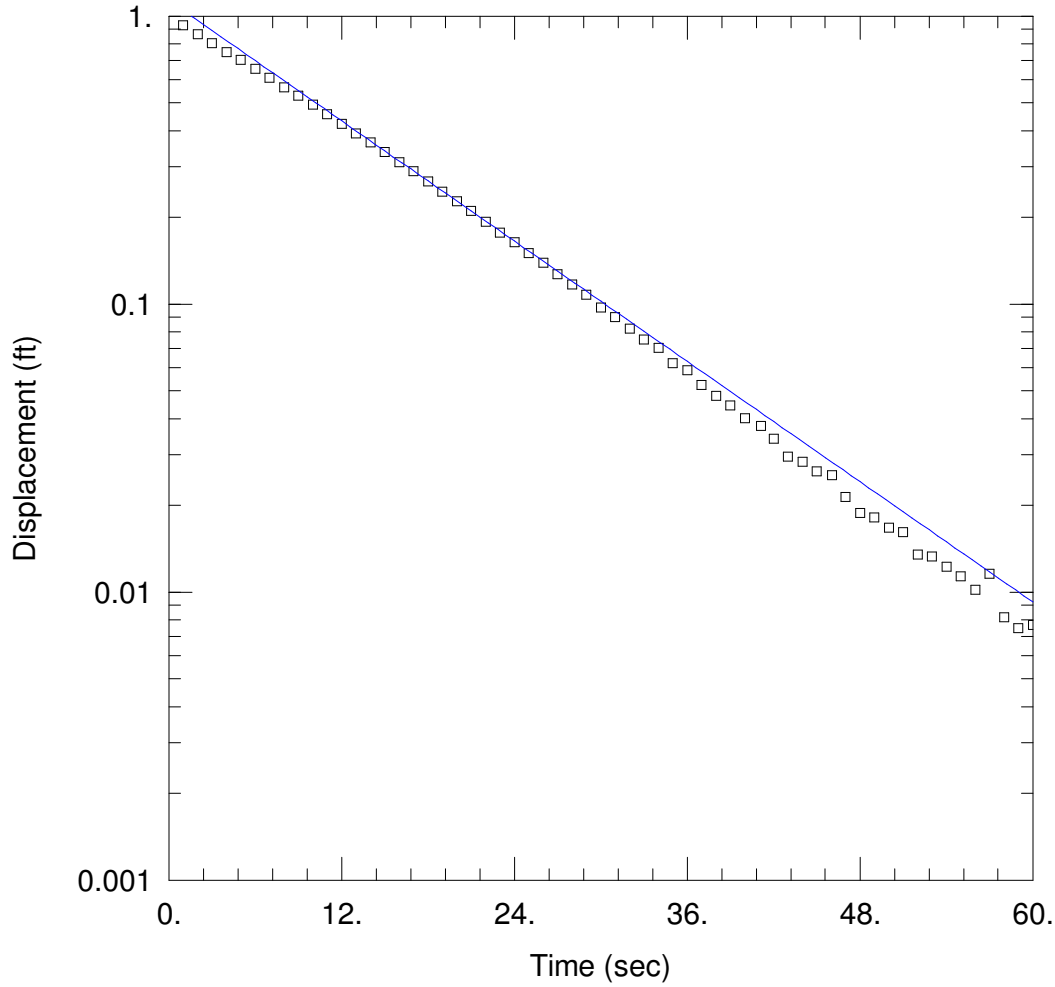
WELL DATA (MMW035)

Initial Displacement: 1.9 ft Static Water Column Height: 112.5 ft
Total Well Penetration Depth: 112.5 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0002229 ft/sec y0 = 1.137 ft



MMW035: SLUG TEST, RISING 4

Data Set: C:\...\MMW035r4.aqt
Date: 12/15/09 Time: 22:39:34

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW035
Test Date: 10/8/09

AQUIFER DATA

Saturated Thickness: 112.5 ft Anisotropy Ratio (Kz/Kr): 1.

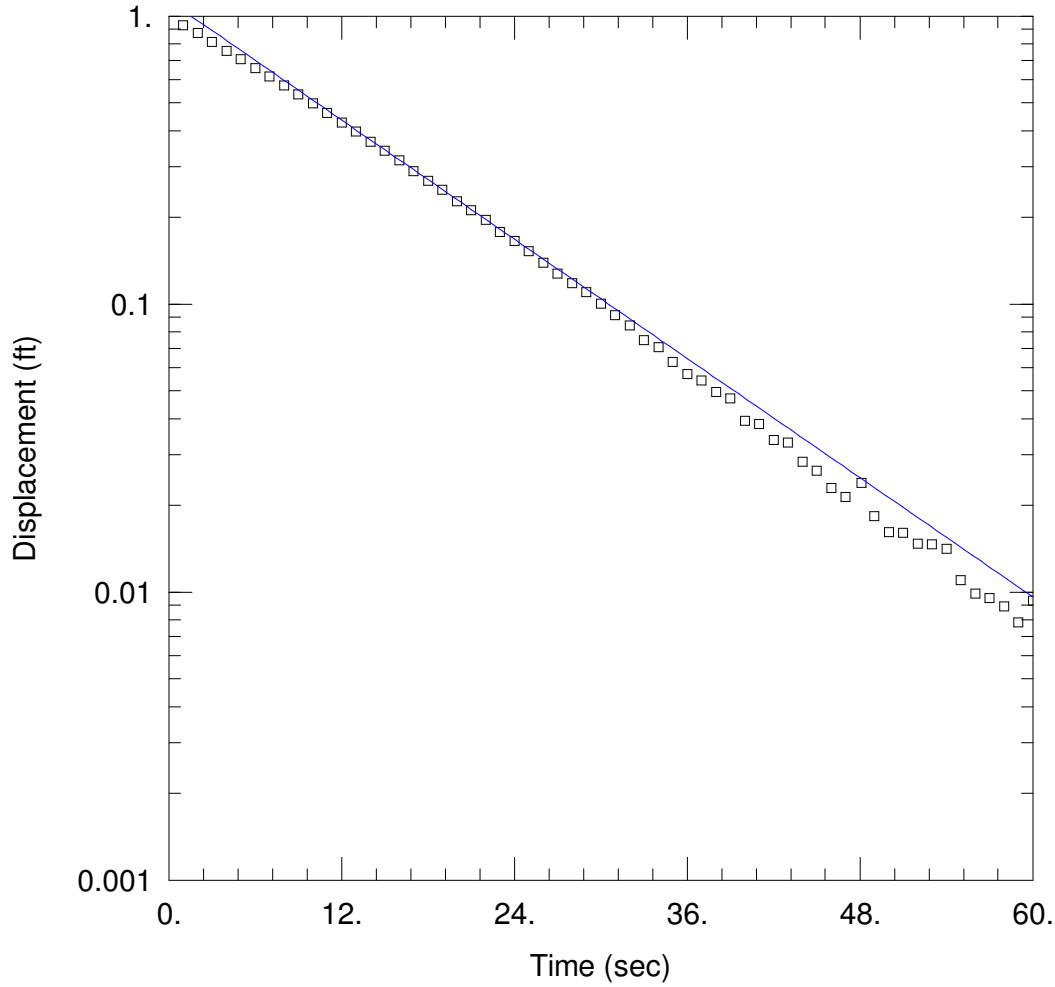
WELL DATA (MMW035)

Initial Displacement: 1.9 ft Static Water Column Height: 112.5 ft
Total Well Penetration Depth: 112.5 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0002266 ft/sec y0 = 1.133 ft



MMW035: SLUG TEST, RISING 5

Data Set: C:\...\MMW035r5.aqt
Date: 12/15/09 Time: 22:40:01

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW035
Test Date: 10/8/09

AQUIFER DATA

Saturated Thickness: 112.5 ft Anisotropy Ratio (Kz/Kr): 1.

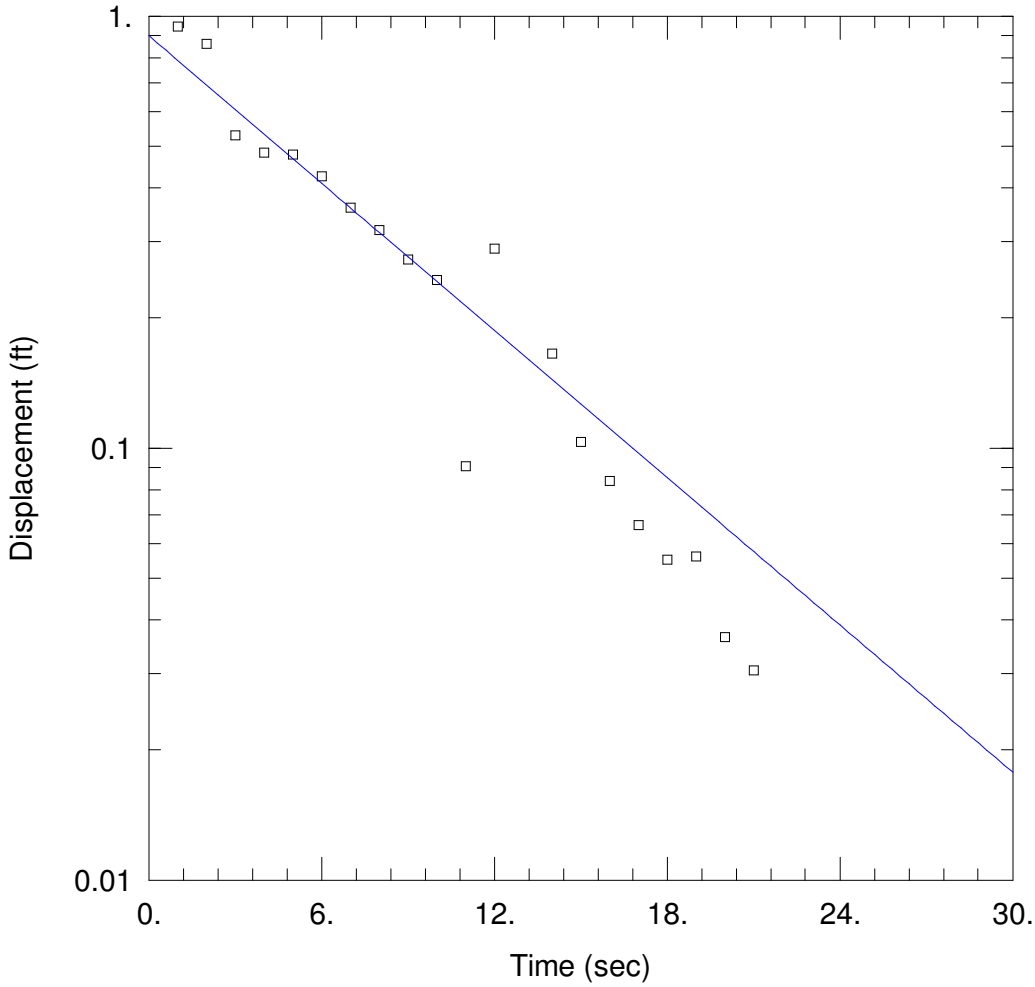
WELL DATA (MMW035)

Initial Displacement: 1.9 ft Static Water Column Height: 112.5 ft
Total Well Penetration Depth: 112.5 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0002246 ft/sec y0 = 1.13 ft



MMW036: SLUG TEST, FALLING 1

Data Set: C:\...\MMW036f1.aqt
Date: 12/15/09 Time: 23:06:00

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW036
Test Date: 10/8/09

AQUIFER DATA

Saturated Thickness: 26.6 ft Anisotropy Ratio (Kz/Kr): 1.

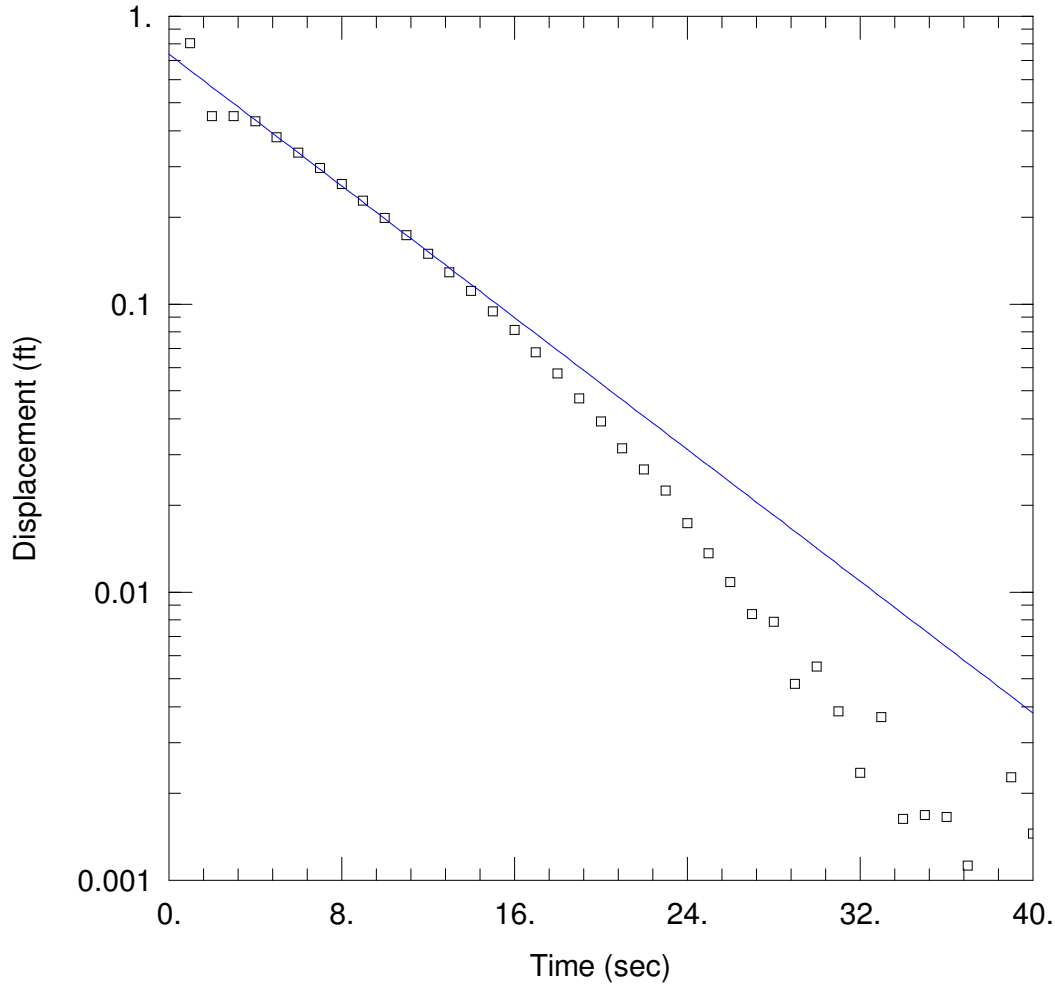
WELL DATA (MMW036)

Initial Displacement: 1.9 ft Static Water Column Height: 26.6 ft
Total Well Penetration Depth: 26.6 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0002927 ft/sec y0 = 0.8997 ft



MMW036: SLUG TEST, FALLING 2

Data Set: C:\...\MMW036f2.aqt
Date: 12/15/09 Time: 23:06:26

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW036
Test Date: 10/8/09

AQUIFER DATA

Saturated Thickness: 26.6 ft Anisotropy Ratio (Kz/Kr): 1.

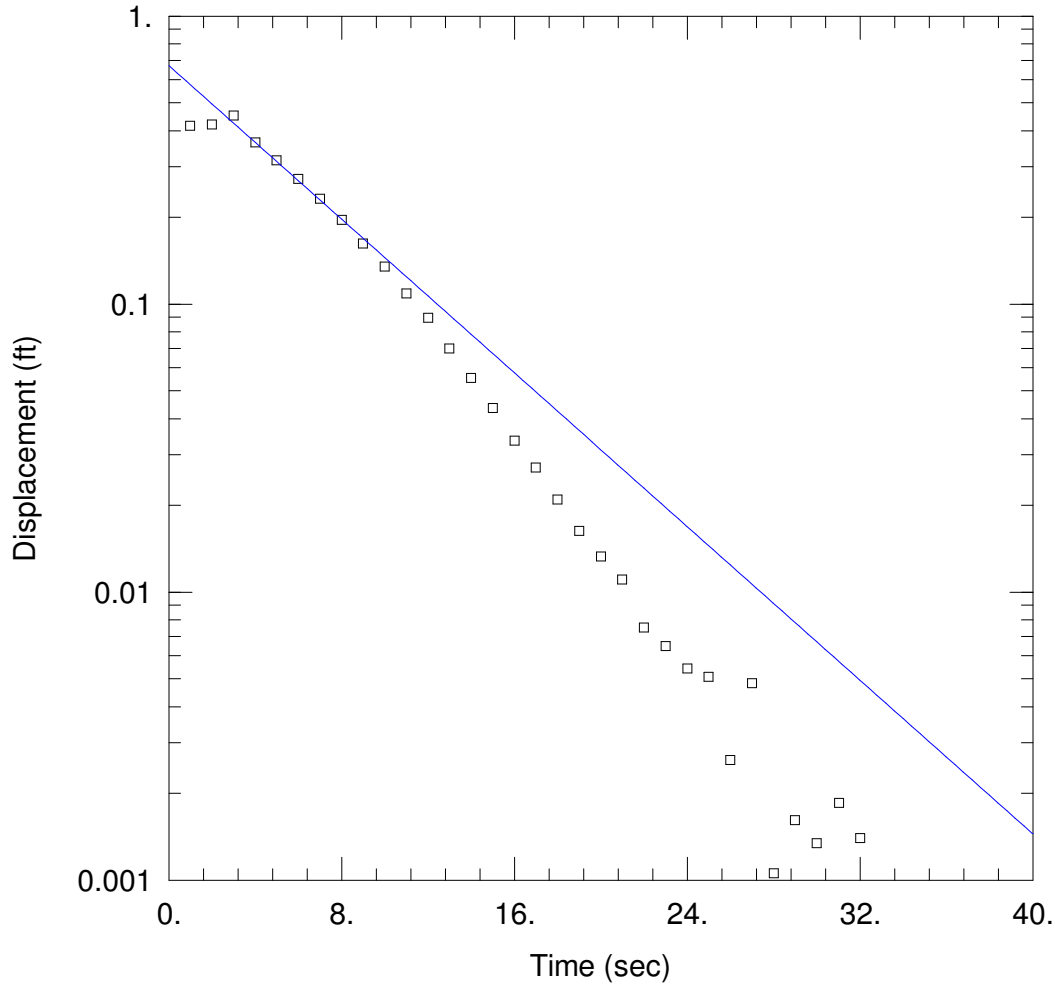
WELL DATA (MMW036)

Initial Displacement: 1.9 ft Static Water Column Height: 26.6 ft
Total Well Penetration Depth: 26.6 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0002943 ft/sec y0 = 0.7372 ft



MMW036: SLUG TEST, FALLING 3

Data Set: C:\...\MMW036f3.aqt
Date: 12/15/09 Time: 23:07:18

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW036
Test Date: 10/8/09

AQUIFER DATA

Saturated Thickness: 26.6 ft Anisotropy Ratio (Kz/Kr): 1.

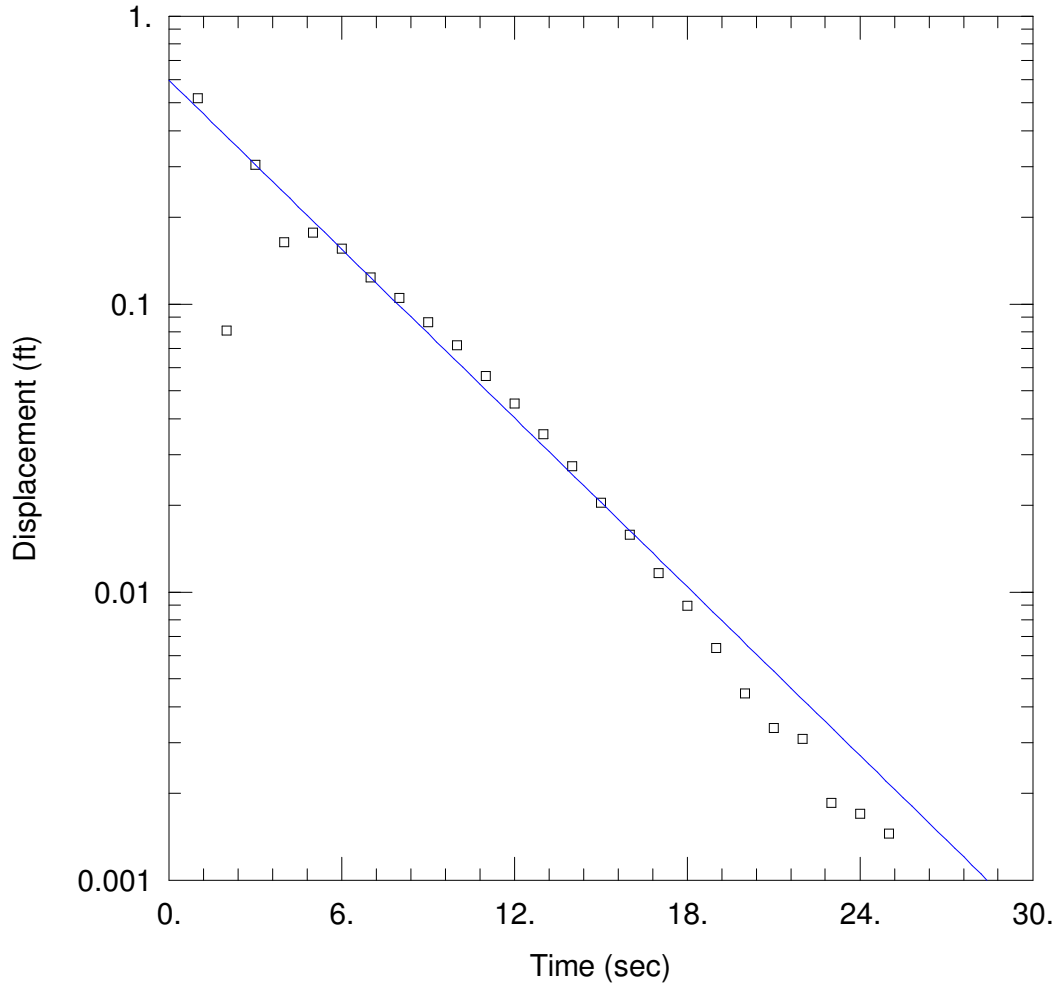
WELL DATA (MMW036)

Initial Displacement: 1.9 ft Static Water Column Height: 26.6 ft
Total Well Penetration Depth: 26.6 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0003434 ft/sec y0 = 0.6737 ft



MMW036: SLUG TEST, FALLING 5

Data Set: C:\...\MMW036f5.aqt
Date: 12/15/09 Time: 23:07:52

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW036
Test Date: 10/8/09

AQUIFER DATA

Saturated Thickness: 26.6 ft Anisotropy Ratio (Kz/Kr): 1.

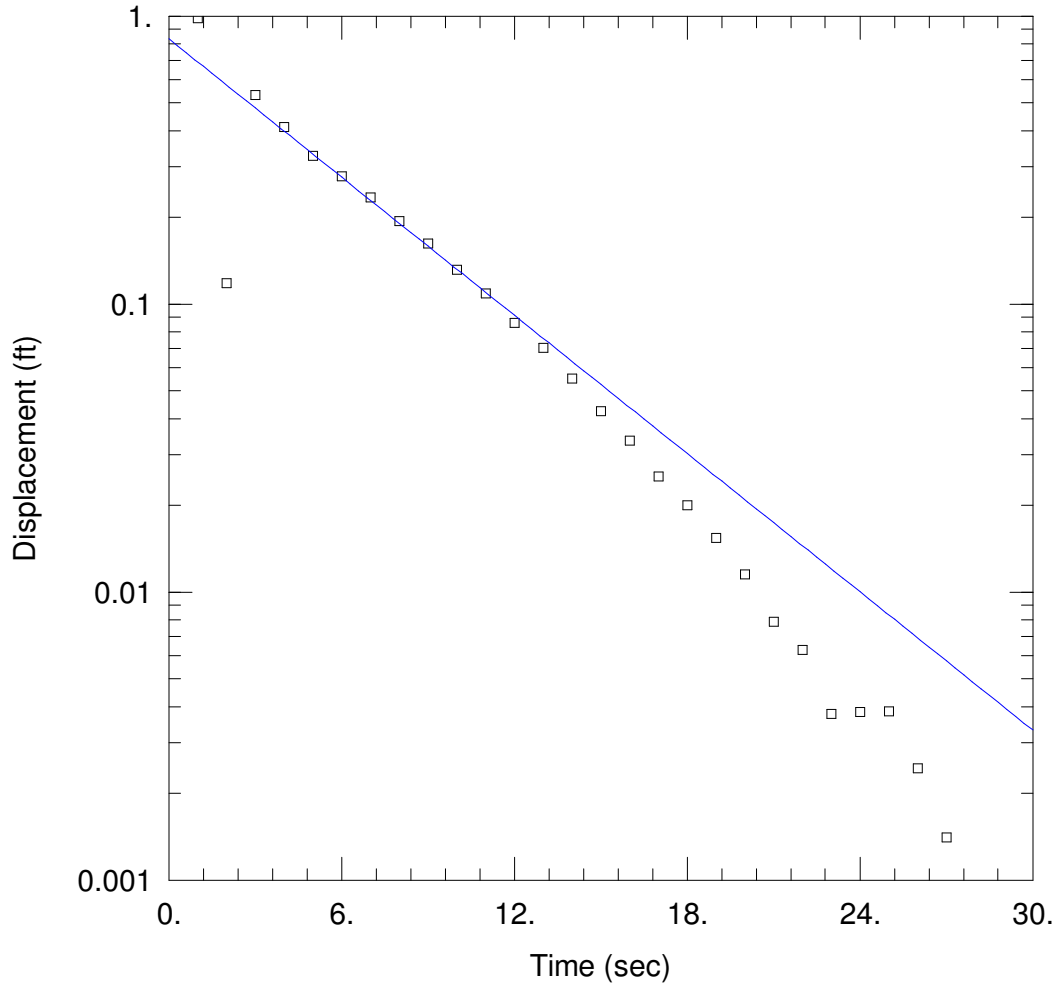
WELL DATA (MMW036)

Initial Displacement: 1.9 ft Static Water Column Height: 26.6 ft
Total Well Penetration Depth: 26.6 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0005033 ft/sec y0 = 0.5989 ft



MMW036: SLUG TEST, FALLING 6

Data Set: C:\...\MMW036f6.aqt
Date: 12/15/09 Time: 23:08:17

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW036
Test Date: 10/8/09

AQUIFER DATA

Saturated Thickness: 26.6 ft Anisotropy Ratio (Kz/Kr): 1.

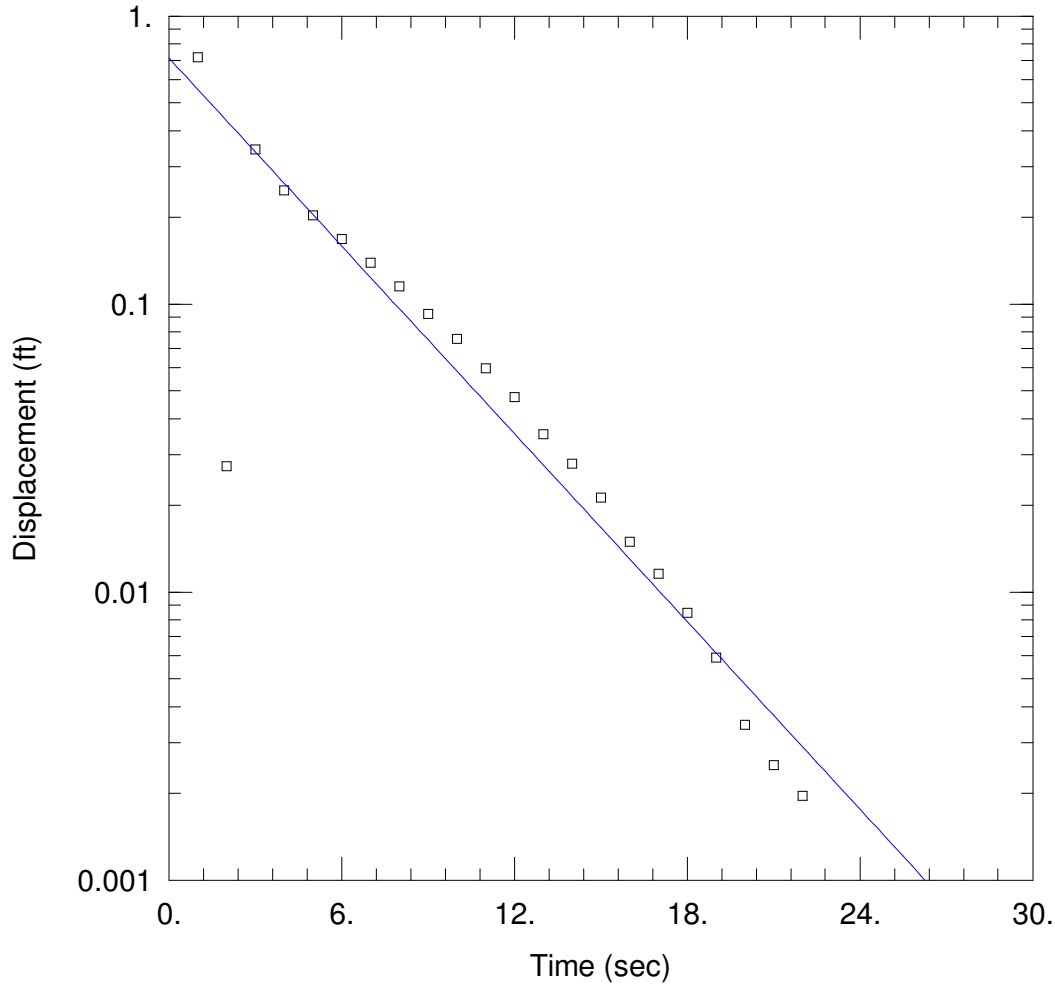
WELL DATA (MMW036)

Initial Displacement: 1.9 ft Static Water Column Height: 26.6 ft
Total Well Penetration Depth: 26.6 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0004121 ft/sec y0 = 0.8334 ft



MMW036: SLUG TEST, FALLING 7

Data Set: C:\...\MMW036f7.aqt
Date: 12/15/09 Time: 23:08:37

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW036
Test Date: 10/8/09

AQUIFER DATA

Saturated Thickness: 26.6 ft Anisotropy Ratio (Kz/Kr): 1.

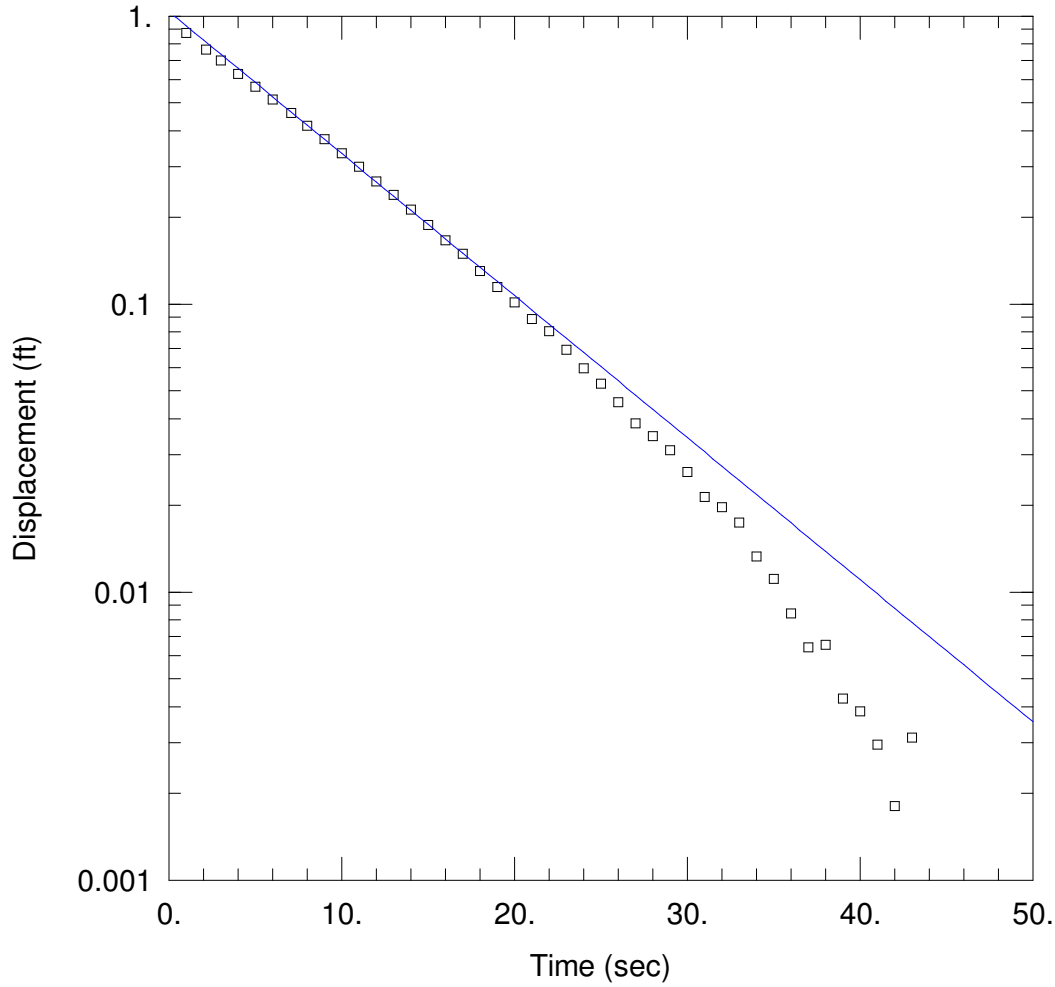
WELL DATA (MMW036)

Initial Displacement: 1.9 ft Static Water Column Height: 26.6 ft
Total Well Penetration Depth: 26.6 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0005599 ft/sec y0 = 0.7153 ft



MMW036: SLUG TEST, RISING 1

Data Set: C:\...\MMW036r1.aqt
Date: 12/15/09 Time: 23:09:29

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW036
Test Date: 10/8/09

AQUIFER DATA

Saturated Thickness: 26.6 ft Anisotropy Ratio (Kz/Kr): 1.

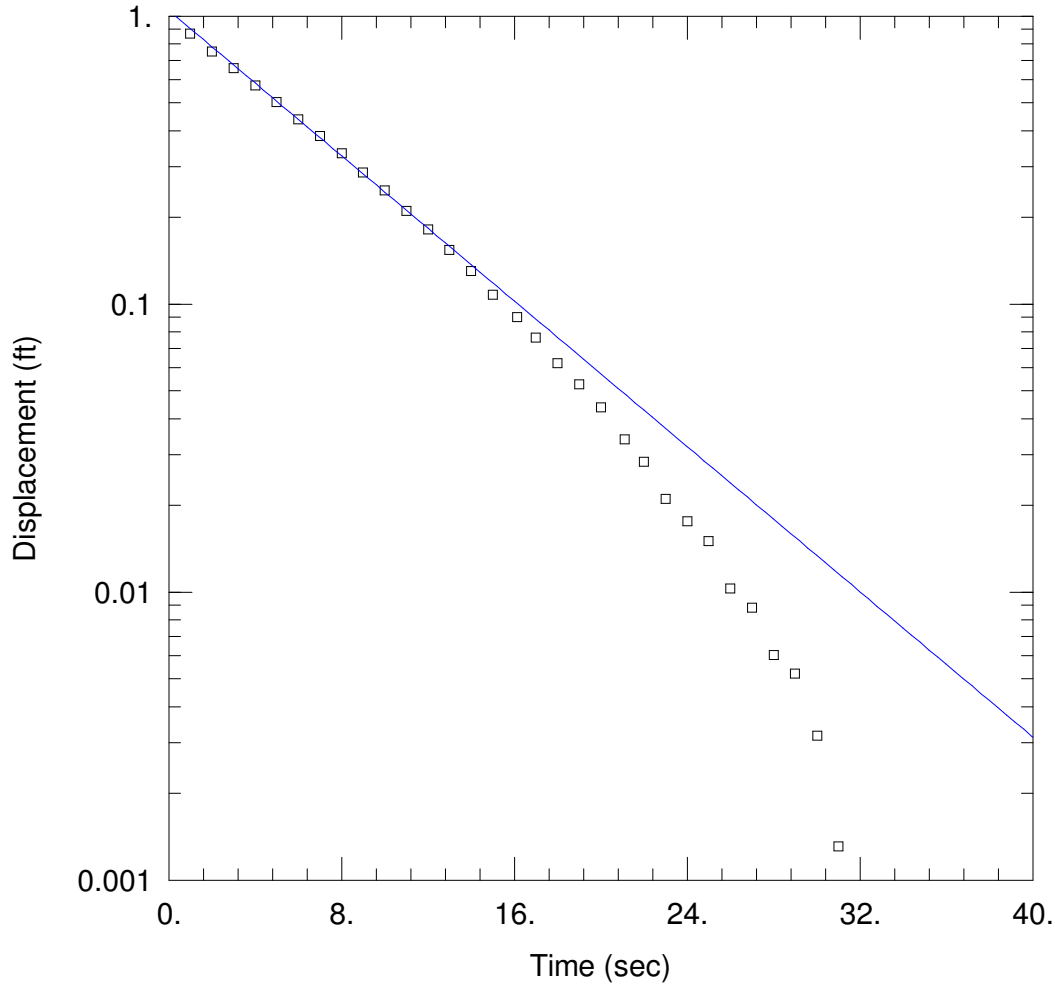
WELL DATA (MMW036)

Initial Displacement: 1.9 ft Static Water Column Height: 26.6 ft
Total Well Penetration Depth: 26.6 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.000254 ft/sec y0 = 1.037 ft



MMW036: SLUG TEST, RISING 2

Data Set: C:\...\MMW036r2.aqt
Date: 12/15/09 Time: 23:11:03

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW036
Test Date: 10/8/09

AQUIFER DATA

Saturated Thickness: 26.6 ft Anisotropy Ratio (Kz/Kr): 1.

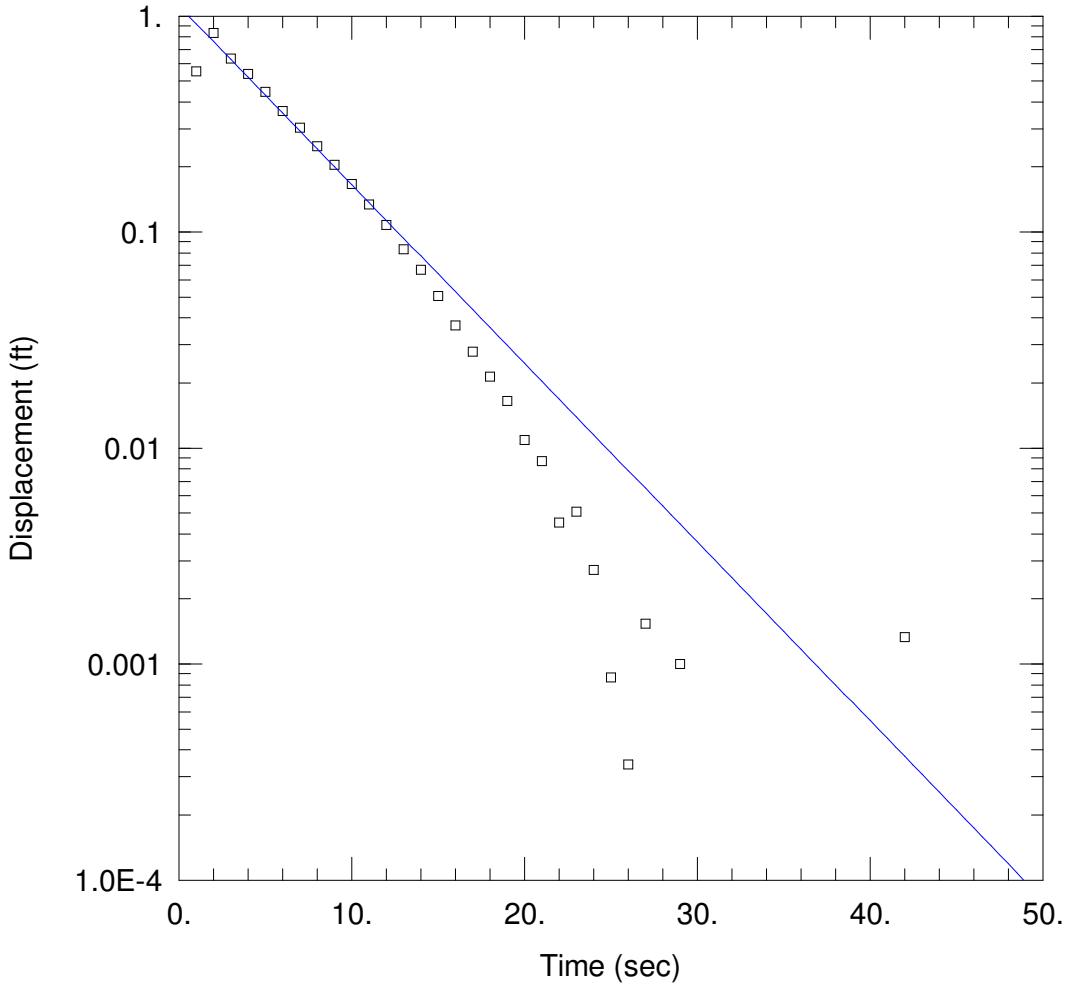
WELL DATA (MMW036)

Initial Displacement: 1.9 ft Static Water Column Height: 26.6 ft
Total Well Penetration Depth: 26.6 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0003247 ft/sec y0 = 1.045 ft



MMW036: SLUG TEST, RISING 3

Data Set: C:\...\MMW036r3.aqt
Date: 12/15/09 Time: 23:10:38

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW036
Test Date: 10/8/09

AQUIFER DATA

Saturated Thickness: 26.6 ft Anisotropy Ratio (Kz/Kr): 1.

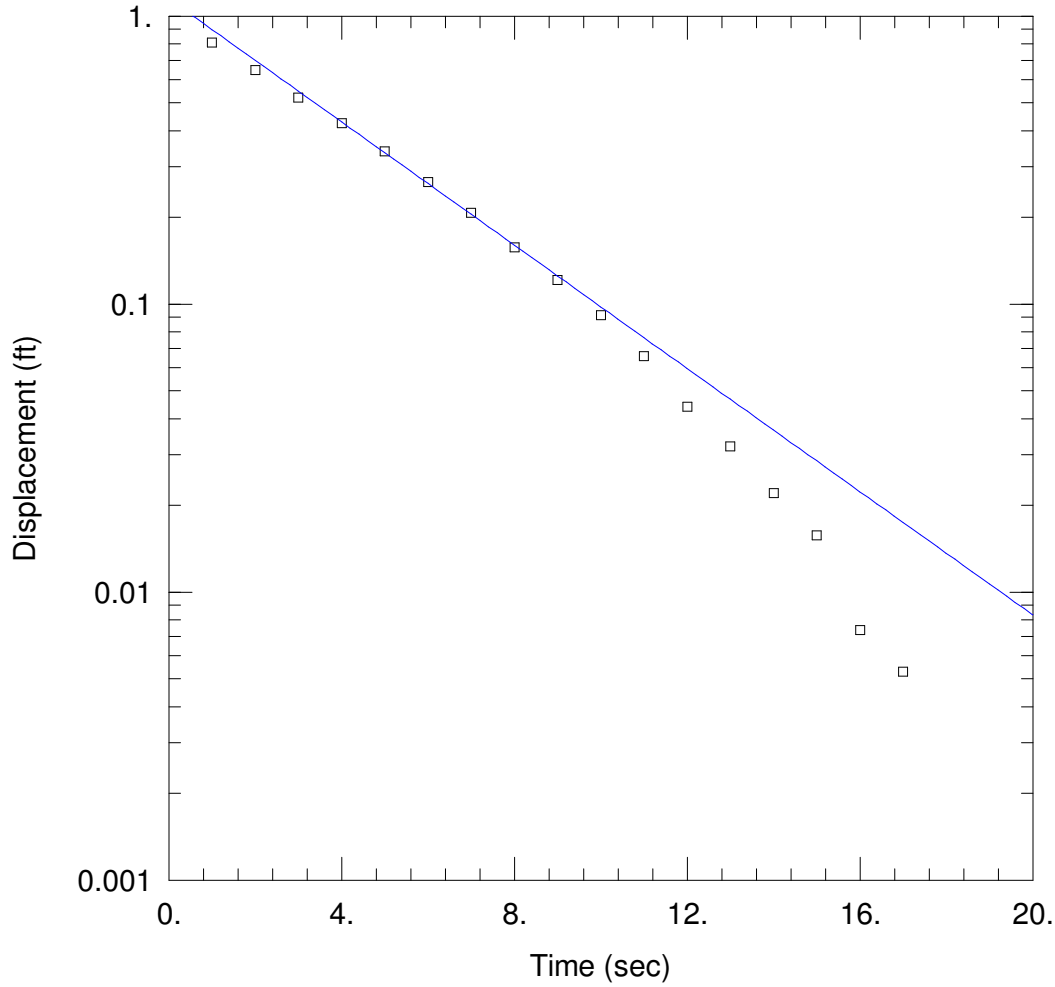
WELL DATA (MMW036)

Initial Displacement: 1.9 ft Static Water Column Height: 26.6 ft
Total Well Penetration Depth: 26.6 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0004261 ft/sec y0 = 1.115 ft



MMW036: SLUG TEST, RISING 4

Data Set: C:\...\MMW036r4.aqt
Date: 12/15/09 Time: 23:11:33

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW036
Test Date: 10/8/09

AQUIFER DATA

Saturated Thickness: 26.6 ft Anisotropy Ratio (Kz/Kr): 1.

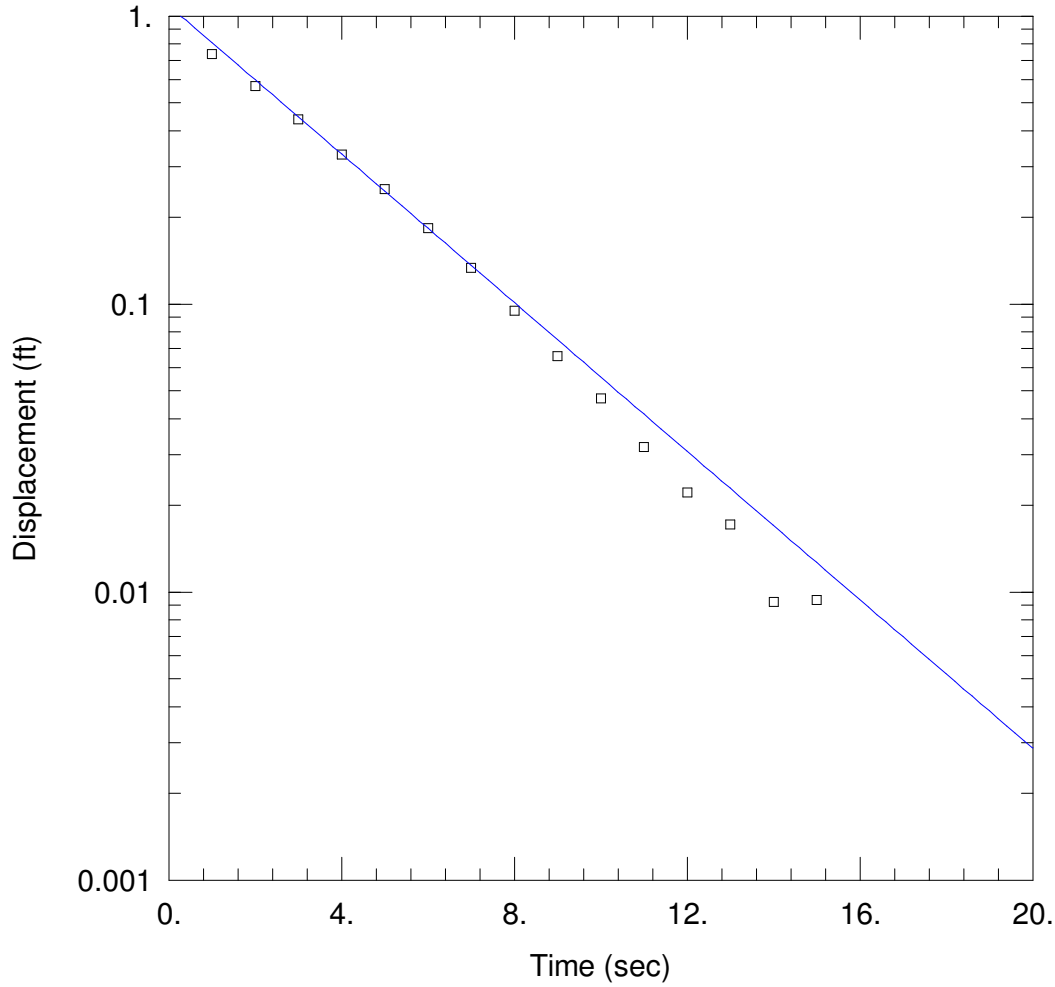
WELL DATA (MMW036)

Initial Displacement: 1.9 ft Static Water Column Height: 26.6 ft
Total Well Penetration Depth: 26.6 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0005507 ft/sec y0 = 1.148 ft



MMW036: SLUG TEST, RISING 5

Data Set: C:\...\MMW036r5.aqt
Date: 12/15/09 Time: 23:12:06

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW036
Test Date: 10/8/09

AQUIFER DATA

Saturated Thickness: 26.6 ft Anisotropy Ratio (Kz/Kr): 1.

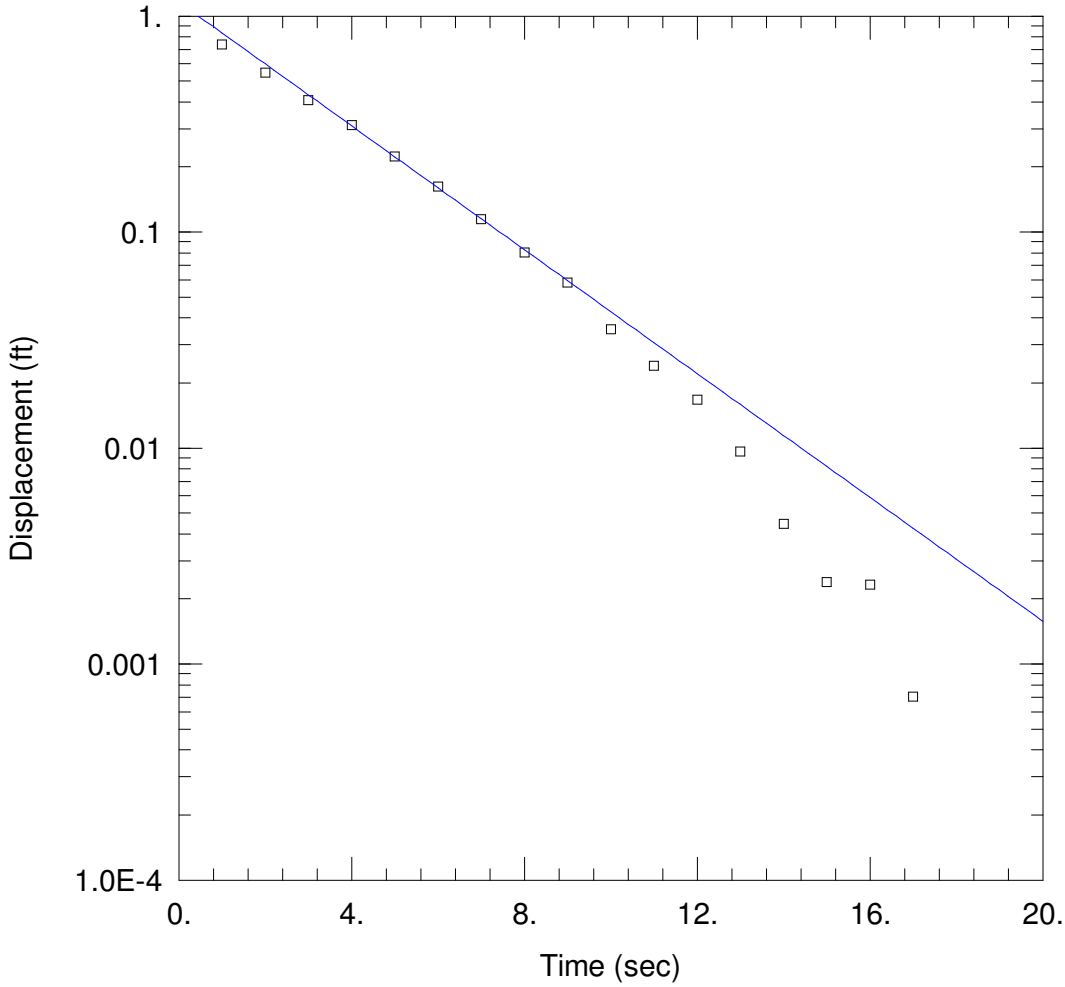
WELL DATA (MMW036)

Initial Displacement: 1.9 ft Static Water Column Height: 26.6 ft
Total Well Penetration Depth: 26.6 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0006638 ft/sec y0 = 1.087 ft



MMW036: SLUG TEST, RISING 6

Data Set: C:\...\MMW036r6.aqt
Date: 12/15/09 Time: 23:12:50

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW036
Test Date: 10/8/09

AQUIFER DATA

Saturated Thickness: 26.6 ft Anisotropy Ratio (Kz/Kr): 1.

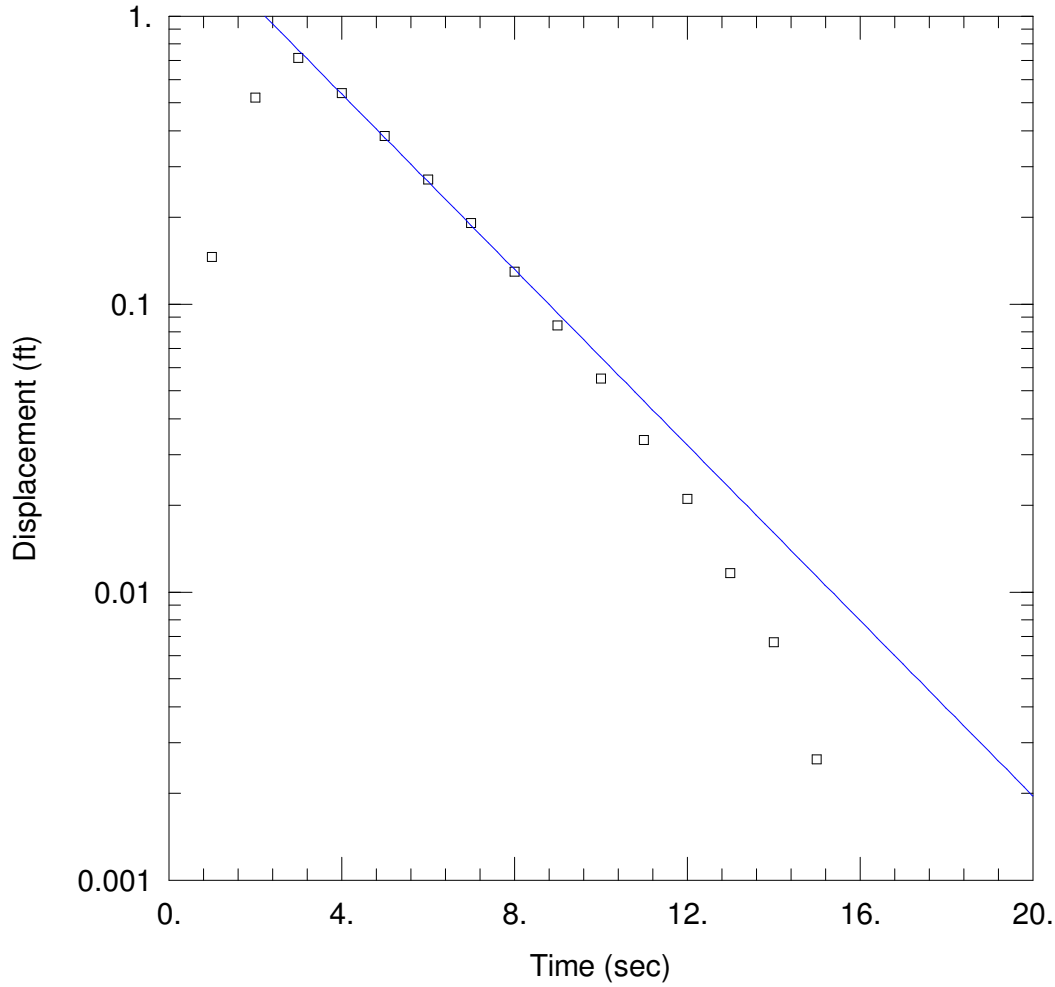
WELL DATA (MMW036)

Initial Displacement: 1.9 ft Static Water Column Height: 26.6 ft
Total Well Penetration Depth: 26.6 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0007378 ft/sec y0 = 1.16 ft



MMW036: SLUG TEST, RISING 7

Data Set: C:\...\MMW036r7.aqt
Date: 12/15/09 Time: 23:13:26

PROJECT INFORMATION

Company: MWH
Client: Monsanto
Project: 1005813
Location: Soda Springs, ID
Test Well: MMW036
Test Date: 10/8/09

AQUIFER DATA

Saturated Thickness: 26.6 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MMW036)

Initial Displacement: 1.9 ft Static Water Column Height: 26.6 ft
Total Well Penetration Depth: 26.6 ft Screen Length: 20. ft
Casing Radius: 0.168 ft Well Radius: 0.354 ft

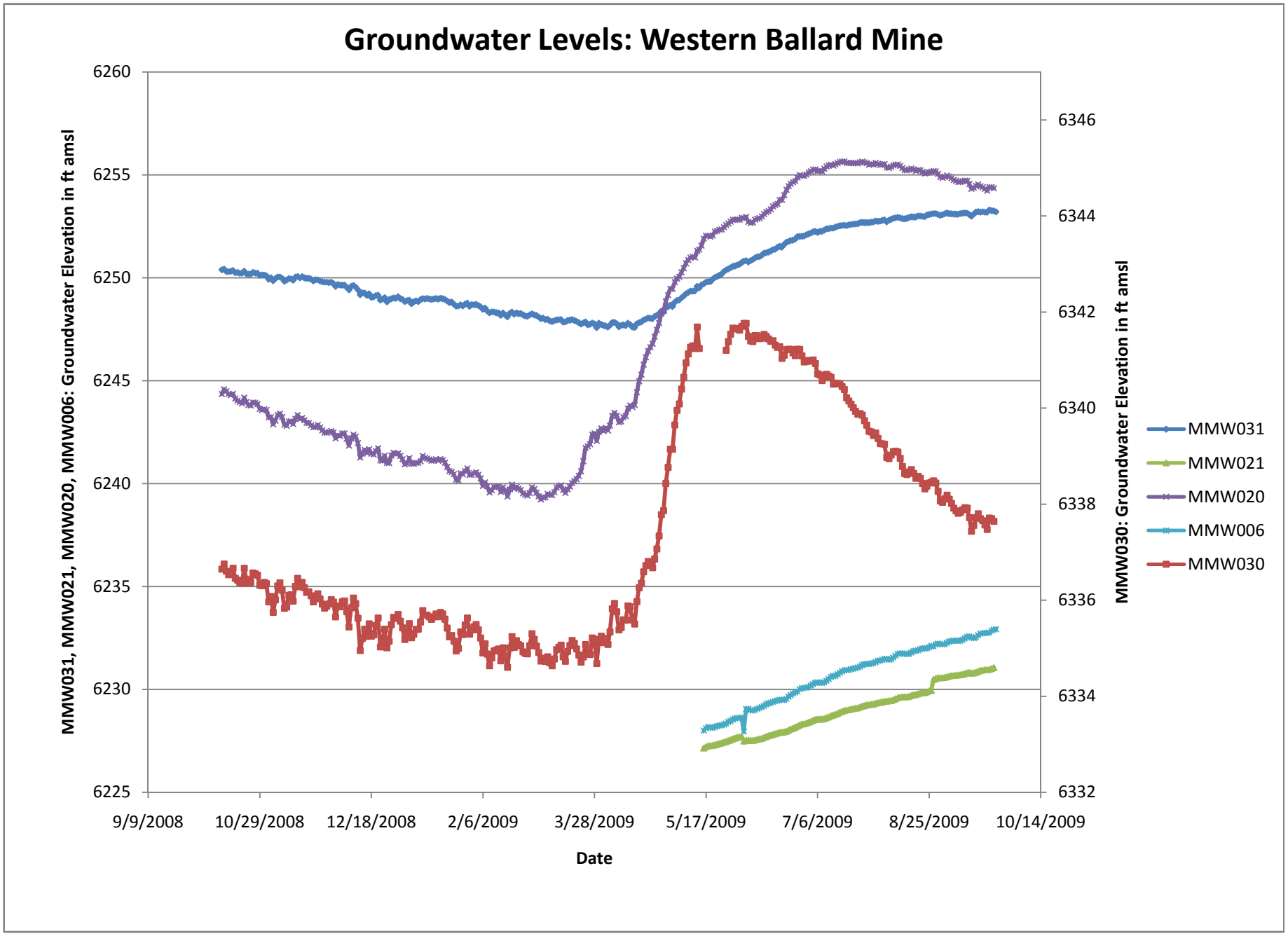
SOLUTION

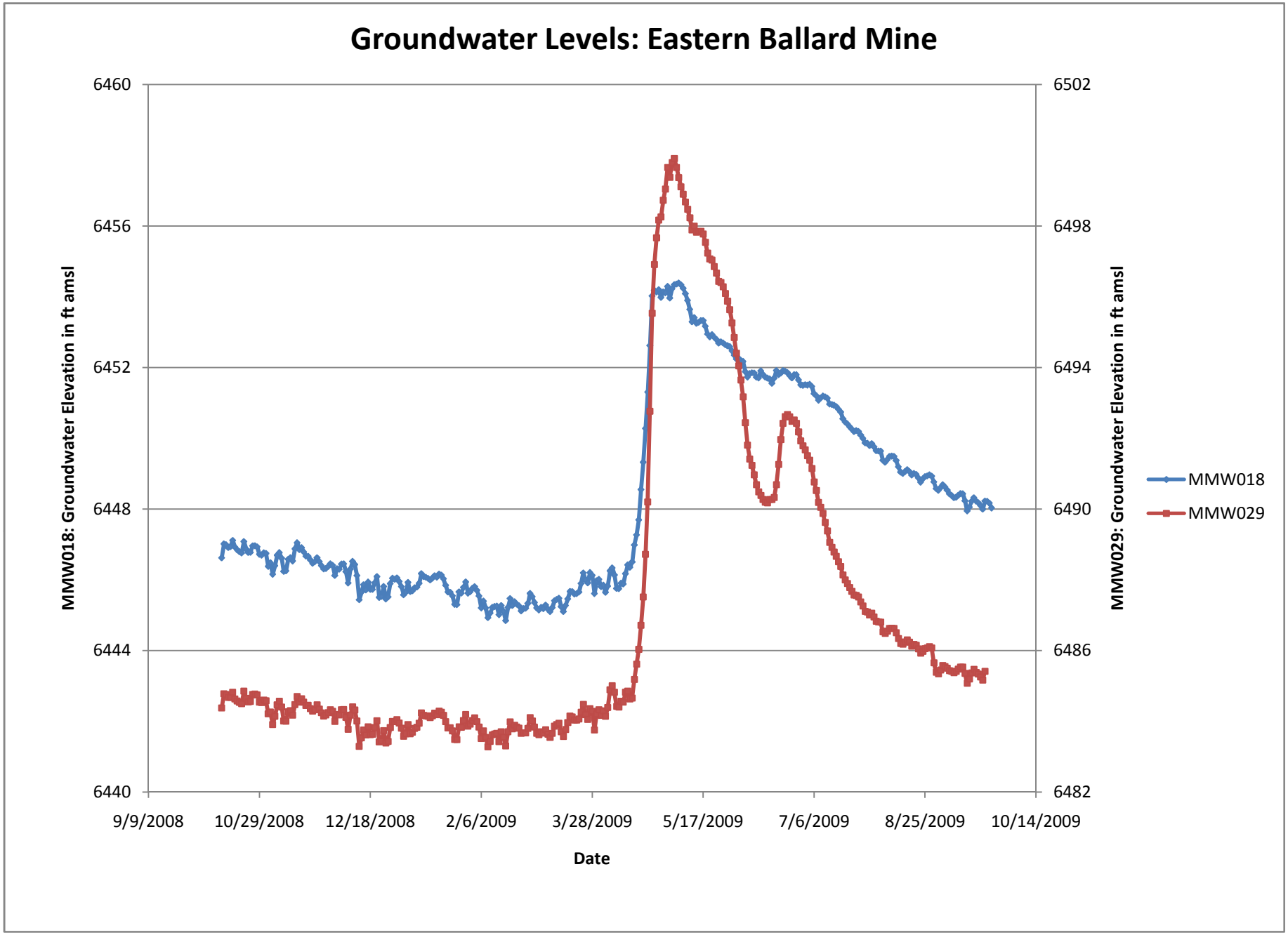
Aquifer Model: Unconfined Solution Method: Bouwer-Rice

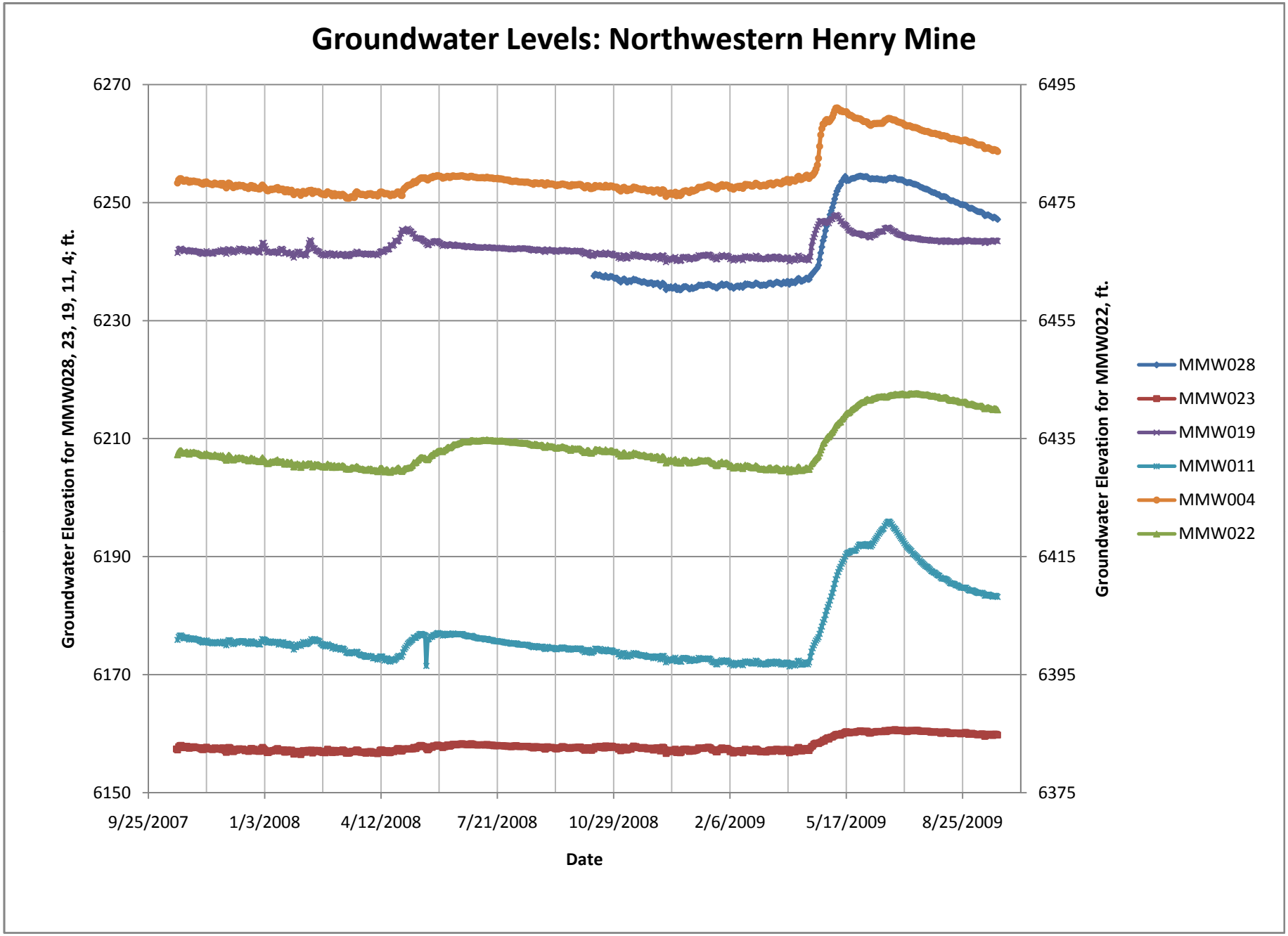
K = 0.0007842 ft/sec y0 = 2.18 ft

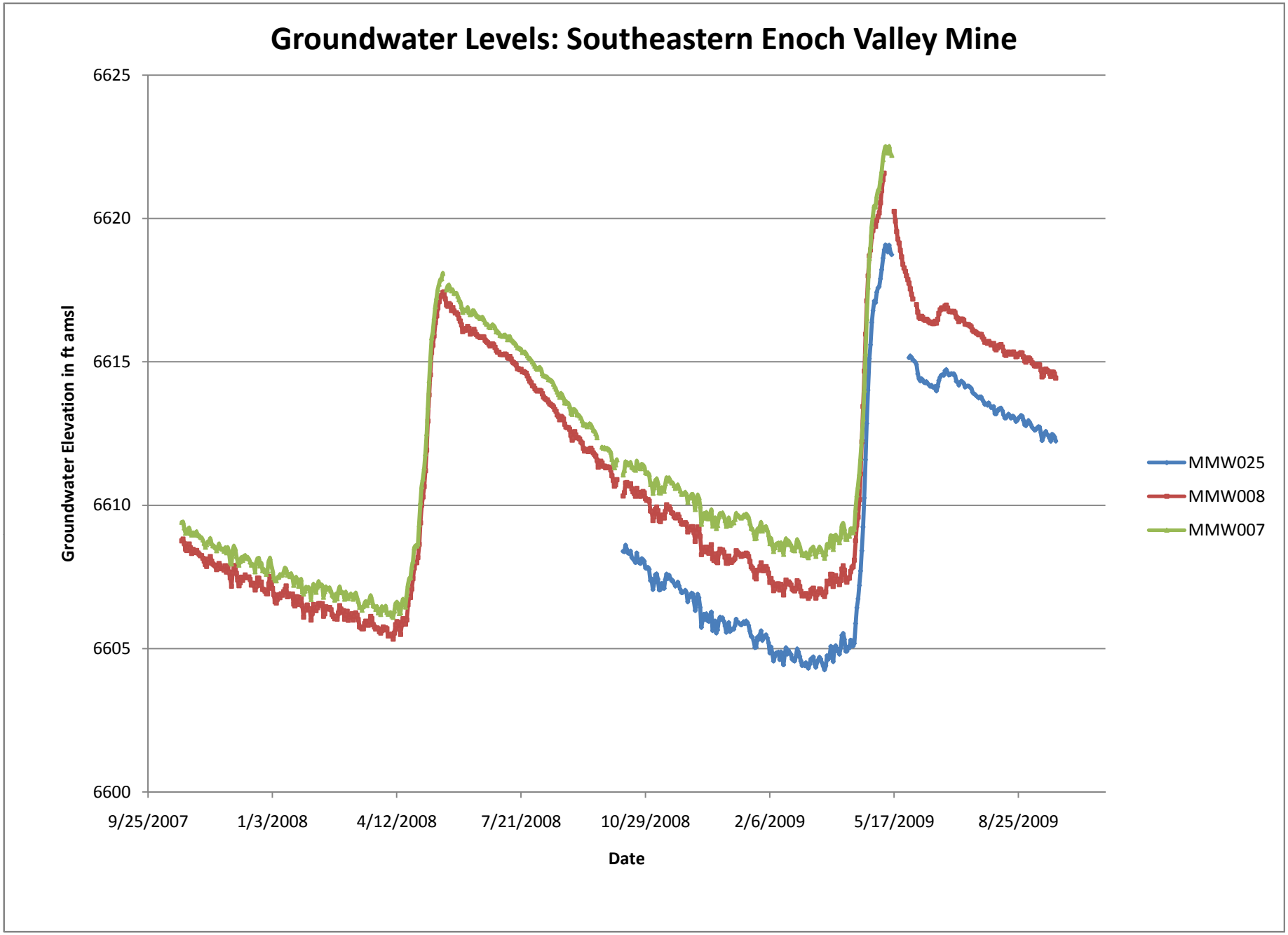
ATTACHMENT B

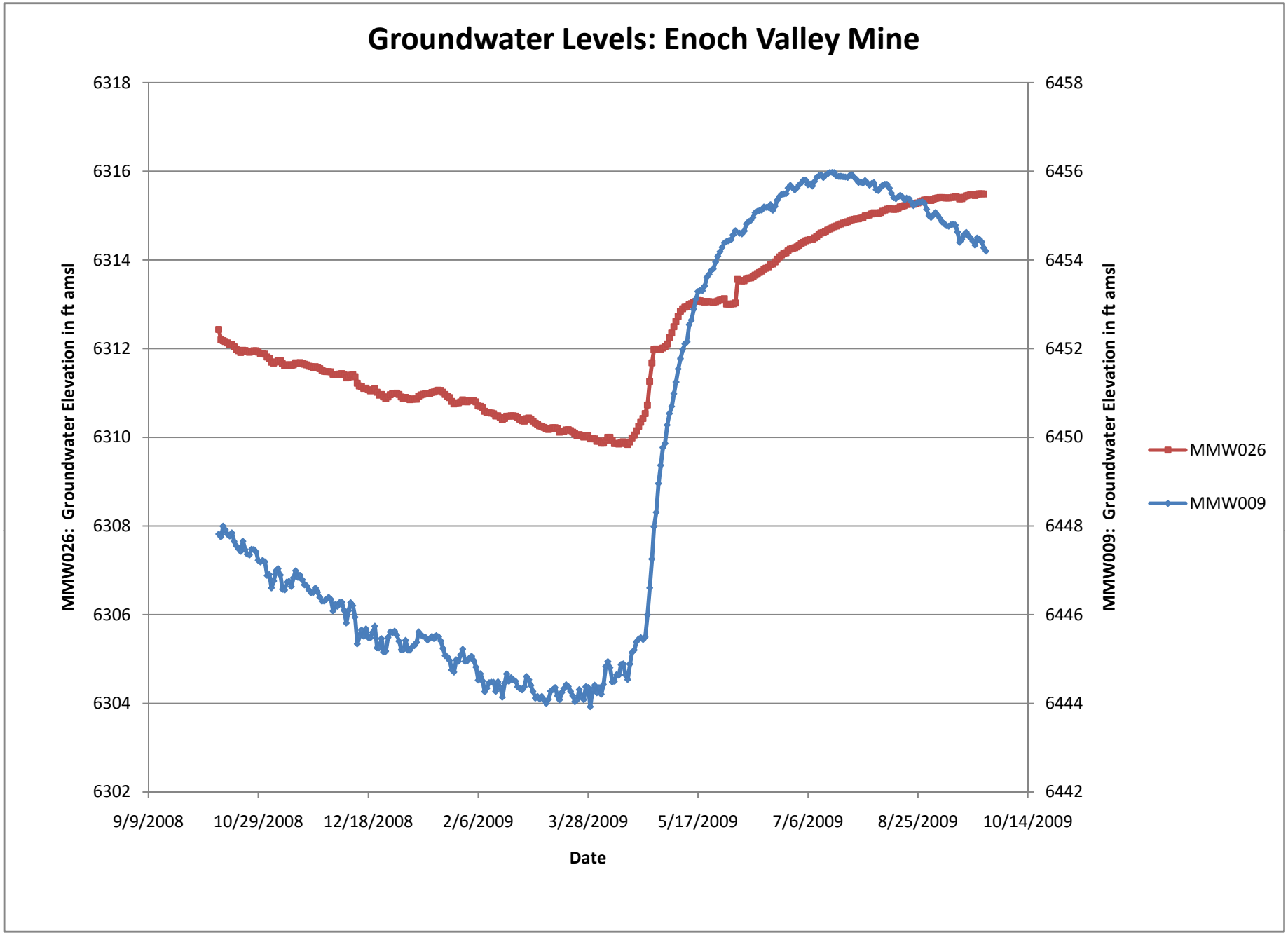
WATER LEVEL GRAPHS

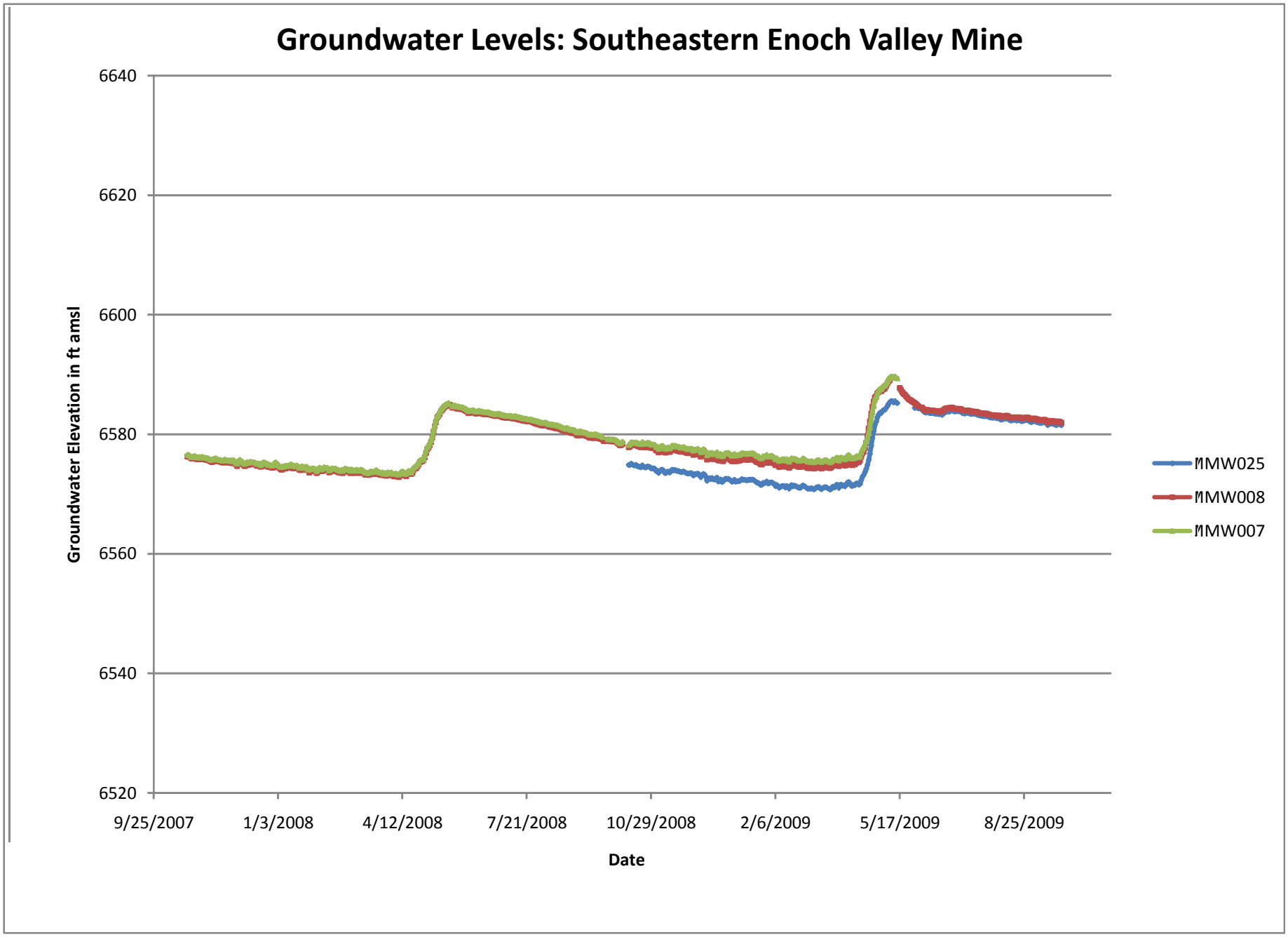

Groundwater Levels: Western Ballard Mine
MMW031, MMW021, MMW020, MMW006: Groundwater Elevation in ft amsl
MMW030: Groundwater Elevation in ft amsl
6260
6255
6250
6245
6240
6235
6230
6225
6346
6344
6342
6340
6338
6336
6334
6332
9/9/2008
10/29/2008
12/18/2008
2/6/2009
3/28/2009
5/17/2009
7/6/2009
8/25/2009
10/14/2009
Date
MMW031
MMW021
MMW020
MMW006
MMW030

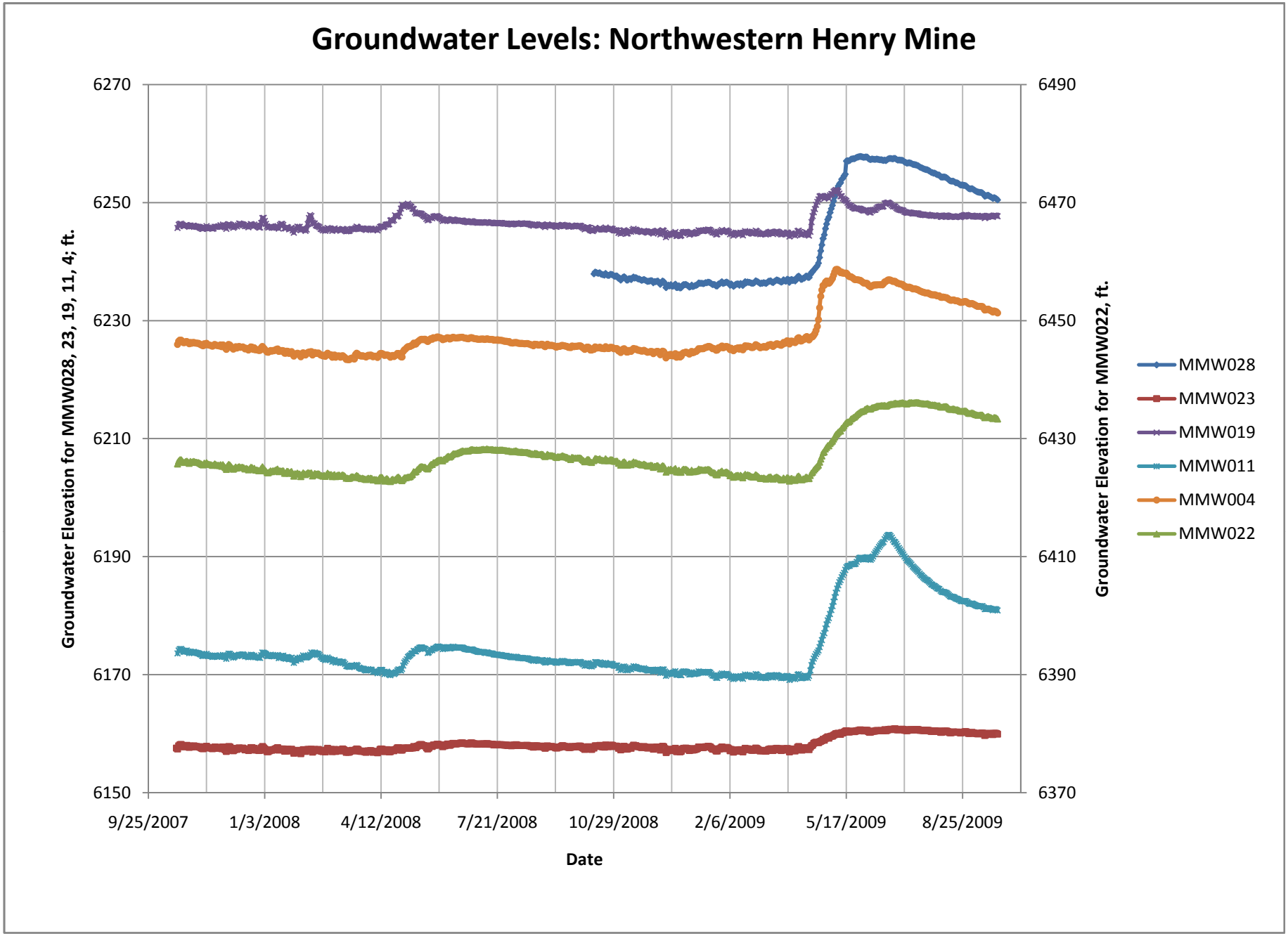

Groundwater Levels: Eastern Ballard Mine
6460
6456
6452
6448
6444
6440
6502
6498
6494
6490
6486
6482
MMW018: Groundwater Elevation in ft amsl
MMW029: Groundwater Elevation in ft amsl
9/9/2008
10/29/2008
12/18/2008
2/6/2009
3/28/2009
5/17/2009
7/6/2009
8/25/2009
10/14/2009
Date
MMW018
MMW029

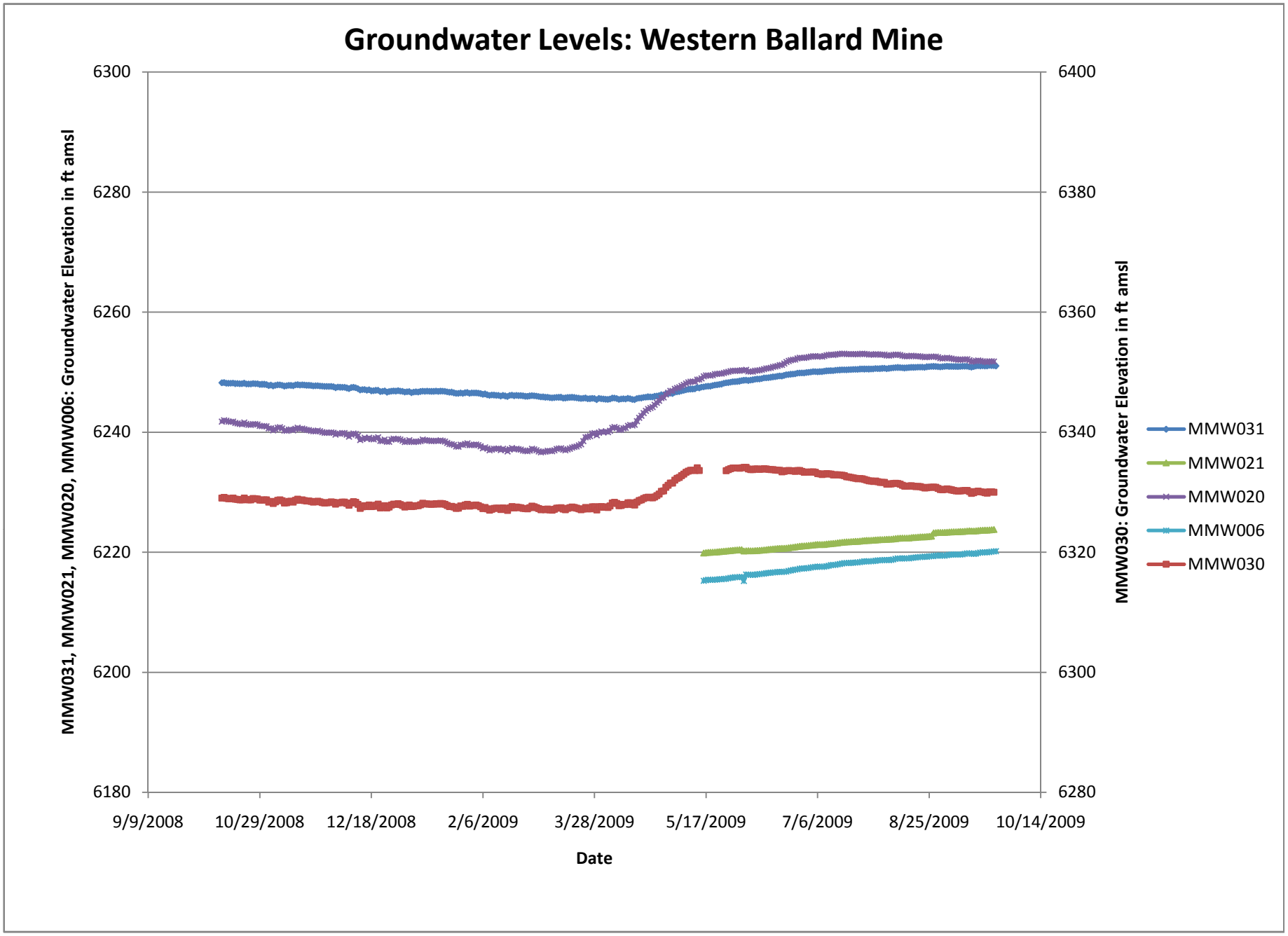

Groundwater Levels: Northwestern Henry Mine
Groundwater Elevation for MMW028, 23, 19, 11, 4; ft.
Groundwater Elevation for MMW022, ft.
6270
6250
6230
6210
6190
6170
6150
6495
6475
6455
6435
6415
6395
6375
9/25/2007
1/3/2008
4/12/2008
7/21/2008
10/29/2008
2/6/2009
5/17/2009
8/25/2009
Date
MMW028
MMW023
MMW019
MMW011
MMW004
MMW022

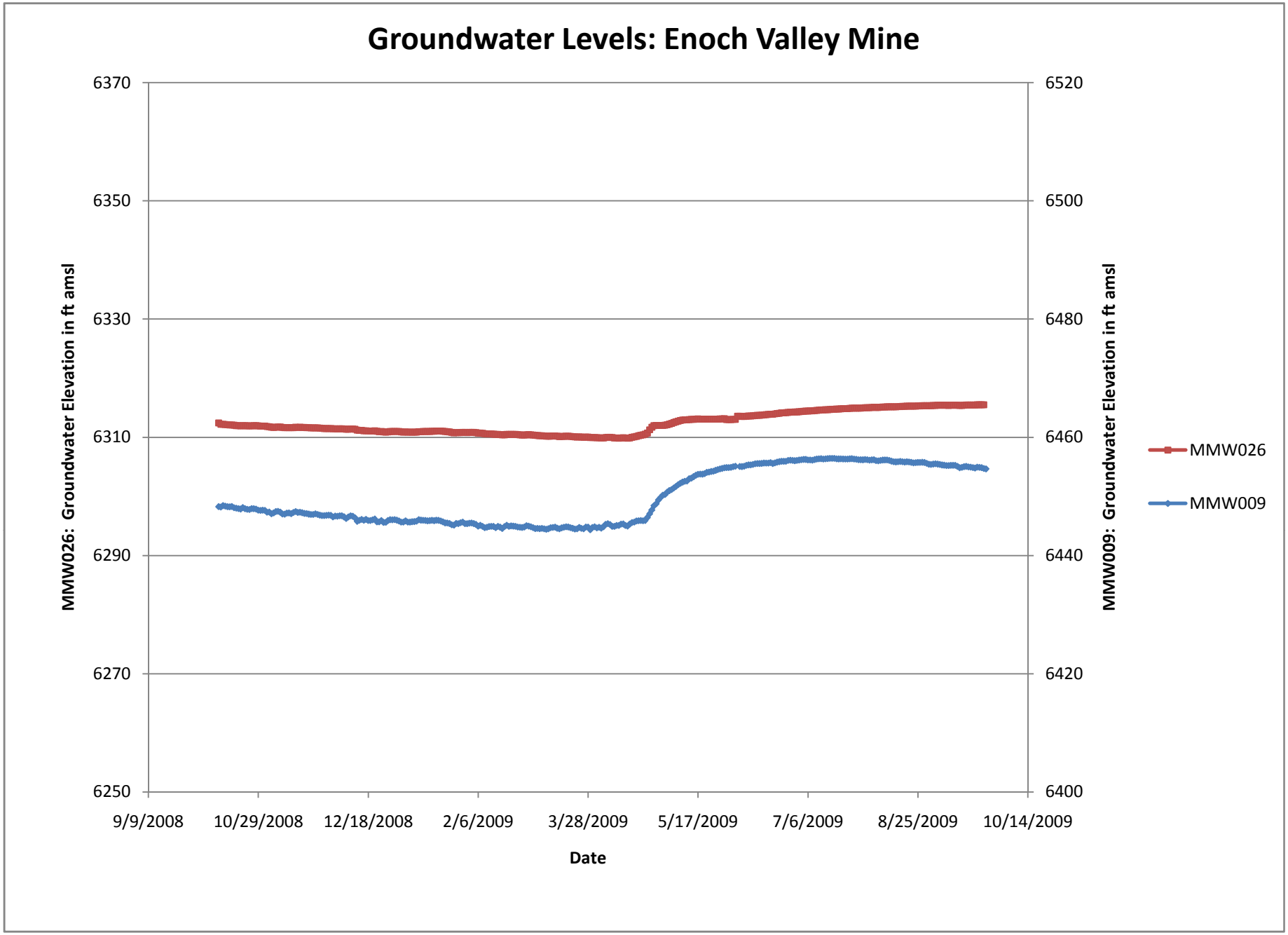

Groundwater Levels: Southeastern Enoch Valley Mine
6625
6620
6615
6610
6605
6600
Groundwater Elevation in ft amsl
9/25/2007
1/3/2008
4/12/2008
7/21/2008
10/29/2008
2/6/2009
5/17/2009
8/25/2009
Date
MMW025
MMW008
MMW007

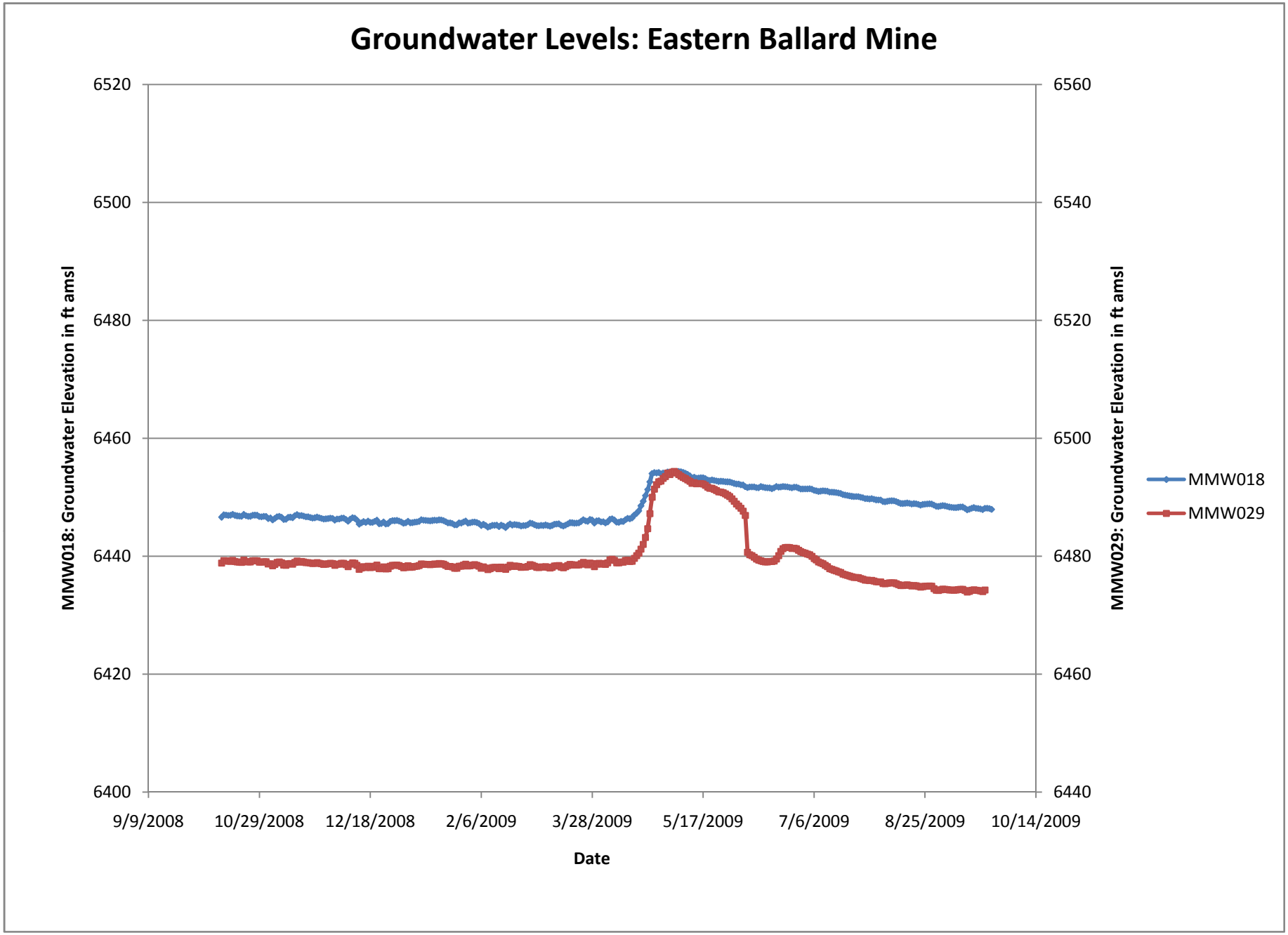

Groundwater Levels: Enoch Valley Mine
6318
6316
6314
6312
6310
6308
6306
6304
6302
6458
6456
6454
6452
6450
6448
6446
6444
6442
MMW026: Groundwater Elevation in ft amsl
MMW009: Groundwater Elevation in ft amsl
9/9/2008
10/29/2008
12/18/2008
2/6/2009
3/28/2009
5/17/2009
7/6/2009
8/25/2009
10/14/2009
Date
MMW026
MMW009


Groundwater Levels: Southeastern Enoch Valley Mine
Groundwater Elevation in ft amsl
6640
6620
6600
6580
6560
6540
6520
9/25/2007
1/3/2008
4/12/2008
7/21/2008
10/29/2008
2/6/2009
5/17/2009
8/25/2009
Date
MMW025
MMW008
MMW007


Groundwater Levels: Northwestern Henry Mine
Groundwater Elevation for MMW028, 23, 19, 11, 4; ft.
Groundwater Elevation for MMW022, ft.
6270
6250
6230
6210
6190
6170
6150
6490
6470
6450
6430
6410
6390
6370
9/25/2007
1/3/2008
4/12/2008
7/21/2008
10/29/2008
2/6/2009
5/17/2009
8/25/2009
Date
MMW028
MMW023
MMW019
MMW011
MMW004
MMW022


Groundwater Levels: Western Ballard Mine
MMW031, MMW021, MMW020, MMW006: Groundwater Elevation in ft amsl
MMW030: Groundwater Elevation in ft amsl
6300
6280
6260
6240
6220
6200
6180
6400
6380
6360
6340
6320
6300
6280
9/9/2008
10/29/2008
12/18/2008
2/6/2009
3/28/2009
5/17/2009
7/6/2009
8/25/2009
10/14/2009
Date
MMW031
MMW021
MMW020
MMW006
MMW030


Groundwater Levels: Enoch Valley Mine
6370
6350
6330
6310
6290
6270
6250
6520
6500
6480
6460
6440
6420
6400
MMW026: Groundwater Elevation in ft amsl
MMW009: Groundwater Elevation in ft amsl
9/9/2008
10/29/2008
12/18/2008
2/6/2009
3/28/2009
5/17/2009
7/6/2009
8/25/2009
10/14/2009
Date
MMW026
MMW009


Groundwater Levels: Eastern Ballard Mine
MMW018: Groundwater Elevation in ft amsl
MMW029: Groundwater Elevation in ft amsl
6520
6500
6480
6460
6440
6420
6400
6560
6540
6520
6500
6480
6460
6440
9/9/2008
10/29/2008
12/18/2008
2/6/2009
3/28/2009
5/17/2009
7/6/2009
8/25/2009
10/14/2009
Date
MMW018
MMW029

APPENDIX A5

WELL CONTRUCTION TABLE AND LOGS

APPENDIX A5-1
MONITORING WELL COMPLETION TABLE

APPENDIX A5-2
DIRECT PUSH WELL COMPLETION TABLE

APPENDIX A5-3
MONITORING WELL COORDINATES

APPENDIX A5-4
MONITORING WELL (MMW) LOGS

APPENDIX A5-5
DIRECT PUSH WELL (MBW) LOGS

APPENDIX A5-6
OTHER WELLS (MPW, MAW, MDW) LOGS AND WELL COMPLETION TABLE

APPENDIX A5-7
BLACKFOOT BRIDGE EIS WELL (MW-15A/MW-16A) LOGS

APPENDIX A5-1

MONITORING WELL COMPLETION TABLE

BALLARD MINE
2007 - 2009 MONITORING WELL DRILLING AND CONSTRUCTION DETAILS

Well ID	Well Location	Date Installed	Formation Screened	Ground Surface Elevation (ft-AMSL)	Boring TD (ft bgs)	Depth Water Encountered when Drilling (ft bgs)	Depth to Formation Contacts (ft bgs)	Well Completion TD (ft bgs)	Screened Interval [Length] (ft bgs)	Screen Slot Size (in)	Sand Size at Screen	Primary Filter Interval (ft bgs)	Bentonite Seal (Pellet) Interval (ft bgs)	Bentonite Seal (Slurry) Interval (ft bgs)	Backfill Below Screen (ft bgs)	Permanent Steel Casing (ft bgs)
MMW006	South of West Ballard Pit; south of waste rock dumps	7/23/2007	Wells	6485.46	335	315-335	0-Wells	330	330-310 [20]	0.020	10x20	335-305 *20x40 sand 305-300*[1]	300-290	290-surface	NA	NA
MMW017	Northwest of Ballard Mine into Long Valley Creek alluvial flow field	8/27/2007	Alluvium	6313.86	62	35	0-Alluvium	57	56-36 [20]	0.010	20x40	56-31	31-20	20-surface	Pellets 32-60; 20x40 sand 60-56	NA
MMW018	East of Ballard Mine in Wooley Valley alluvial flow field	8/12/2007	Alluvium/ Dinwoody	6459.52	33	31	0-Alluvium 30-Dinwoody	33	33-18 [15]	0.010	20x40	33-15	15-10	10-surface	NA	NA
MMW020	East side of West Ballard Pit (MMP035); replacement of MMW001	10/5/2007	Wells	6525.71	416	225, 250, 315, 370	0-Rex Chert 370-Wells	408	408-388 [20]	0.010	20x40	408-378	378-368	368-surface	NA	NA
MMW021	West side of West Ballard Pit (MMP035); replacement of MMW002	9/24/2007	Wells	6436.30	260	229, 238	0-Waste Rock 25-Wells	250	250-230 [20]	0.010	20x40	250-219	219-210	210-surface	NA	NA
MMW029	East Ballard mine area upgradient of MMW018	7/17/2008	Dinwoody	6498.67	61	60	0-Alluvium 25-Dinwoody	60	60-45 [15]	0.020	10x20	60-40	40-surface [2]	NA	NA	16
MMW030	Along the southwestern portion of Ballard Mine in the vicinity of MW-16A	7/10/2008	Wells	6355.25	221	155	0-Alluvium 75-Wells 170-Phosphoria	155	155-135 [20]	0.010	20X40	155-130	130-surface [2]	NA	221-155 Bentonite (Chips)	16
MMW031	Along the western perimeter of Ballard Mine north of MMW017 and on the east side of the haul road.	7/12/2008	Wells	6346.42	201	120, 185	0-Alluvium 160-Wells	200	200-180 [20]	0.010	20x40	200-175	175-surface [2]	NA	NA	16
MMW032	Adjacent to MWD084	8/16/2009	Dinwoody	6446.39	160	35	0-Alluvium 55-Dinwoody 65-Phosphoria	65	65-55 [10]	0.010	20x40	69-24 (sand and native)	24-surface [2]	NA	160-69 Bentonite & Native	17
MMW033	Deeper Well Nested with MMW029	8/28/2009	Dinwoody	6489.84	160	17	0-Alluvium 18-Dinwoody	150	150-130 [20]	0.010	20x40	155-124	124-surface [2]	NA	155-150 Sand	16.5

Notes:
(1) - Italics indicates sand size and interval of secondary filter
(2) - Chips were used instead of pellets
ft-AMSL: feet above mean sea level
ft-bgs: feet below ground surface

HENRY MINE
2007 - 2009 MONITORING WELL DRILLING AND CONSTRUCTION DETAILS

Well ID	Well Location	Date Installed	Formation Screened	Ground Surface Elevation (ft-AMSL)	Boring TD (ft bgs)	Depth Water Encountered when Drilling (ft bgs)	Depth to Formation Contacts (ft bgs)	Well Completion TD (ft bgs)	Screened Interval [Length] (ft bgs)	Screen Slot Size (in)	Sand Size at Screen	Primary Filter Interval (ft bgs)	Bentonite Seal (Pellet) Interval (ft bgs)	Bentonite Seal (Slurry) Interval (ft bgs)	Backfill Below Screen (ft bgs)	Permanent Steel Casing (ft bgs)
MMW010	Southeast of Center Henry Pit; near MPW023	9/9/2007	Alluvium	6462.62	38	17	0-Alluvium	32	32-12 [20]	0.010	20x40	32-8	NA	8-surface	20x40 sand 38-32	NA
MMW011	Northwest of Center Henry Pit; south of Little Blackfoot River	9/8/2007	Wells	6268.31	120	101	0-Wells	115	115-95 [20]	0.010	20x40	115-85	85-75	75-surface	20x40 sand 120-115	NA
MMW014	Southeast of Henry Mine center pit in Lone Pine Creek alluvial flow field	8/11/2007	Alluvium	6435.45	22	9	0-Alluvium	22	22-7 [15]	0.010	20x40	22-4	4-surface	NA	NA	NA
MMW019	North of Henry Mine center pit	8/10/2007	Phosphoria	6259.92	14	10	0-Phosphoria	14	14-4 [10]	0.020	10x20	14-3	1-Mar	NA	NA	NA
MMW022	Northeast lobe of Henry Mine waste rock dump MWD086	7/28/2007	Dinwoody	6635.85	360	320, 340	0-Waste Rock 5-Dinwoody	326	326-306 [10]	0.020	10x20	326-286 *20x40 sand 286-281*[1]	281-271	271-surface	Boring caved 360-326	NA
MMW023	Henry Mine North Pit (MMP041)	9/11/2007	Wells	6230.92	362	128, 188	0-Phosphoria 350-Wells	357	357-352 [5]	0.010	20x40	357-350	350-340	340-surface	NA	NA
MMW028	Near the Little Blackfoot River northwest of MMW019	7/15/2008	Dinwoody	6316.91	100	80, 100	0-Alluvium 40-Basalt 63-Alluvium 70-Dinwoody	96	96-76 [20]	0.010	20x40	96-70	70-surface [2]	NA	Boring Caved 100-96	16

Notes:
(1) - Italics indicates sand size and interval of secondary filter
(2) - Chips were used instead of pellets
ft-AMSL: feet above mean sea level
ft-bgs: feet below ground surface

ENOCH VALLEY MINE
2007 - 2009 MONITORING WELL DRILLING AND CONSTRUCTION DETAILS

Well ID	Well Location	Date Installed	Formation Screened	Ground Surface Elevation (ft-AMSL)	Boring TD (ft bgs)	Depth Water Encountered when Drilling (ft bgs)	Depth to Formation Contacts (ft bgs)	Well Completion TD (ft bgs)	Screened Interval [Length] (ft bgs)	Screen Slot Size (in)	Sand Size at Screen	Primary Filter Interval (ft bgs)	Bentonite Seal (Pellet) Interval (ft bgs)	Bentonite Seal (Slurry) Interval (ft bgs)	Backfill Below Screen (ft bgs)	Permanent Steel Casing (ft bgs)
MMW007	South of EVM South Dump; near edge of dump footprint	8/23/2007	Alluvium/ Weathered Dinwoody	6619.89	90	88	0-Alluvium	89.5	90-70 [20]	0.010	16x30	90-64	64-61	61-surface	NA	NA
MMW008	South of EVM South Dump; south and downgradient of MMW007	8/25/2007	Weathered Dinwoody (Alluvial system)	6602.76	204	160, 175	0-Alluvium 130-Dinwoody	197	197-177 [20]	0.010	16x30	197-170	170-160	160-surface	NA	NA
MMW009	Central North Dump (MWD091)	10/26/2007	Wells	6789.20	563	150 (Wells Fm contact 530)	0-Waste Rock 90-Phosphoria 530-Wells	554	554-549 [5]	0.010	20x40	554-546	546-536	536-surface	NA	360
MMW012	Northwest of EVM North Dump in Lone Pine Creek alluvial flow field	8/28/2007	Alluvium/ Dinwoody	6488.72	58	Dinwoody contact @ 60 ft-BGL	0-Alluvium 37-Dinwoody	58	58-28 [30]	0.010	20x40	58-23	23-13	13-surface	NA	NA
MMW013	Southwest of EVM in Rasmussen Creek alluvial flow field	8/13/2007	Dinwoody	6634.46	35	29	0-Alluvium 6-Dinwoody	35	35-25 [10]	0.020	10x20	35-21	21-16	16-surface	NA	NA
MMW024	Along the south end of Enoch Valley Mine, upgradient of MMW013	7/25/2008	Dinwoody	6704.05	201	15, 60, 100, 140	0-Alluvium 10-Dinwoody	200	200-180 [20]	0.020	10x20	201-175	175-surface [1]	NA	NA	16
MMW025	Along the south end of Enoch Valley Mine, near MMW007	7/28/2008	Dinwoody	6612.87	201	58,160	0-Alluvium 115-Dinwoody	200	200-180 [20]	0.020	10x20	201-175	175-surface [1]	NA	NA	16
MMW026	Northeast of MPW006 and MMW008	8/11/2008	Wells	6599.21	363	6, 65, 100, 200, 300	0-Alluvium 218-Wells	355	355-335 [20]	0.010	20x40	355-330	330-surface [1]	NA	Boring Caved 363-355	322
MMW027	Near MMW012	8/15/2008	Dinwoody	6491.07	123	88	0-Alluvium 20-Basalt 45-Alluvuim 53-Dinwoody	120	120-100 [20]	0.010	20x40	120-95	95-Surface [1]	NA	NA	16
MMW034	Deeper Well Nested with MMW013	9/2/2009	Dinwoody	6640.31	160	156	0-Alluvium 19-Dinwoody	136	156-136 [20]	0.010	20x40	160-126	126-surface [1]	NA	160-156 Sand	18
MMW035	Deeper Well Nested with MMW027	8/30/2009	Dinwoody	6500.34	200	199	0-Alluvium 22-Basalt 33-Dinwoody	179	199-179 [20]	0.010	20x40	200-176	176-surface [1]	NA	200-199 Sand	31
MMW036	Well West of MMW028	9/1/2009	Basalt	6425.18	160	135	0-Alluvium 88-Basalt	115	135-115 [20]	0.010	20x40	137-111	160-137 [1]	NA	160-137 Bentonite	16

Notes:
(1) - Chips were used instead of pellets
ft-AMSL: feet above mean sea level
ft-bgs: feet below ground surface

APPENDIX A5-2

DIRECT PUSH WELL COMPLETION TABLE

ALLUVIAL DIRECT PUSH BOREHOLE WELLS
DRILLING AND CONSTRUCTION DETAILS

Well ID	Well Location	Date Installed	Ground Surface Elevation (ft AMSL)	Boring TD (ft bgs)	Depth Water Encountered when Drilling (ft bgs)	Screened Interval [Length] (ft bgs)	Screen Slot Size (inch.)	Sand Size at Screen (sieve)	Primary Filter Interval (ft bgs)	Bentonite Seal (Chips) Interval (ft bgs)
MBW006	South of MST069 on South Side of Road	5/13/2008	6319.31	14	8	9-14	0.011	20x40	7-14	0-7
MBW009	Blackfoot River Road at Monsanto Haul Road	5/14/2008	6310.69	11	6	6-11	0.011	20x40	4-11	1.5-4
MBW011	Near MST067, Off East Side of Haul Road	5/14/2008	6339.80	15	9	10-15	0.011	20x40	8-15	1.5-8
MBW026	West Side of Haul Road in Ballard Close To MBW027, Shallow of Two	5/20/2008	6313.32	11	6	6-11	0.011	20x40	4-11	0-4
MBW027	West Side of Haul Road in Ballard Close To MBW026, Deeper of Two	5/21/2008	6313.33	25	6	11-16	0.011	20x40	7.5-20	1.5-7.5
MBW028	Torgesen Ranch	5/21/2008	6339.99	21	8	16-21	0.011	20x40	14-21	1.5-14
MBW032	Holmgren Ranch	5/28/2008	6499.13	15	8	10-15	0.011	20x40	8-15	0-8
MBW048	Wooley Valley Creek	5/30/2008	6421.72	10	2, 4	4-9	0.011	20x40	2-9	0-2
MBW085	Rasmussen Creek	6/11/2008	6639.57	12.25	6.9	7.25-12.25	0.011	20x40	7-12.25	0-7
MBW087	Rasmussen Road and Agrium Haul Road Intersection	6/11/2008	6587.30	12	NR	7-12	0.011	20x40	7-12	0-7
MBW099	Agrium Haul Road North	6/13/2008	6599.25	29	NR	24-29	0.011	20x40	22-29	0-22
MBW107	Western Enoch Valley, East of Fence	6/16/2008	6486.78	40	30	35-40	0.011	20x40	33-40	0-33
MBW112	Western Enoch Valley, Two Small Drainages North of MBW107 Near Tilled Field	6/17/2008	6404.00	20	NR	13-18	0.011	20x40	12-20	0-12
MBW130	East of Ballard Mine, Along Wooley Valley Creek	5/11/2009	6416.29	25	18	20-25	0.011	20x40	17-25	0-17
MBW131	Northeast of Ballard Mine, Near MST093	5/11/2009	6468.52	8	1.5	3-8	0.011	20x40	2-8	0-2
MBW135	Southeast of Ballard Mine , Across Blackfoot River Road	5/14/2009	6290.56	20	15	15-20	0.011	20x40	13-20	0-13
MBW152	North Henry Mine, Along Little Blackfoot River	5/12/2009	6280.00	15	7.5	10-15	0.011	20x40	8-15	0-8

NR: Water was not reached during borehole well installation.
Ft-AMSL: Feet above mean sea level
Ft-bgs: Feet below ground surface

APPENDIX A5-3

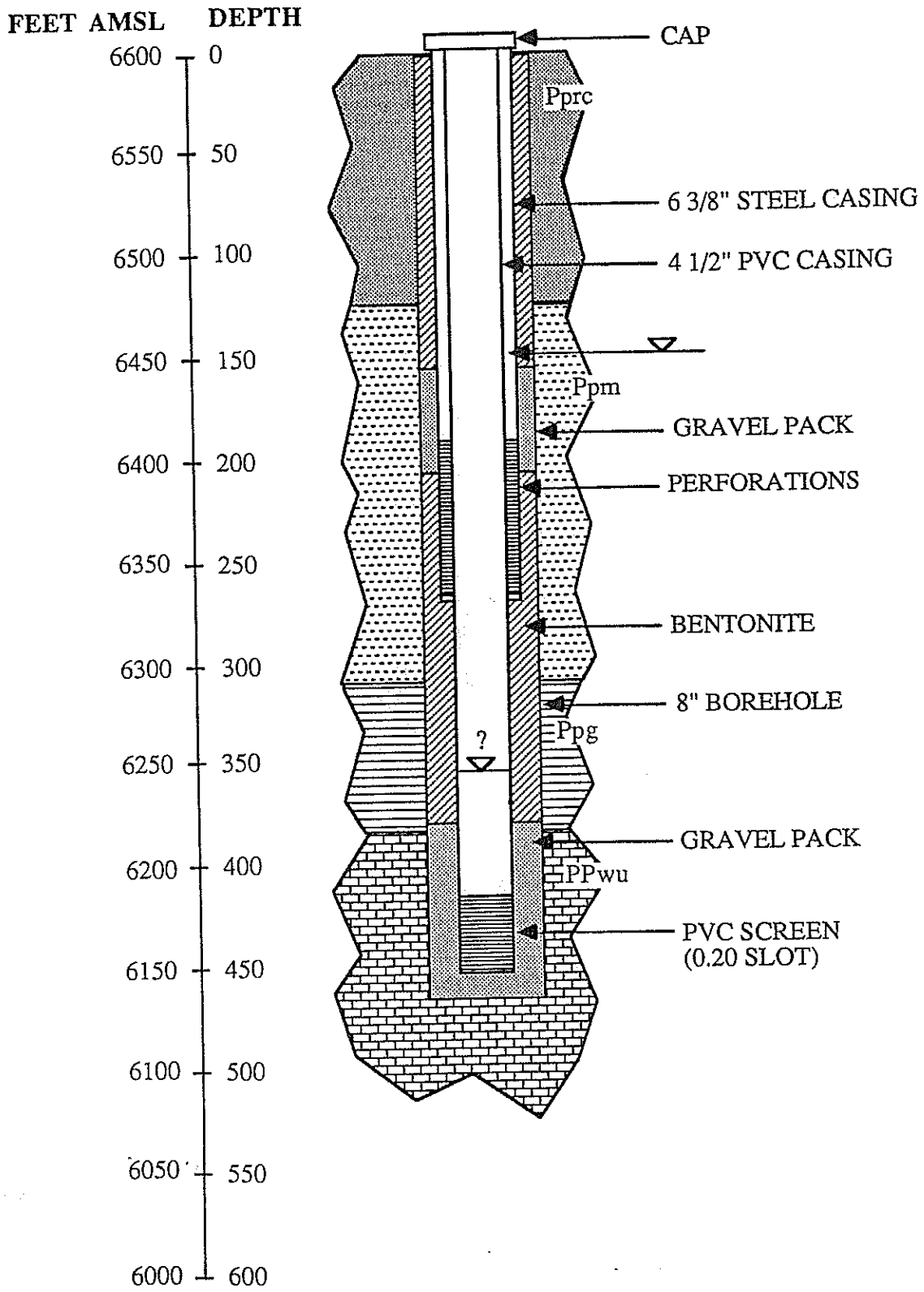
MONITORING WELL COORDINATES

Well Coordinates Table For Monsanto Wells					
Well Identification	NAD27		WGS84		Elevation in ft amsl
	Longitude	Latitude	Longitude	Latitude	
MAW001	W111° 26' 39.99"	N42° 53' 15.00"	111° 26' 42.7891" W	42° 53' 14.7124" N	6325.62
MAW002	W111° 26' 41.99"	N42° 53' 51.00"	111° 26' 44.7897" W	42° 53' 50.7119" N	6331.38
MAW003	W111° 27' 21.59"	N42° 53' 24.00"	111° 27' 24.3906" W	42° 53' 23.7119" N	6338.14
MAW004	W111° 29' 22.21"	N42° 51' 57.01"	111° 29' 25.0135" W	42° 51' 56.7212" N	6259.99
MAW005	W111° 23' 08.79"	N42° 51' 44.32"	111° 23' 11.5811" W	42° 51' 44.0365" N	6559.77
MAW006	W111° 30' 49.85"	N42° 51' 59.54"	111° 30' 52.6563" W	42° 51' 59.2505" N	6359.91
MAW007	W111° 29' 49.20"	N42° 52' 29.99"	111° 29' 52.0046" W	42° 52' 29.7005" N	6258.98
MAW008	W111° 29' 42.79"	N42° 49' 30.11"	111° 29' 45.5905" W	42° 49' 29.8237" N	6341.58
MBW006	W111° 29' 26.00"	N42° 49' 01.90"	111° 29' 28.8051" W	42° 49' 1.6102" N	6319.31
MBW009	W111° 29' 46.78"	N42° 49' 12.31"	111° 29' 49.5839" W	42° 49' 12.0284" N	6310.69
MBW011	W111° 29' 38.38"	N42° 49' 22.25"	111° 29' 41.1850" W	42° 49' 21.9598" N	6339.80
MBW026	W111° 29' 51.51"	N42° 50' 02.36"	111° 29' 54.3172" W	42° 50' 2.0692" N	6313.32
MBW027	W111° 29' 51.52"	N42° 50' 02.40"	111° 29' 54.3247" W	42° 50' 2.1144" N	6313.33
MBW028	W111° 29' 40.12"	N42° 49' 34.73"	111° 29' 42.9261" W	42° 49' 34.4424" N	6339.99
MBW032	W111° 28' 07.23"	N42° 49' 35.17"	111° 28' 10.0316" W	42° 49' 34.8870" N	6499.13
MBW048	W111° 27' 53.41"	N42° 50' 04.04"	111° 27' 56.2068" W	42° 50' 3.7570" N	6421.72
MBW085	W111° 24' 01.33"	N42° 51' 55.80"	111° 24' 4.1240" W	42° 51' 55.5193" N	6639.57
MBW087	W111° 23' 41.53"	N42° 51' 38.62"	111° 23' 44.3194" W	42° 51' 38.3352" N	6587.30
MBW099	W111° 23' 25.35"	N42° 51' 57.36"	111° 23' 28.1391" W	42° 51' 57.0767" N	6599.25
MBW107	W111° 25' 53.34"	N42° 53' 28.65"	111° 25' 56.1329" W	42° 53' 28.3655" N	6486.78
MBW130	W111° 27' 10.00"	N42° 49' 40.00"	111° 27' 12.7965" W	42° 49' 39.7162" N	6416.29
MBW131	W111° 28' 33.00"	N42° 50' 24.00"	111° 28' 35.7999" W	42° 50' 23.7144" N	6468.52
MBW134	W111° 29' 31.00"	N42° 48' 40.00"	111° 29' 33.8010" W	42° 48' 39.7145" N	6298.04
MBW135	W111° 29' 43.00"	N42° 48' 40.00"	111° 29' 45.8014" W	42° 48' 39.7143" N	6290.56
MBW152	W111° 29' 23.00"	N42° 54' 14.00"	111° 29' 25.8038" W	42° 54' 13.7115" N	6280.00
MDW001	W111° 27' 25.99"	N42° 53' 24.00"	111° 27' 28.7907" W	42° 53' 23.7117" N	6345.16
MDW002	W111° 26' 49.20"	N42° 54' 17.99"	111° 26' 52.0002" W	42° 54' 17.7015" N	6350.39
MDW003	W111° 26' 45.99"	N42° 52' 29.99"	111° 26' 48.7888" W	42° 52' 29.7030" N	6360.49
MDW004	W111° 33' 14.40"	N42° 49' 26.39"	111° 33' 17.2096" W	42° 49' 26.1009" N	6158.77
MDW005	W111° 31' 51.59"	N42° 54' 32.40"	111° 31' 54.3996" W	42° 54' 32.1090" N	6140.00
MDW006	W111° 28' 47.99"	N42° 54' 43.20"	111° 28' 50.7941" W	42° 54' 42.9101" N	6350.31
MMW001	W111° 29' 17.25"	N42° 49' 38.10"	111° 29' 20.0492" W	42° 49' 37.8169" N	6514.21
MMW002	W111° 23' 47.88"	N42° 50' 25.89"	111° 23' 50.6684" W	42° 50' 25.6061" N	7555.80
MMW003	W111° 23' 01.95"	N42° 50' 23.54"	111° 23' 4.7399" W	42° 50' 23.2639" N	6947.61
MMW004	W111° 29' 46.50"	N42° 54' 07.70"	111° 29' 49.3054" W	42° 54' 7.4097" N	6280.00
MMW006	W111° 29' 03.35"	N42° 49' 21.09"	111° 29' 6.1536" W	42° 49' 20.8095" N	6485.46
MMW007	W111° 23' 34.40"	N42° 51' 48.50"	111° 23' 37.1919" W	42° 51' 48.2161" N	6619.89
MMW008	W111° 23' 29.80"	N42° 51' 48.60"	111° 23' 32.5918" W	42° 51' 48.3163" N	6602.76
MMW009	W111° 25' 33.80"	N42° 53' 34.60"	111° 25' 36.5973" W	42° 53' 34.3129" N	6789.20
MMW010	W111° 27' 51.30"	N42° 52' 22.30"	111° 27' 54.1008" W	42° 52' 22.0121" N	6462.62
MMW011	W111° 29' 30.00"	N42° 53' 48.30"	111° 29' 32.8048" W	42° 53' 48.0101" N	6268.31
MMW012	W111° 25' 53.28"	N42° 53' 28.80"	111° 25' 56.0759" W	42° 53' 28.5189" N	6488.72
MMW013	W111° 24' 12.00"	N42° 52' 05.70"	111° 24' 14.7934" W	42° 52' 5.4154" N	6634.46
MMW014	W111° 27' 05.20"	N42° 51' 59.30"	111° 27' 7.9989" W	42° 51' 59.0130" N	6435.45
MMW017	W111° 29' 51.30"	N42° 50' 02.23"	111° 29' 54.1056" W	42° 50' 1.9413" N	6313.86
MMW018	W111° 28' 02.73"	N42° 49' 41.52"	111° 28' 5.5302" W	42° 49' 41.2325" N	6459.52
MMW019	W111° 29' 25.40"	N42° 53' 50.20"	111° 29' 28.2046" W	42° 53' 49.9101" N	6259.92
MMW020	W111° 29' 16.56"	N42° 49' 37.60"	111° 29' 19.3654" W	42° 49' 37.3107" N	6525.71
MMW021	W111° 29' 24.44"	N42° 49' 36.01"	111° 29' 27.2450" W	42° 49' 35.7258" N	6436.30
MMW022	W111° 28' 18.30"	N42° 53' 09.20"	111° 28' 21.1022" W	42° 53' 8.9114" N	6635.85
MMW023	W111° 30' 22.97"	N42° 54' 17.42"	111° 30' 25.7768" W	42° 54' 17.1290" N	6230.92
MMW024	W111° 24' 11.80"	N42° 52' 11.78"	111° 24' 14.5928" W	42° 52' 11.4937" N	6704.05
MMW025	W111° 23' 31.89"	N42° 51' 49.21"	111° 23' 34.6832" W	42° 51' 48.9275" N	6612.87
MMW026	W111° 23' 25.68"	N42° 51' 56.53"	111° 23' 28.4751" W	42° 51' 56.2467" N	6599.21
MMW027	W111° 25' 53.44"	N42° 53' 29.02"	111° 25' 56.2339" W	42° 53' 28.7313" N	6491.07

Well Coordinates Table For Monsanto Wells					
Well Identification	NAD27		WGS84		Elevation in ft amsl
	Longitude	Latitude	Longitude	Latitude	
MMW028	W111° 28' 59.94"	N42° 53' 50.29"	111° 29' 2.7475" W	42° 53' 50.0037" N	6316.91
MMW029	W111° 28' 08.68"	N42° 49' 34.83"	111° 28' 11.4768" W	42° 49' 34.5458" N	6498.67
MMW030	W111° 29' 16.99"	N42° 49' 10.77"	111° 29' 19.7870" W	42° 49' 10.4831" N	6355.25
MMW031	W111° 29' 43.00"	N42° 50' 11.92"	111° 29' 45.8014" W	42° 50' 11.6341" N	6346.42
MMW032	W111° 28' 16.43"	N42° 50' 08.56"	111° 28' 19.2303" W	42° 50' 8.2739" N	6446.39
MMW033	W111° 28' 08.57"	N42° 49' 36.32"	111° 28' 11.3724" W	42° 49' 36.0316" N	6489.84
MMW034	W111° 24' 14.80"	N42° 52' 09.10"	111° 24' 17.5926" W	42° 52' 8.8168" N	6640.31
MMW035	W111° 25' 54.30"	N42° 53' 29.50"	111° 25' 57.0969" W	42° 53' 29.2144" N	6500.34
MMW036	W111° 26' 05.60"	N42° 53' 26.70"	111° 26' 8.3972" W	42° 53' 26.4143" N	6425.18
MPW006	W111° 23' 26.90"	N42° 51' 47.20"	111° 23' 29.6907" W	42° 51' 46.9178" N	6599.23
MPW019	W111° 25' 16.52"	N42° 52' 37.40"	111° 25' 19.3160" W	42° 52' 37.1139" N	6720.76
MPW022	W111° 27' 22.83"	N42° 52' 00.10"	111° 27' 25.6246" W	42° 51' 59.8163" N	6534.31
MPW023	W111° 27' 47.20"	N42° 52' 17.70"	111° 27' 50.0006" W	42° 52' 17.4122" N	6460.00
MW-15A	W111° 29' 36.55"	N42° 49' 35.99"	111° 29' 39.3485" W	42° 49' 35.7064" N	6364.37
MW-16A	W111° 29' 16.53"	N42° 49' 08.53"	111° 29' 19.3298" W	42° 49' 8.2396" N	6346.71

APPENDIX A5-4

MONITORING WELL (MMW) LOGS



MW001

Geologic Log of Monitor Well #1

HOWARD CONSULTANTS, INC.
CONSULTING GEOTECHNICAL ENGINEERS

PLATE 2

DATE ____ BY ____ FILE ____ CHECKED BY ____

Form 238-7
8/90

MW-1

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

USE TYPEWRITER OR BALLPOINT

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

1. WELL OWNER

Name MONSANTO Co. #1 E.

Address BOX 816 Soda Springs, Id. 83276

Drilling Permit No. 27-92E-060-001.

Water Right Permit No. _____

2. NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement
☐ Well diameter increase
☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

3. PROPOSED USE

☐ Domestic ☐ Irrigation ☒ Test ☐ Municipal
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED

☒ Rotary ☒ Air ☐ Hydraulic ☐ Reverse rotary
☐ Cable ☐ Dug ☐ Other _____

5. WELL CONSTRUCTION

Casing schedule: ☒ Steel ☐ Concrete ☒ Other PVC F.J.

Thickness	Diameter	From	To
.250 inches	6 5/8 inches +	2 feet	271 feet
.250 inches	4½ PVC inches +	2 feet	452 feet
____ inches	____ inches	____ feet	____ feet
____ inches	____ inches	____ feet	____ feet

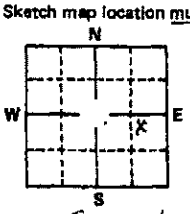
Was casing drive shoe used? ☐ Yes ☒ No
Was a packer or seal used? ☒ Yes ☐ No
Perforated? ☒ Yes ☐ No
How perforated? ☒ Factory ☐ Knife ☐ Torch ☐ Gun
Size of perforation .020 inches by 2 inches

		From	To
PVC	Size .020 perforations	420 feet	450 feet
	____ perforations	____ feet	____ feet
Steel	80 perforations	191 feet	271 feet

Well screen installed? ☐ Yes ☒ No
Manufacturer's name _____
Type _____ Model No. _____
Diameter ____ Slot size ____ Set from ____ feet to ____ feet
Diameter ____ Slot size ____ Set from ____ feet to ____ feet
Gravel packed? ☒ Yes ☐ No ☐ Size of gravel 3/8 -
Placed from 380 feet to 450 feet
Surface seal depth ____ Material used in seal: ☐ Cement grout
☒ Bentonite ☐ Puddling clay ☐ _____
Sealing procedure used: ☐ Slurry pit ☒ Temp. surface casing (cent)
☒ Overbore to seal depth
Method of joining casing: ☒ Threaded PVC ☒ Welded STEEL ☐ Solvent Weld
☐ Cemented between strata
Describe access port LOCKING CAP

6. LOCATION OF WELL

Sketch map location must agree with written location



~~Subdivision Name~~ _____
Collar Elev. AUG 09 1993
Lot No. ____ Block No. ____

County Caribou

NE ¼ SE ¼ Sec. 12, T. 7 N ☐ S ☒, R. 42 E ☒ W ☐

7. WATER LEVEL

Static water level 190 feet below land surface.
Flowing? ☐ Yes ☒ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature 49 °F. Quality Good
Describe artesian or temperature zones below.

8. WELL TEST DATA

☐ Pump ☐ Bailer ☒ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped
15	210	4

9. LITHOLOGIC LOG 103888

Bore Diam.	Depth From	Depth To	Material	Water Yes	Water No
12"	0	10	cherty overburden		X
	10	100	Med. Lt. Shale		
	100	130	" Blk. "		
	130	150	" chert		
	150	170	" Blk. Shale		
	170	190	Phosphate - 15 GPM	X	
	190	212	Med. Lt. shale		X
7 7/8	212	265	" " "	X	
"	265	290	hard ls.		X
6"	270	345	Med. to hard shale		
	345	385	phosphate		
	385	395	fine well silts		
	395	410	Hard ls.		
	410	420	Broken ls.		
	420	460	Hard ls.		

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Eastern District Office

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FEB 22 1993
Department of Water Resources

10.

Work started 11-11-92 finished 12-29-92

11. DRILLERS CERTIFICATION

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Nelson Firm No. 215

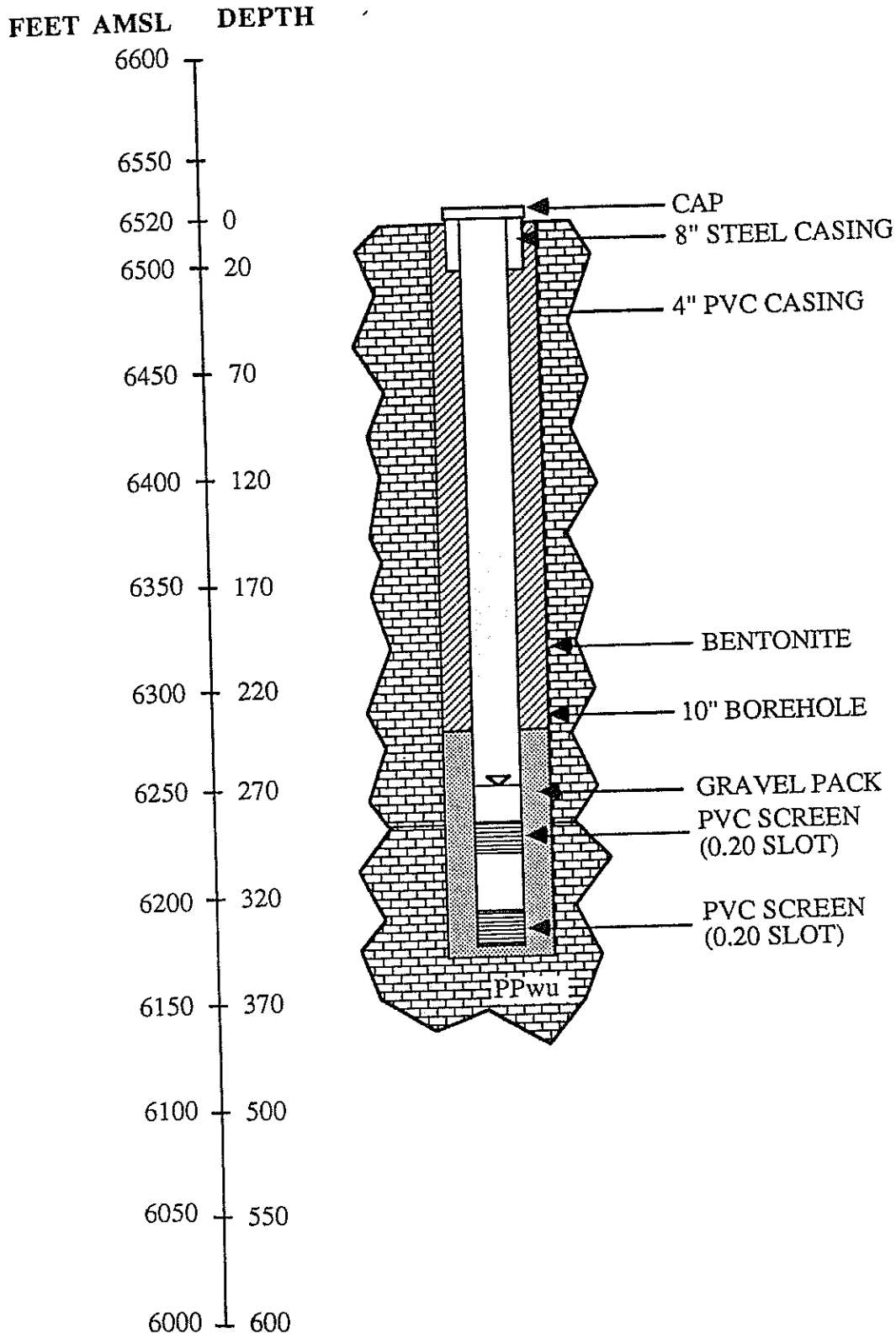
Address Soda Springs Date 12-30-92

Signed by (Firm Official) R. Nelson

and

(Operator) [signature]

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT



Geologic Log of Monitor Well #2

MW002

HOWARD CONSULTANTS, INC.
CONSULTING GEOTECHNICAL ENGINEERS

PLATE 3

DATE ____ BY ____ FILE ____ CHECKED BY ____

Form 238-7
8/90

MW002

USE TYPEWRITER OR BALLPOINT

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

1. WELL OWNER

Name MONSANTO Co. #2 W.

Address Box 816 Soda Springs, Id. 83276

Drilling Permit No. 27-92E-060-002

Water Right Permit No. _____

2. NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement
☐ Well diameter increase
☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

3. PROPOSED USE

☐ Domestic ☐ Irrigation ☒ Test ☐ Municipal
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED

☒ Rotary ☒ Air ☐ Hydraulic ☐ Reverse rotary
☐ Cable ☐ Dug ☐ Other _____

5. WELL CONSTRUCTION

Casing schedule: ☒ Steel ☐ Concrete ☒ Other PVC F.J.

	Thickness		Diameter		From		To	
Steel	.250	inches	8" ID	inches +	2	feet	20	feet
PVC	.250	inches	4" ID	inches +	2	feet	348	feet
		inches		inches		feet		feet
		inches		inches		feet		feet

Was casing drive shoe used? ☐ Yes ☒ No
Was a packer or seal used? ☐ Yes ☒ No
Perforated? ☒ Yes ☐ No
How perforated? ☒ Factory ☐ Knife ☐ Torch ☐ Gun
Size of perforation .020 inches by 2 inches

Number		From		To	
.020	perforations	328	feet	348	feet
.020	perforations	288	feet	308	feet
	perforations		feet		feet

Well screen installed? ☐ Yes ☒ No
Manufacturer's name _____
Type _____ Model No. _____
Diameter ___ Slot size ___ Set from ___ feet to ___ feet
Diameter ___ Slot size ___ Set from ___ feet to ___ feet
Gravel packed? ☒ Yes ☐ No ☐ Size of gravel 3/8 -
Placed from 250 feet to 350 feet
Surface seal depth 20 Material used in seal: ☐ Cement grout ☒ Bentonite ☐ Puddling clay ☐ _____
Sealing procedure used: ☐ Slurry pit ☒ ~~Temp.~~ Perm. surface casing ☒ Overbore to seal depth
Method of joining casing: ☒ Threaded PVC ☒ Welded Steel ☐ Solvent Weld ☐ Cemented between strata

7. WATER LEVEL

Static water level 223 feet below land surface.
Flowing? ☐ Yes ☒ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature 49 °F. Quality Good
Describe artesian or temperature zones below.

8. WELL TEST DATA

☐ Pump ☐ Bailer ☐ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped
25	330	4

9. LITHOLOGIC LOG

103889

Bore Diam.	Depth From	Depth To	Material	Water Yes
12¼	0	12	overburden	
"	12	19	Med. Sandstone	
7⅞	19	42	" "	
	42	54	Hard limestone	
	54	60	Med. Sandstone	
	60	73	Hard "	
	73	169	Med. "	
	169	178	Hard "	
	178	220	Med "	
	220	259	Med. limestone	
	259	270	Med. Sandstone	
	270	282	Med. limestone 156PM	X
	282	286	Hard "	
	286	330	Med. " 106PM	X
	330	400	Hard "	

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Department of Water Resources

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Department of Water Resources
Eastern District Office

RECORD OF BOREHOLE: MMW006

P4 Production
Southeast Idaho Mine-Specific
Selenium Program

Project No. 1010076.011602

IDWR Tag No	: D0048733	Drilling Method / Rig	: Air Rotary / Atlas Copco TH-60
Drilling Date(s)	: 7/21/07 to 7/22/07	Drilled By	: J. Arfman (Boart Longyear)
Latitude	: 42 49 20.0	Logged By	: D. Brame (MWH)
Longitude	: 111 29 23.0	Installed By	: R. Chipman (Boart Longyear)
Elevation (ft)	: 6499.6	Suveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Well: MMW006
Elev.: 6499.6 ft

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0–5	1	1537	limestone, grey (5Y6/1).	Wells
15–20	2	1608	sandstone, grey (5Y6/1), fine grained.	Wells
25–30	3	1610	limestone grey (5Y6/1), fine grained.	Wells
35–40	4	1625	sandstone, grey (5Y6/1), fine grained.	Wells
50–55	5	1630	limestone, grey (5Y6/1).	Wells
60–65	6	1638	sandstone, light grey (5Y7/1), very fine grained.	Wells
70–75	7	1643	sandstone, pale yellow (2.5Y7/4), very fine grained.	Wells
75–80	8	0834	sandstone, light grey (5Y7/1), very fine grained.	Wells
90–105	9	0902	sandstone, pale yellow (2.5Y7/4), very fine grained.	Wells

Well Details

CONSTRUCTION DETAILS

Installation Date	7/23/07
Boring Total Depth (ft bgs)	335
Well Total Depth (ft bgs)	330
Casing Type	Sched. 80 PVC
Screen Slot Size	0.020
Screen Length (ft)	20
Screened Interval (ft bgs)	330-310
Sand Size at Screen	10x20
Primary Filter Interval (ft bgs)	335-310
Secondary Filter Interval	20x40 sand
(ft bgs)	305-300
Bentonite Seal (3/8" pellet)	300-290
Interval (ft bgs)	
Bentonite Seal (slurry)	290-0
Interval (ft bgs)	
Formation at Screen	Wells
Depth Water Encountered	315, 335
when Drilling (ft bgs)	
Sump	332-330
Drill Shoe Burial	N/A
Backfill	N/A
Steel Casing Depth	N/A
(ft bgs)	
Pump Depth (ft bgs)	327
Pump Intake Depth (ft bgs)	N/A
Height of MP (ft ags)	3

SAMPLE DETAILS

Fall 07 Static Water Level (ft bgs)	263.7
Fall 07 Total Se (mg/L)	0.080

NOTES:
Bottom of borehole 335' below ground surface.

RECORD OF BOREHOLE: MMW006

P4 Production
Southeast Idaho Mine-Specific
Selenium Program

Project No. 1010076.011602

IDWR Tag No	: D0048733	Drilling Method / Rig	: Air Rotary / Atlas Copco TH-60
Drilling Date(s)	: 7/21/07 to 7/22/07	Drilled By	: J. Arfman (Boart Longyear)
Latitude	: 42 49 20.0	Logged By	: D. Brame (MWH)
Longitude	: 111 29 23.0	Installed By	: R. Chipman (Boart Longyear)
Elevation (ft)	: 6499.6	Suveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Well: MMW006
Elev.: 6499.6 ft

Depth in Feet	Sample	Time	DESCRIPTION
115–120	9	0902	
120–125	10	0904	sandstone, light grey (5Y7/1), very fine grained.
125–135	11	0914	limestone, grey (5Y6/1).
135–145	12	0917	sandstone, grey (5Y6/1), fine grained.
145–150	13	0918	limestone, grey (5Y6/1).
150–170	14	0932	sandstone, pale yellow (2.5Y7/4), very fine grained.
170–185	15	0941	sandstone, light yellowish-brown (2.5Y6/4), fine grained.
185–190	16	0944	limestone, grey (5Y6/1).
190–195	17	0945	sandstone, light grey (5Y7/1), very fine grained.
195–205	18	0955	sandstone, pale yellow (2.5Y7/4), very fine grained.
205–210	19	0958	sandstone, light grey (5Y7/1),very fine grained.
210–215	20	1000	limestone, dark grey (5Y4/1).
215–220	21	1007	sandstone, light grey (5Y7/1), very fine grained.
220–230	22	1008	sandstone, pale yellow (2.5Y7/4), very fine grained.

Formation: Wells

Well Details

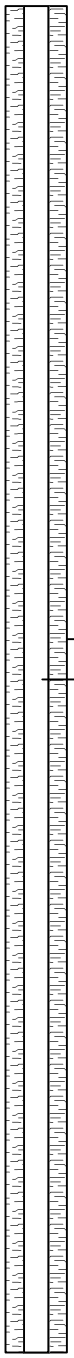
CONSTRUCTION DETAILS

Installation Date	:	7/23/07
Boring Total Depth (ft bgs)	:	335
Well Total Depth (ft bgs)	:	330
Casing Type	:	Sched. 80 PVC
Screen Slot Size	:	0.020
Screen Length (ft)	:	20
Screened Interval (ft bgs)	:	330-310
Sand Size at Screen	:	10x20
Primary Filter Interval (ft bgs)		335-310
Secondary Filter Interval	:	20x40 sand
(ft bgs)	:	305-300
Bentonite Seal (3/8" pellet)	:	300-290
Interval (ft bgs)	:	
Bentonite Seal (slurry)	:	290-0
Interval (ft bgs)	:	
Formation at Screen	:	Wells
Depth Water Encountered	:	315, 335
when Drilling (ft bgs)	:	
Sump	:	332-330
Drill Shoe Burial	:	N/A
Backfill	:	N/A
Steel Casing Depth	:	N/A
(ft bgs)	:	
Pump Depth (ft bgs)	:	327
Pump Intake Depth (ft bgs)	:	N/A
Height of MP (ft ags)	:	3

SAMPLE DETAILS

Fall 07 Static Water Level (ft bgs)		263.7
Fall 07 Total Se (mg/L)	:	0.080

NOTES:
Bottom of borehole 335' below ground surface.



RECORD OF BOREHOLE: MMW006

P4 Production
Southeast Idaho Mine-Specific
Selenium Program

Project No. 1010076.011602

IDWR Tag No	: D0048733	Drilling Method / Rig	: Air Rotary / Atlas Copco TH-60
Drilling Date(s)	: 7/21/07 to 7/22/07	Drilled By	: J. Arfman (Boart Longyear)
Latitude	: 42 49 20.0	Logged By	: D. Brame (MWH)
Longitude	: 111 29 23.0	Installed By	: R. Chipman (Boart Longyear)
Elevation (ft)	: 6499.6	Suveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
230–235	23	1010	limestone, grey (5Y6/1).	Wells
235–240	24	1024	sandstone, light grey(5Y7/1), very fine grained.	Wells
240–245	25	1028	sandstone, pale yellow (2.5Y7/4), very fine grained.	Wells
245–250	26	1030	sandstone, light grey (5Y7/1), very fine grained.	Wells
250–255	27	1041	sandstone, pale yellow (2.5Y7/4), very fine grained.	Wells
255–260	28	1053	sandstone, pale yellow (2.5Y7/4) and light grey (5Y7/1), very fine grained.	Wells
260–265				Wells
265–270				Wells
270–275				Wells
275–280				Wells
280–285	29	1103	sandstone, pale yellow (2.5Y7/4), very fine grained.	Wells
285–290	30	1259	sandstone, light grey (5Y7/1), very fine grained.	Wells
290–295				Wells
295–300				Wells
300–305				Wells
305–310				Wells
310–315	31	1301	sandstone, pale yellow (2.5Y7/4), fine grained.	Wells
315–320	32	1315	sandstone, light grey (5Y7/1), very fine grained.	Wells
320–325	33	1320	sandstone, pale yellow (2.5Y7/4) and light grey (5Y7/1), fine grained.	Wells
325–330				Wells
330–335				Wells
335–340				
340–345				

Well Details

CONSTRUCTION DETAILS

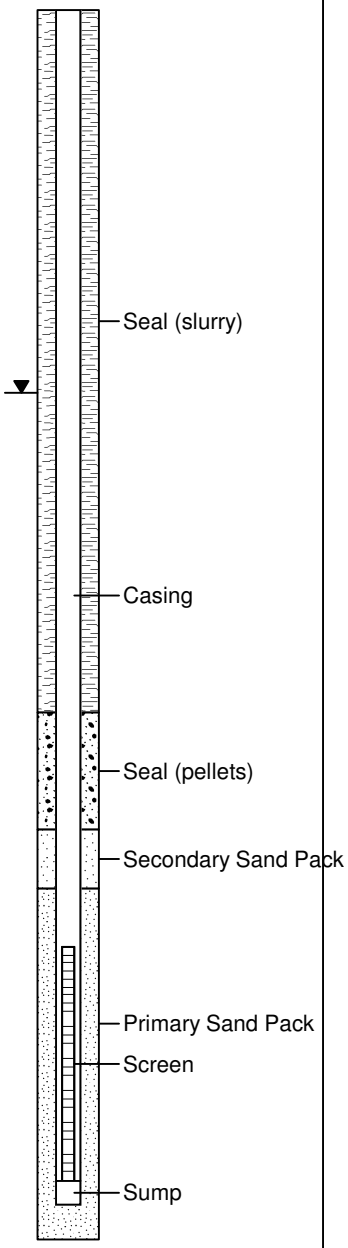
Installation Date	7/23/07
Boring Total Depth (ft bgs)	335
Well Total Depth (ft bgs)	330
Casing Type	Sched. 80 PVC
Screen Slot Size	0.020
Screen Length (ft)	20
Screened Interval (ft bgs)	330-310
Sand Size at Screen	10x20
Primary Filter Interval (ft bgs)	335-310
Secondary Filter Interval	20x40 sand
(ft bgs)	305-300
Bentonite Seal (3/8" pellet)	300-290
Interval (ft bgs)	
Bentonite Seal (slurry)	290-0
Interval (ft bgs)	
Formation at Screen	Wells
Depth Water Encountered	315, 335
when Drilling (ft bgs)	
Sump	332-330
Drill Shoe Burial	N/A
Backfill	N/A
Steel Casing Depth	N/A
(ft bgs)	
Pump Depth (ft bgs)	327
Pump Intake Depth (ft bgs)	N/A
Height of MP (ft ags)	3

SAMPLE DETAILS

Fall 07 Static Water Level (ft bgs)	263.7
Fall 07 Total Se (mg/L)	0.080

NOTES:
Bottom of borehole 335' below ground surface.

Well: MMW006
Elev.: 6499.6 ft



RECORD OF BOREHOLE: MMW007

P4 Production
Southeast Idaho Mine-Specific
Selenium Program

Project No. 1010076.011602

IDWR Tag No	: D0048721	Drilling Method / Rig	: Air Rotary / Atlas Copco TH-60
Drilling Date(s)	: 8/14/07	Drilled By	: J. Arfman (Boart Longyear)
Latitude	: 42 51 48.5	Logged By	: B. Eloff (MWH)
Longitude	: 111 23 29.8	Installed By	: R. Chipman (Boart Longyear)
Elevation (ft)	: not surveyed	Suveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0–40	1, 2, 3		sandy clay (SC), dark yellowish-brown (10YR4/6), damp, fine sand. at 10' becomes yellowish brown (10YR5/6). at 15' becomes slightly moist. gravelly clay (CL), yellowish brown (10YR5/6), fine gravel, angular, trace of fine to coarse sand.	Alluvium
40–85	4		sandy clay (CL), dark yellowish-brown (10YR4/6).	Alluvium
85–90	5		siltstone (Dinwoody Fm), black, finely laminated. 86'-88' soft to hard drilling based on driller report.	Dinwoody

Well Details

CONSTRUCTION DETAILS

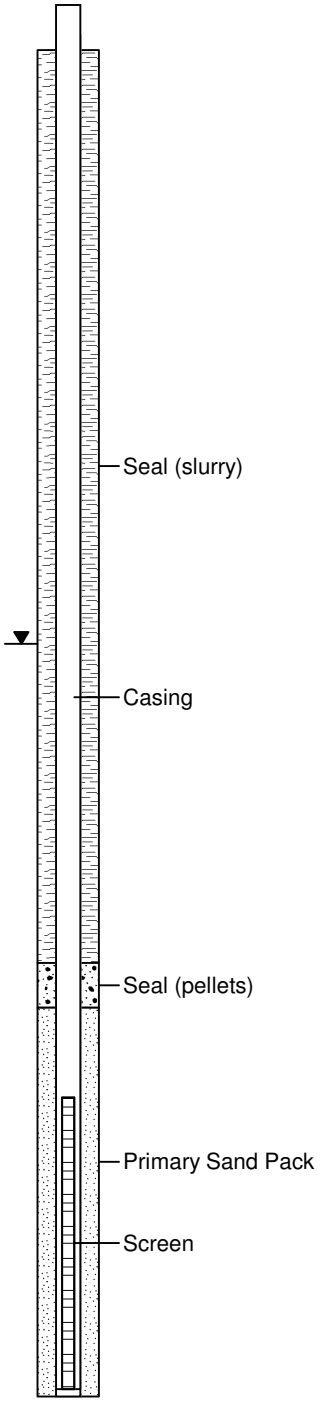
Installation Date	8/23/07
Boring Total Depth (ft bgs)	90
Well Total Depth (ft bgs)	89.5
Casing Type	Sched. 40 PVC
Screen Slot Size	0.010
Screen Length (ft)	20
Screened Interval (ft bgs)	90-70
Sand Size at Screen	16x30
Primary Filter Interval (ft bgs)	90-64
Secondary Filter Interval (ft bgs)	N/A
Bentonite Seal (3/8" pellet) Interval (ft bgs)	64-61
Bentonite Seal (slurry) Interval (ft bgs)	61-0
Formation at Screen	Alluv. (sandy clay), D.woody
Depth Water Encountered when Drilling (ft bgs)	88
Sump	N/A
Drill Shoe Burial	N/A
Backfill	N/A
Steel Casing Depth (ft bgs)	N/A
Pump Depth (ft bgs)	87
Pump Intake Depth (ft bgs)	N/A
Height of MP (ft ags)	3

SAMPLE DETAILS

Fall 07 Static Water Level (ft bgs)	40.7
Fall 07 Total Se (mg/L)	0.0020

NOTES:
Bottom of borehole at 90' below ground surface.

Well: MMW007
Elev.: not surveyed



RECORD OF BOREHOLE: MMW008

P4 Production
Southeast Idaho Mine-Specific
Selenium Program

Project No. 1010076.011602

IDWR Tag No	: D0048722	Drilling Method / Rig	: Air Rotary / Atlas Copco TH-60
Drilling Date(s)	: 8/21/07	Drilled By	: J. Arfman (Boart Longyear)
Latitude	: 42 51 48.6	Logged By	: T. Adams (MWH)
Longitude	: 111 23 29.8	Installed By	: R. Chipman (Boart Longyear)
Elevation (ft)	: not surveyed	Suveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0–5	1	1025	silty clay (CL), med. brown (10YR5/3), moderate to very firm, highly plastic.	Alluvium
5–10	2	1033	sandy silty clay (CL), med. brown (10YR6/3), moderately firm to firm, highly plastic, no reaction with HCl.	Alluvium
15–20	3	1107	silty clay (CL), light yellowish-brown (10YR6/4), slightly to moderately firm.	Alluvium
20–25	4	1109	silty clay (CL), pale brown (10YR6/3).	Alluvium
25–45	5	1224	sandy clay (CL), very pale brown (10YR7/4) sand is very course and angular.	Alluvium
45–50	6	1229	gravel (GP), dark grey (10YR4/1).	Alluvium
50–55	7	1232	sandy clay (CL), very pale brown (10YR7/4), sand is coarse grained and angular.	Alluvium
55–60	8	1235	gravel (GP), pale brown (10YR6/3), gravel is sub-rounded.	Alluvium
60–70	9	1303	clayey gravel (GC), very pale brown (10YR7/4), sand is course grained and sub-angular.	Alluvium
70–95	10	1336	gravel (GP), grey (10YR5/1), trace of clay.	Alluvium
95–100			gravelly clay (CL), pale brown (10YR6/3).	Alluvium

Well Details

CONSTRUCTION DETAILS

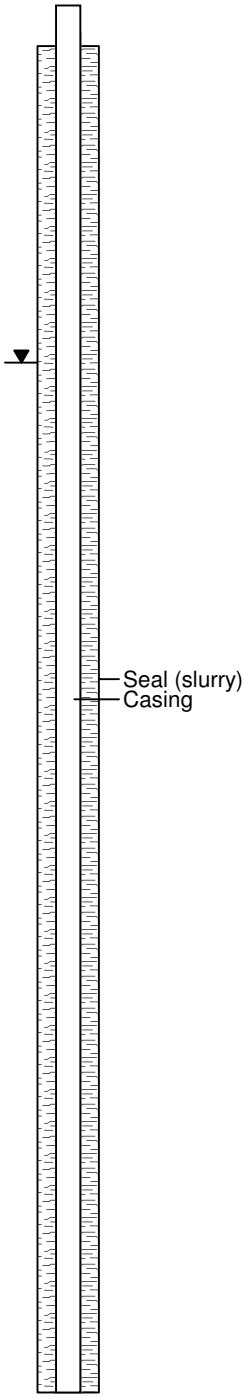
Installation Date	:	8/25/07
Boring Total Depth (ft bgs)	:	204
Well Total Depth (ft bgs)	:	198
Casing Type	:	Sched. 80 PVC
Screen Slot Size	:	0.010
Screen Length (ft)	:	20
Screened Interval (ft bgs)	:	197-177
Sand Size at Screen	:	16x30
Primary Filter Interval (ft bgs)		197-170
Secondary Filter Interval (ft bgs)	:	N/A
Bentonite Seal (3/8" pellet) Interval (ft bgs)	:	170-160
Bentonite Seal (slurry) Interval (ft bgs)	:	160-0
Formation at Screen	:	Alluvium and D.woody
Depth Water Encountered when Drilling (ft bgs)	:	160,175
Sump	:	N/A
Drill Shoe Burial	:	204-197 (16x30 sand)
Backfill	:	N/A
Steel Casing Depth (ft bgs)	:	N/A
Pump Depth (ft bgs)	:	197
Pump Intake Depth (ft bgs)	:	N/A
Height of MP (ft ags)	:	3

SAMPLE DETAILS

Fall 07 Static Water Level (ft bgs)		24.5
Fall 07 Total Se (mg/L)	:	<0.0010

NOTES:
Bottom of borehole 198' below grand surface.

Well: MMW008
Elev.: not surveyed



RECORD OF BOREHOLE: MMW008

P4 Production
Southeast Idaho Mine-Specific
Selenium Program

Project No. 1010076.011602

IDWR Tag No	: D0048722	Drilling Method / Rig	: Air Rotary / Atlas Copco TH-60
Drilling Date(s)	: 8/21/07	Drilled By	: J. Arfman (Boart Longyear)
Latitude	: 42 51 48.6	Logged By	: T. Adams (MWH)
Longitude	: 111 23 29.8	Installed By	: R. Chipman (Boart Longyear)
Elevation (ft)	: not surveyed	Suveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Well: MMW008
Elev.: not surveyed

Depth in Feet	Sample	Time	DESCRIPTION	Formation
100–115	11	1349		Alluvium
115–130	12	1406	clayey gravel (GC), yellowish brown (10YR5/4), sand is course grained and sub-angular.	Alluvium
130–180	13	1510	siltstone, light olive brown (2.5Y5/4), finely laminated.	Dinwoody
180–190	14	1738	siltstone, pale yellow (2.5Y7/4), finely laminated.	Dinwoody
190–200	15		siltstone, dark olive brown (2.5Y3/3), finely laminated.	Dinwoody

Well Details

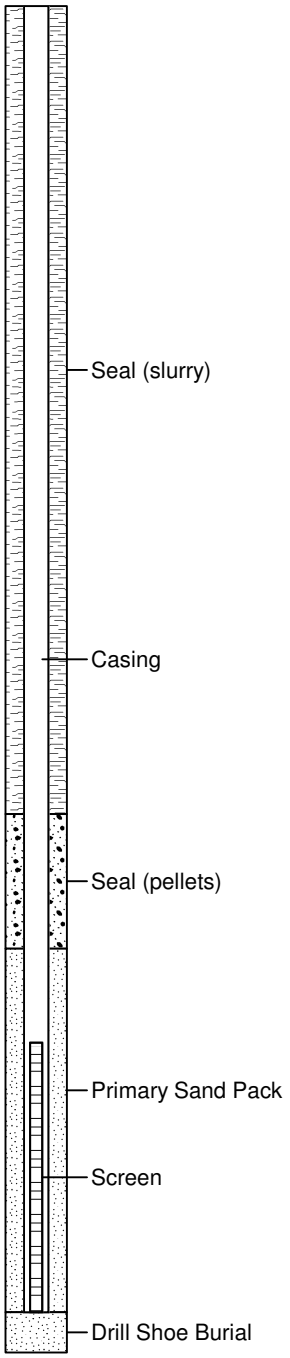
CONSTRUCTION DETAILS

Installation Date	8/25/07
Boring Total Depth (ft bgs)	204
Well Total Depth (ft bgs)	198
Casing Type	Sched. 80 PVC
Screen Slot Size	0.010
Screen Length (ft)	20
Screened Interval (ft bgs)	197-177
Sand Size at Screen	16x30
Primary Filter Interval (ft bgs)	197-170
Secondary Filter Interval (ft bgs)	N/A
Bentonite Seal (3/8" pellet) Interval (ft bgs)	170-160
Bentonite Seal (slurry) Interval (ft bgs)	160-0
Formation at Screen	Alluvium and D.woody
Depth Water Encountered when Drilling (ft bgs)	160,175
Sump	N/A
Drill Shoe Burial	204-197 (16x30 sand)
Backfill	N/A
Steel Casing Depth (ft bgs)	N/A
Pump Depth (ft bgs)	197
Pump Intake Depth (ft bgs)	N/A
Height of MP (ft ags)	3

SAMPLE DETAILS

Fall 07 Static Water Level (ft bgs)	24.5
Fall 07 Total Se (mg/L)	<0.0010

NOTES:
Bottom of borehole 198' below grand surface.



RECORD OF BOREHOLE: MMW009

P4 Production
Southeast Idaho Mine-Specific
Selenium Program

Project No. 1010076.011602

IDWR Tag No	: D0048723	Drilling Method / Rig	: Air Rotary / Atlas Copco TH-60
Drilling Date(s)	: 9/29-9/30/07, 10/8-10/12/07	Drilled By	: J. Arfman (Boart Longyear)
Latitude	: not surveyed	Logged By	: D. Brame (MWH)
Longitude	: not surveyed	Installed By	: R. Chipman (Boart Longyear)
Elevation (ft)	: not surveyed	Suveyed By	: not surveyed

Water Levels
▼ Water Level Before Sampling
▽ N/A

Well: MMW009
Elev.: not surveyed

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0–20			clayey gravel (GC), greyish brown.	Waste Rock
20–35			gravel (GP), dark grey.	Waste Rock
35–45			gravel (GP), multi colored, gravel is predominantly fine.	Waste Rock
45–55			gravel (GP), dark grey, becomes clayey at 50' and finer.	Waste Rock
55–80			gravelly clay (CL), moderate yellowish brown to dark yellowish brown, gravel is fine. contains some very coarse sand.	Waste Rock
80–90			gravel (GP), with trace of clay, yellowish grey to olive grey. gravel is fine.	Waste Rock
90–145			interbedded mudstone, sandstone, siltstone and chert. black to grey-brown.	Phosphoria

Well Details

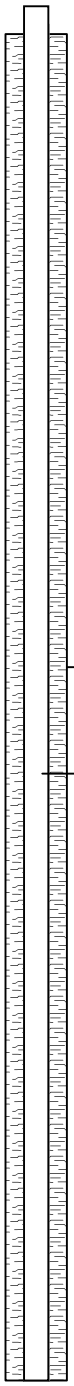
CONSTRUCTION DETAILS

Installation Date	:	10/26/07
Boring Total Depth (ft bgs)	:	563
Well Total Depth (ft bgs)	:	554
Casing Type	:	Sched. 80 PVC
Screen Slot Size	:	0.010
Screen Length (ft)	:	5
Screened Interval (ft bgs)	:	554-549
Sand Size at Screen	:	20x40
Primary Filter Interval (ft bgs)		554-546
Secondary Filter Interval (ft bgs)	:	N/A
Bentonite Seal (3/8" pellet) Interval (ft bgs)	:	546-536
Bentonite Seal (slurry) Interval (ft bgs)	:	536-0
Formation at Screen	:	Wells
Depth Water Encountered when Drilling (ft bgs)	:	150
Sump	:	N/A
Drill Shoe Burial (ft bgs)	:	Pellets 563-559
	:	20x40 sand 559-554
Backfill	:	N/A
Permanant Steel Casing Depth		360 ft bgs
Pump Depth (ft bgs)	:	360
Pump Intake Depth (ft bgs)	:	N/A
Height of MP (ft ags)	:	3

SAMPLE DETAILS

Fall 07 Static Water Level (ft bgs)		209
Fall 07 Total Se (mg/L)	:	0.0010

NOTES:
Bottom of borehole at 563' below ground surface.



RECORD OF BOREHOLE: MMW009

P4 Production
Southeast Idaho Mine-Specific
Selenium Program

Project No. 1010076.011602

IDWR Tag No	: D0048723	Drilling Method / Rig	: Air Rotary / Atlas Copco TH-60
Drilling Date(s)	: 9/29-9/30/07, 10/8-10/12/07	Drilled By	: J. Arfman (Boart Longyear)
Latitude	: not surveyed	Logged By	: D. Brame (MWH)
Longitude	: not surveyed	Installed By	: R. Chipman (Boart Longyear)
Elevation (ft)	: not surveyed	Suveyed By	: not surveyed

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet | Sample | Time | DESCRIPTION | Formation | Well Details

Well: MMW009
Elev.: not surveyed

145, 150, 155, 160, 165, 170, 175, 180, 185, 190, 195, 200, 205, 210, 215, 220, 225, 230, 235, 240, 245, 250, 255, 260, 265, 270, 275, 280, 285, 290

Phosphoria

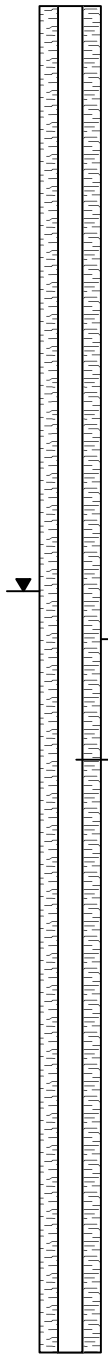
CONSTRUCTION DETAILS

Installation Date	:	10/26/07
Boring Total Depth (ft bgs)	:	563
Well Total Depth (ft bgs)	:	554
Casing Type	:	Sched. 80 PVC
Screen Slot Size	:	0.010
Screen Length (ft)	:	5
Screened Interval (ft bgs)	:	554-549
Sand Size at Screen	:	20x40
Primary Filter Interval (ft bgs)		554-546
Secondary Filter Interval (ft bgs)	:	N/A
Bentonite Seal (3/8" pellet) Interval (ft bgs)	:	546-536
Bentonite Seal (slurry) Interval (ft bgs)	:	536-0
Formation at Screen	:	Wells
Depth Water Encountered when Drilling (ft bgs)	:	150
Sump	:	N/A
Drill Shoe Burial (ft bgs)	:	Pellets 563-559
	:	20x40 sand 559-554
Backfill	:	N/A
Permanant Steel Casing Depth		360 ft bgs
Pump Depth (ft bgs)	:	360
Pump Intake Depth (ft bgs)	:	N/A
Height of MP (ft ags)	:	3

SAMPLE DETAILS

Fall 07 Static Water Level (ft bgs)		209
Fall 07 Total Se (mg/L)	:	0.0010

NOTES:
Bottom of borehole at 563' below ground surface.



RECORD OF BOREHOLE: MMW009

P4 Production
Southeast Idaho Mine-Specific
Selenium Program

Project No. 1010076.011602

IDWR Tag No	: D0048723	Drilling Method / Rig	: Air Rotary / Atlas Copco TH-60
Drilling Date(s)	: 9/29-9/30/07, 10/8-10/12/07	Drilled By	: J. Arfman (Boart Longyear)
Latitude	: not surveyed	Logged By	: D. Brame (MWH)
Longitude	: not surveyed	Installed By	: R. Chipman (Boart Longyear)
Elevation (ft)	: not surveyed	Suveyed By	: not surveyed

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet | Sample | Time | DESCRIPTION | Formation | Well Details

Well: MMW009
Elev.: not surveyed

290 295 300 305 310 315 320 325 330 335 340 345 350 355 360 365 370 375 380 385 390 395 400 405 410 415 420 425 430 435

Phosphoria

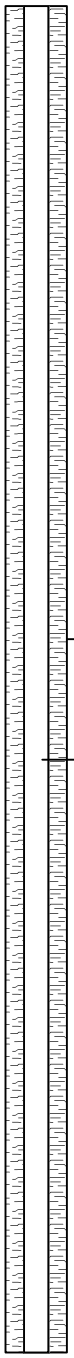
CONSTRUCTION DETAILS

Installation Date	:	10/26/07
Boring Total Depth (ft bgs)	:	563
Well Total Depth (ft bgs)	:	554
Casing Type	:	Sched. 80 PVC
Screen Slot Size	:	0.010
Screen Length (ft)	:	5
Screened Interval (ft bgs)	:	554-549
Sand Size at Screen	:	20x40
Primary Filter Interval (ft bgs)		554-546
Secondary Filter Interval (ft bgs)	:	N/A
Bentonite Seal (3/8" pellet) Interval (ft bgs)	:	546-536
Bentonite Seal (slurry) Interval (ft bgs)	:	536-0
Formation at Screen	:	Wells
Depth Water Encountered when Drilling (ft bgs)	:	150
Sump	:	N/A
Drill Shoe Burial (ft bgs)	:	Pellets 563-559
	:	20x40 sand 559-554
Backfill	:	N/A
Permanant Steel Casing Depth		360 ft bgs
Pump Depth (ft bgs)	:	360
Pump Intake Depth (ft bgs)	:	N/A
Height of MP (ft ags)	:	3

SAMPLE DETAILS

Fall 07 Static Water Level (ft bgs)		209
Fall 07 Total Se (mg/L)	:	0.0010

NOTES:
Bottom of borehole at 563' below ground surface.



RECORD OF BOREHOLE: MMW009

P4 Production
Southeast Idaho Mine-Specific
Selenium Program

Project No. 1010076.011602

IDWR Tag No	: D0048723	Drilling Method / Rig	: Air Rotary / Atlas Copco TH-60
Drilling Date(s)	: 9/29-9/30/07, 10/8-10/12/07	Drilled By	: J. Arfman (Boart Longyear)
Latitude	: not surveyed	Logged By	: D. Brame (MWH)
Longitude	: not surveyed	Installed By	: R. Chipman (Boart Longyear)
Elevation (ft)	: not surveyed	Suveyed By	: not surveyed

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet | Sample | Time | DESCRIPTION | Formation | Well Details

Well: MMW009
Elev.: not surveyed

435, 440, 445, 450, 455, 460, 465, 470, 475, 480, 485, 490, 495, 500, 505, 510, 515, 520, 525, 530, 535, 540, 545, 550, 555, 560, 565, 570, 575, 580

Phosphoria

Wells

sandstone, light grey, fine grained.

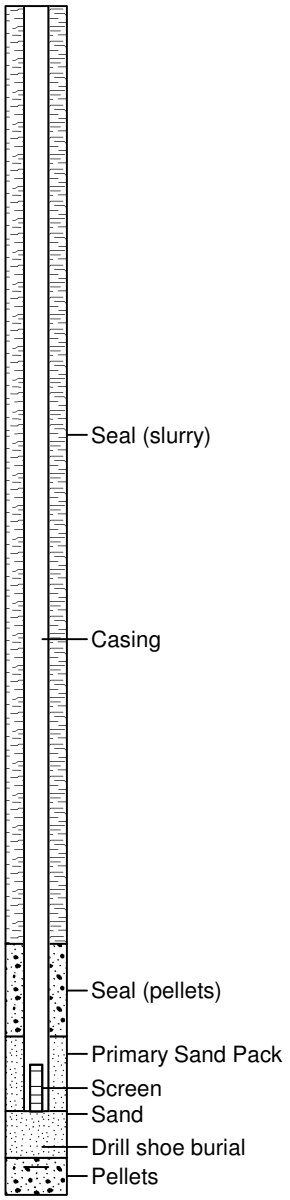
CONSTRUCTION DETAILS

Installation Date	:	10/26/07
Boring Total Depth (ft bgs)	:	563
Well Total Depth (ft bgs)	:	554
Casing Type	:	Sched. 80 PVC
Screen Slot Size	:	0.010
Screen Length (ft)	:	5
Screened Interval (ft bgs)	:	554-549
Sand Size at Screen	:	20x40
Primary Filter Interval (ft bgs)		554-546
Secondary Filter Interval (ft bgs)	:	N/A
Bentonite Seal (3/8" pellet) Interval (ft bgs)	:	546-536
Bentonite Seal (slurry) Interval (ft bgs)	:	536-0
Formation at Screen	:	Wells
Depth Water Encountered when Drilling (ft bgs)	:	150
Sump	:	N/A
Drill Shoe Burial (ft bgs)	:	Pellets 563-559 20x40 sand 559-554
Backfill	:	N/A
Permanant Steel Casing Depth		360 ft bgs
Pump Depth (ft bgs)	:	360
Pump Intake Depth (ft bgs)	:	N/A
Height of MP (ft ags)	:	3

SAMPLE DETAILS

Fall 07 Static Water Level (ft bgs)		209
Fall 07 Total Se (mg/L)	:	0.0010

NOTES:
Bottom of borehole at 563' below ground surface.



RECORD OF BOREHOLE: MMW010

P4 Production
Southeast Idaho Mine-Specific
Selenium Program

Project No. 1010076.011602

IDWR Tag No	: D0048727	Drilling Method / Rig	: Air Rotary / Atlas Copco TH-60
Drilling Date(s)	: 8/29/07	Drilled By	: J. Arfman (Boart Longyear)
Latitude	: 42 52 22.3	Logged By	: D. Brame (MWH)
Longitude	: 111 27 51.3	Installed By	: R. Chipman (Boart Longyear)
Elevation (ft)	: not surveyed	Suveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0–5	1	1423	sandy clay (CL), dark reddish brown (10YR5/3).	Alluvium
5–10	2	1425	silty clay/clayey silt (CL/ML), dark reddish brown (10YR5/3).	Alluvium
10–35	3	1605	clay (CL), light brown (10YR5/4).	Alluvium

Well Details

CONSTRUCTION DETAILS

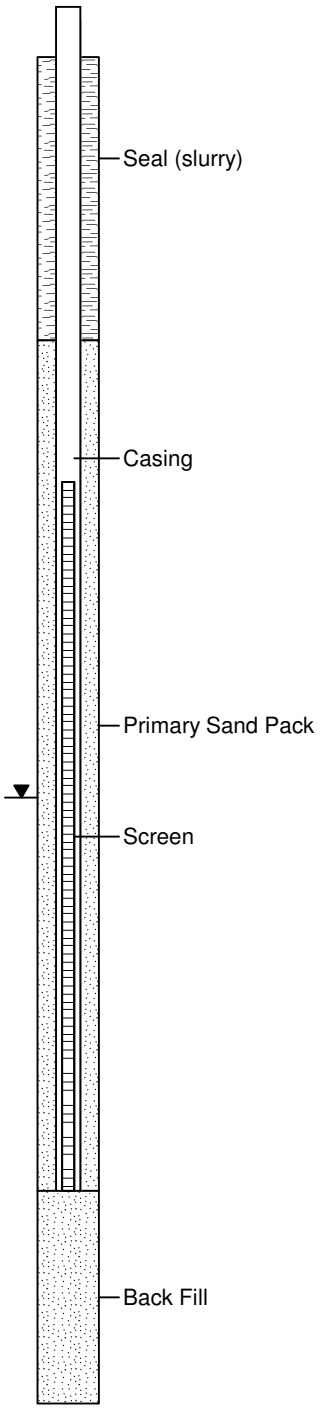
Installation Date	:	9/9/07
Boring Total Depth (ft bgs)	:	38
Well Total Depth (ft bgs)	:	32
Casing Type	:	Sched. 40 PVC
Screen Slot Size	:	0.010
Screen Length (ft)	:	20
Screened Interval (ft bgs)	:	32-12
Sand Size at Screen	:	20x40
Primary Filter Interval (ft bgs)		32-8
Secondary Filter Interval (ft bgs)	:	N/A
Bentonite Seal (3/8" pellet) Interval (ft bgs)	:	N/A
Bentonite Seal (slurry) Interval (ft bgs)	:	8-0
Formation at Screen	:	Alluvium (clay)
Depth Water Encountered when Drilling (ft bgs)	:	17
Sump	:	
Drill Shoe Burial	:	N/A
Backfill	:	20x40 sand from 38-32 ft
Steel Casing Depth (ft bgs)	:	N/A
Pump Depth (ft bgs)	:	29
Pump Intake Depth (ft bgs)	:	N/A
Height of MP (ft ags)	:	3

SAMPLE DETAILS

Fall 07 Static Water Level (ft bgs)		21.9
Fall 07 Total Se (mg/L)	:	<0.0010

NOTES:
Bottom of borehole at 38' below ground surface.

Well: MMW010
Elev.: not surveyed



RECORD OF BOREHOLE: MMW0011B

P4 Production
Southeast Idaho Mine-Specific
Selenium Program

Project No. 1010076.011602

IDWR Tag No	: D0048728	Drilling Method / Rig	: Air Rotary / Atlas Copco TH-60
Drilling Date(s)	: 7/31/07	Drilled By	: J. Arfman (Boart Longyear)
Latitude	: 42 53 48.3	Logged By	: B. Eloff (MWH)
Longitude	: 111 29 30.0	Installed By	: R. Chipman (Boart Longyear)
Elevation (ft)	: not surveyed	Suveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet | Sample | Time | DESCRIPTION | Formation | Well Details

0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 105, 110, 115, 120

limestone, bluish grey, and sandstone, yellowish-brown, fine grained.

sandstone, yellowish brown to yellowish grey (5Y7/2), fine grained.

calcareous cement with calcite infilling along cross-bedded bedding planes, highly fractured.

limestone, pale, yellowish brown (10YR6/12).

sandstone, yellowish grey (5Y7/2).

sandstone, yellowish grey (5Y7/2), fine grained. poorly cemented. contains fractures between 60' and 70'.

sandstone, yellowish grey (5Y7/2), medium grained. contains quartz grains.

Formation: Wells

CONSTRUCTION DETAILS

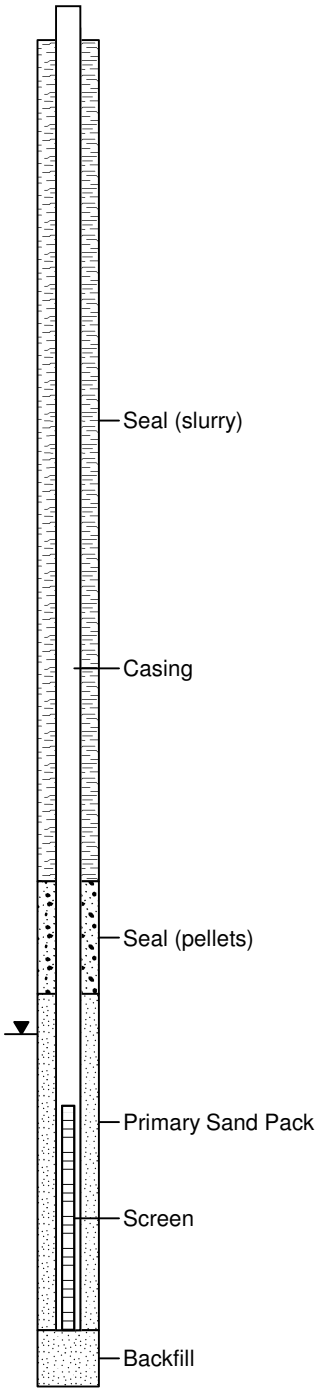
Installation Date	:	9/8/07
Boring Total Depth (ft bgs)	:	120
Well Total Depth (ft bgs)	:	115
Casing Type	:	Sched. 80 PVC
Screen Slot Size	:	0.010
Screen Length (ft)	:	20
Screened Interval (ft bgs)	:	115-95
Sand Size at Screen	:	20x40
Primary Filter Interval (ft bgs)		115-85
Secondary Filter Interval (ft bgs)	:	N/A
Bentonite Seal (3/8" pellet) Interval (ft bgs)	:	85-75
Bentonite Seal (slurry) Interval (ft bgs)	:	75-0
Formation at Screen	:	Wells
Depth Water Encountered when Drilling (ft bgs)	:	101
Sump	:	N/A
Drill Shoe Burial	:	N/A
Backfill (ft bgs)	:	20x40 sand 120-115
Pump Depth (ft bgs)	:	112
Pump Intake Depth (ft bgs)	:	N/A
Height of MP (ft ags)	:	3

SAMPLE DETAILS

Fall 07 Static Water Level (ft bgs)		89.6
Fall 07 Total Se (mg/L)	:	<0.0010

NOTES:
Bottom of borehole at 120' below ground surface.

Well: MMW0011B
Elev.: not surveyed



RECORD OF BOREHOLE: MMW012

P4 Production
Southeast Idaho Mine-Specific
Selenium Program

Project No. 1010076.011602

IDWR Tag No	: D0048724	Drilling Method / Rig	: Air Rotary / Atlas Copco TH-60
Drilling Date(s)	: 8/13/07	Drilled By	: J. Arfman (Boart Longyear)
Northing	: not surveyed	Logged By	: B. Eloff (MWH)
Easting	: not surveyed	Installed By	: R. Chipman (Boart Longyear)
Elevation (ft)	: not surveyed	Suveyed By	: not surveyed

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0–5	1		sandy clay (CL), light yellowish-brown (10 YR6/4), fine sand.	Alluvium
10	2		quartzite boulder, grey (10YR5/1), dark yellowish-brown with grey (10YR4/6), semi metallic luster.	Alluvium
15–20	3		sandy clay (CL), dark yellowish brown (10YR4/6), fine sand.	Alluvium
25–30	4		sandy clay (CL), dark olive grey (5Y3/2).	Alluvium
35	5		basalt boulder, black.	Alluvium
40–55	6		siltstone, olive (5Y5/4), finely laminated.	Dinwoody

Well Details

CONSTRUCTION DETAILS

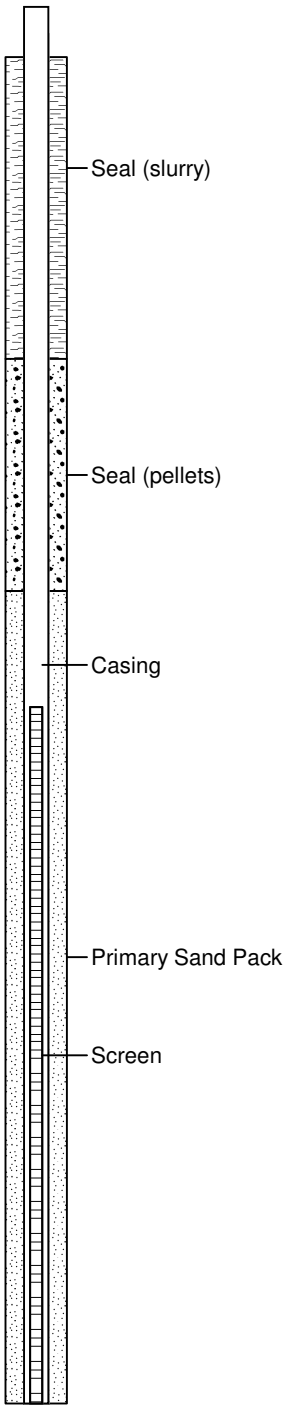
Installation Date	:	8/28/07
Boring Total Depth (ft bgs)	:	58
Well Total Depth (ft bgs)	:	58
Casing Type	:	Sched. 40 PVC
Screen Slot Size	:	0.010
Screen Length (ft)	:	30
Screened Interval (ft bgs)	:	58-28
Sand Size at Screen	:	20x40
Primary Filter Interval (ft bgs)		58-23
Secondary Filter Interval (ft bgs)	:	N/A
Bentonite Seal (3/8" pellet) Interval (ft bgs)	:	23-13
Bentonite Seal (slurry) Interval (ft bgs)	:	13-0
Formation at Screen	:	Alluvium and Dinwoody
Depth Water Encountered when Drilling (ft bgs)	:	Dinwoody Contact at 60
Sump	:	N/A
Drill Shoe Burial	:	N/A
Backfill	:	N/A
Steel Casing Depth (ft bgs)	:	N/A
Pump Depth (ft bgs)	:	55
Pump Intake Depth (ft bgs)	:	N/A
Height of MP (ft ags)	:	3

SAMPLE DETAILS

Fall 07 Static Water Level (ft bgs)		Dry
Fall 07 Total Se (mg/L)	:	NS

NOTES:
Bottom of borehole at 58' below ground surface.

Well: MMW012
Elev.: not surveyed



RECORD OF BOREHOLE: MMW013

P4 Production
Southeast Idaho Mine-Specific
Selenium Program

Project No. 1010076.011602

IDWR Tag No	: D0048724	Drilling Method / Rig	: Air Rotary / Atlas Copco TH-60
Drilling Date(s)	: 8/11/07	Drilled By	: J. Arfman (Boart Longyear)
Latitude	: 42 52 05.7	Logged By	: B. Eloff (MWH)
Longitude	: 111 24 12.0	Installed By	: R. Chipman (Boart Longyear)
Elevation (ft)	: not surveyed	Suveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1		silty clay with gravel (CL), brown (10YR5/3).	Alluvium
5	2		siltstone, yellowish brown (10YR5/6), interbedded with greenish grey limestone (5GY6/1).	Dinwoody
10	3		siltstone, yellowish brown (10YR5/6).	Dinwoody
15	4		siltstone, light olive brown (2.5Y5/4), finely laminated, interbedded with greenish grey limestone (5GY6/1).	Dinwoody
20				
25	5		siltstone, light olive brown (2.5Y5/4), finely laminated.	Dinwoody
30			driller reported water at 1 gpm at 29' below ground surface.	
	6		siltstone, light olive brown (2.5Y5/4), finely laminated.	Dinwoody
35				

Well Details

CONSTRUCTION DETAILS

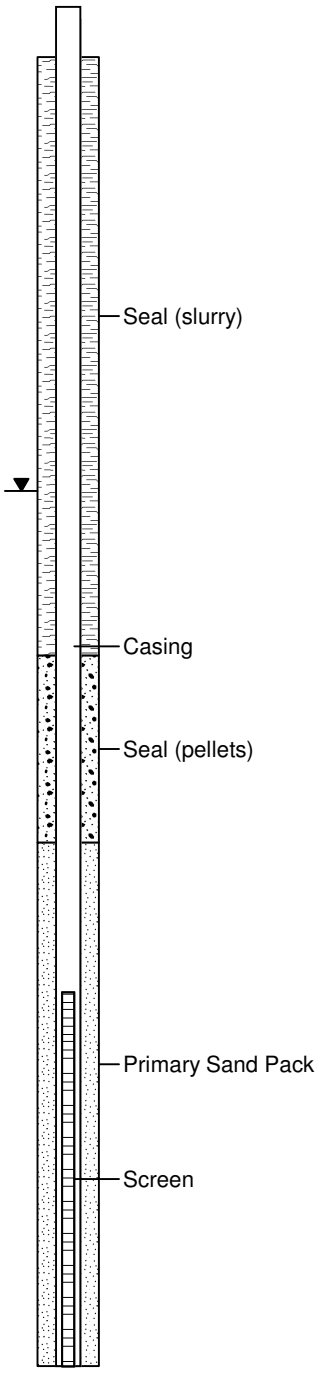
Installation Date	8/13/07
Boring Total Depth (ft bgs)	35
Well Total Depth (ft bgs)	35
Casing Type	Sched. 40 PVC
Screen Slot Size	0.020
Screen Length (ft)	10
Screened Interval (ft bgs)	35-25
Sand Size at Screen	10x20
Primary Filter Interval (ft bgs)	35-21
Secondary Filter Interval (ft bgs)	N/A
Bentonite Seal (3/8" pellet) Interval (ft bgs)	21-16
Bentonite Seal (slurry) Interval (ft bgs)	16-0
Formation at Screen	Dinwoody
Depth Water Encountered when Drilling (ft bgs)	29
Sump	N/A
Drill Shoe Burial	N/A
Backfill	N/A
Steel Casing Depth (ft bgs)	N/A
Pump Depth (ft bgs)	31
Pump Intake Depth (ft bgs)	N/A
Height of MP (ft ags)	3

SAMPLE DETAILS

Fall 07 Static Water Level (ft bgs)	12.6
Fall 07 Total Se (mg/L)	<0.0010

NOTES:
Bottom of borehole at 36' below ground surface.

Well: MMW013
Elev.: not surveyed



RECORD OF BOREHOLE: MMW014

P4 Production
Southeast Idaho Mine-Specific
Selenium Program

Project No. 1010076.011602

IDWR Tag No	: D0048729	Drilling Method / Rig	: Air Rotary / Atlas Copco TH-60
Drilling Date(s)	: 8/11/07	Drilled By	: J. Arfman (Boart Longyear)
Latitude	: 42 51 59.3	Logged By	: B. Eloff (MWH)
Longitude	: 111 27 05.2	Installed By	: R. Chipman (Boart Longyear)
Elevation (ft)	: not surveyed	Suveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0			sandy clay (CL), brown (10YR4/3), damp, fine sand.	Alluvium
5	1			
			driller reported water at 9'.	
10			silty clay (ML), brown (10YR4/3), moist to wet.	
			at 11:40 water was measured at 13.1'.	
			water at 14.6' in borehole.	
15			clay (CL), brown (10YR4/3), wet.	
	2			
20				

Well Details

CONSTRUCTION DETAILS

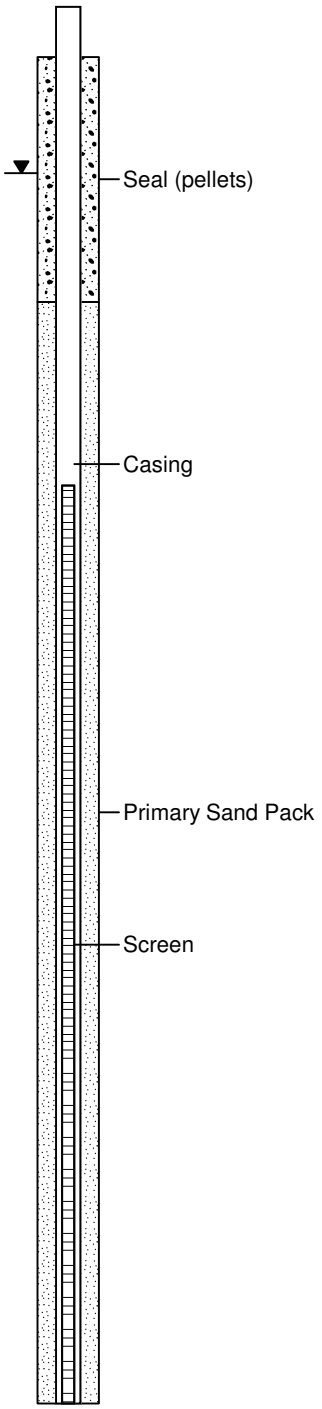
Installation Date	8/11/07
Boring Total Depth (ft bgs)	22
Well Total Depth (ft bgs)	22
Casing Type	Sched. 80 PVC
Screen Slot Size	0.010
Screen Length (ft)	15
Screened Interval (ft bgs)	22-7
Sand Size at Screen	20x40
Primary Filter Interval (ft bgs)	22-4
Secondary Filter Interval (ft bgs)	N/A
Bentonite Seal (3/8" pellet) Interval (ft bgs)	4-0
Bentonite Seal (slurry) Interval (ft bgs)	N/A
Formation at Screen	Alluvium (silty clay)
Depth Water Encountered when Drilling (ft bgs)	9
Sump	N/A
Drill Shoe Burial	N/A
Backfill	N/A
Steel Casing Depth (ft bgs)	N/A
Pump Depth (ft bgs)	18
Pump Intake Depth (ft bgs)	N/A
Height of MP (ft ags)	3

SAMPLE DETAILS

Fall 07 Static Water Level (ft bgs)	2.9
Fall 07 Total Se (mg/L)	<0.0010

NOTES:
Bottom of borehole at 22' below ground surface.

Well: MMW014
Elev.: not surveyed

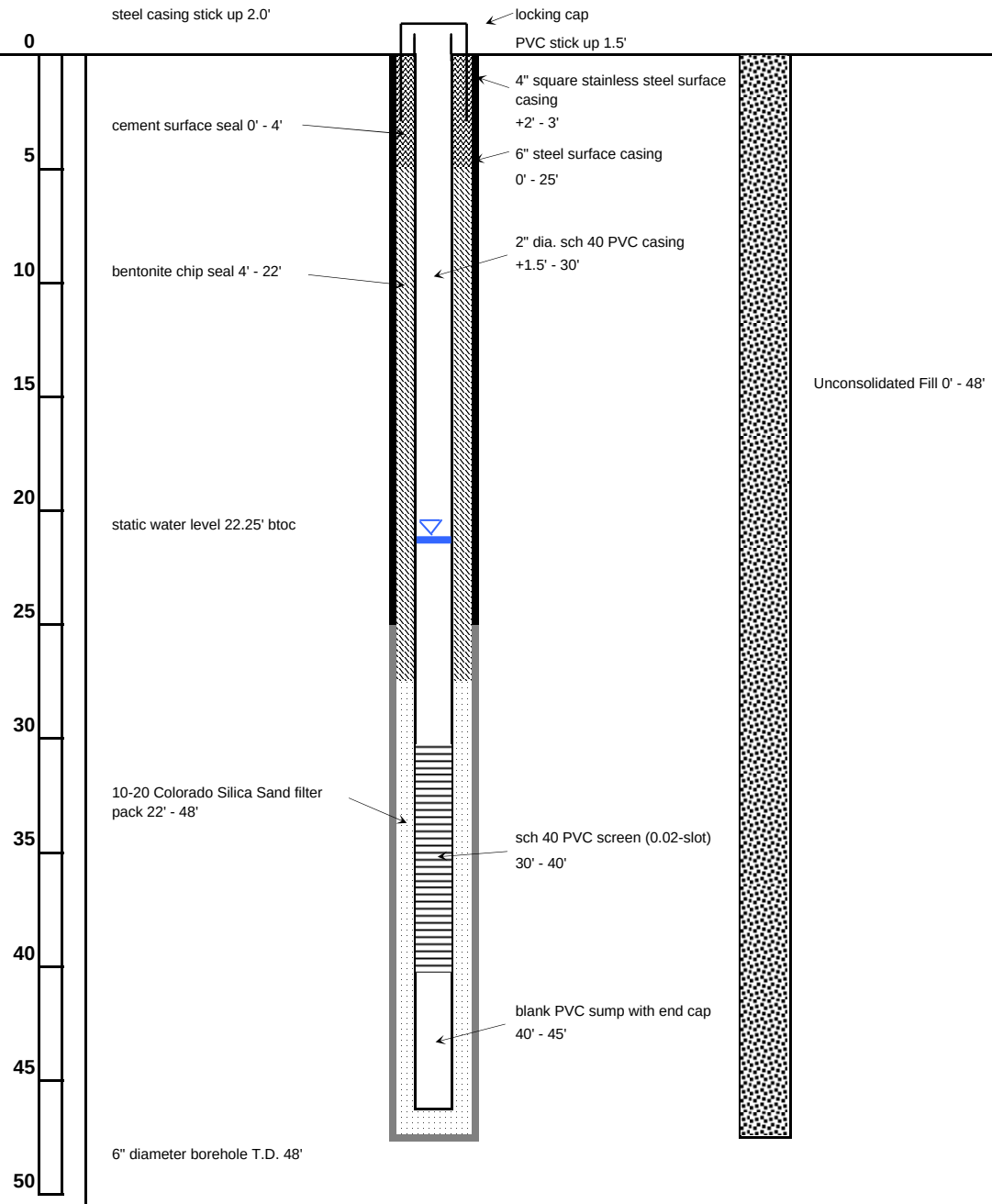


BLACKFOOT BRIDGE PROJECT

CONSTRUCTION DIAGRAM FOR MONITORING WELL MW-15A

Owner:	Monsanto	**Completion Date:**	11/9/2006
Northing:	423,580.11	**Driller:**	AK Drilling - Ramsey, Montana
Easting:	836,763.92	**Hydrogeologist:**	T. Anderson, Whetstone Associates
Ground Elevation:	6,364.41	**Screen Interval:**	30' - 40'
Casing Elevation:	6,365.91	**Formation:**	Unconsolidated Fill

Depth (feet)	Well Completion	Lithology



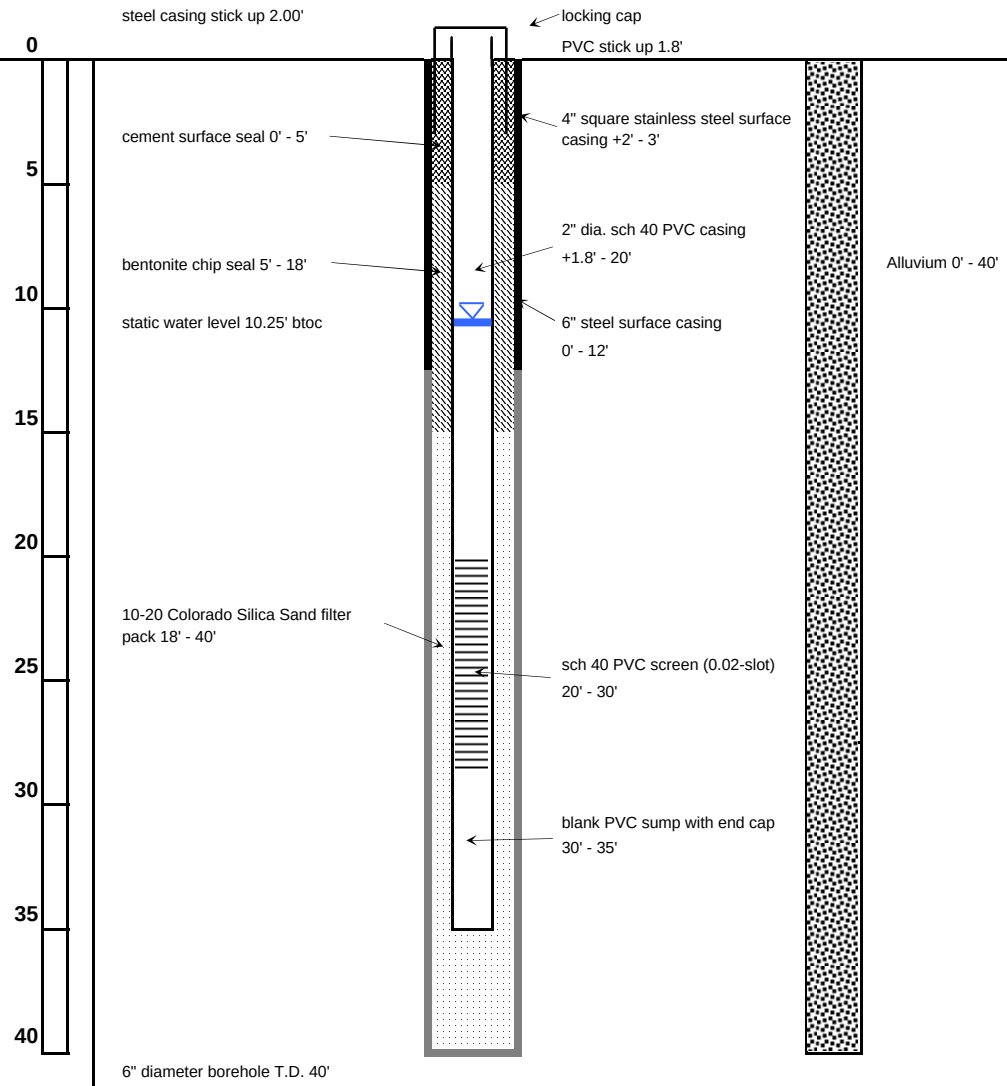
All depths below ground surface unless otherwise noted (not to scale)

BLACKFOOT BRIDGE PROJECT

CONSTRUCTION DIAGRAM FOR MONITORING WELL MW-16A

Owner:	Monsanto	**Completion Date:**	11/8/2006
Northing:	420,701.93	**Driller:**	AK Drilling - Ramsey, Montana
Easting:	838,024.32	**Hydrogeologist:**	T. Anderson, Whetstone Associates
Ground Elevation:	6,340.57	**Screen Interval:**	20' - 30'
Casing Elevation:	6,342.37	**Formation:**	Alluvium

Depth (feet)	Well Completion	Lithology



All depths below ground surface unless otherwise noted (not to scale)

RECORD OF BOREHOLE: MMW017A

P4 Production
Southeast Idaho Mine-Specific
Selenium Program

Project No. 1010076.011602

IDWR Tag No	: N/A	Drilling Method / Rig	: Air Rotary / Atlas Copco TH-60
Drilling Date(s)	: 7/26/07	Drilled By	: J. Arfman (Boart Longyear)
Latitude	: 42 49 59.6	Logged By	: D. Brame (MWH)
Longitude	: 111 29 47.4	Installed By	: R. Chipman (Boart Longyear)
Elevation (ft)	: 6315.2	Suveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Well: MMW017A
Elev.: N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0–5	1	1246	sandy clay (CL), greyish brown (10YR5/2), sand is very fine grained.	Alluvium
5–10	2	1311	sandy clay (CL), light brownish grey (10YR6/2), sand is very fine grained.	Alluvium
15–65	3	1410	sandy clay (CL), greyish brown (10YR5/2), sand is very fine grained.	Alluvium
65–70	4	1412	sandy clay (CL), greyish brown (10YR5/2), sand is very fine grained, contains grey boulder (10YR6/1) from 65'-67'.	Alluvium
70–115	5	1550	sandy clay (CL), greyish brown (10YR5/2), sand is very fine grained.	Alluvium

Well Details

CONSTRUCTION DETAILS

Installation Date :
Boring Total Depth (ft bgs):
Well Total Depth (ft bgs) :
Casing Type :
Screen Slot Size :
Screen Length (ft) :
Screened Interval (ft bgs) :
Sand Size at Screen :
Primary Filter Interval (ft bgs)
Secondary Filter Interval :
(ft bgs) :
Bentonite Seal (3/8" pellet):
Interval (ft bgs) :
Bentonite Seal (slurry) :
Interval (ft bgs) :
Formation at Screen :
Depth Water Encountered :
when Drilling (ft bgs) :
Sump :
Drill Shoe Burial :
Backfill :
Steel Casing Depth :
(ft bgs) :
Pump Depth (ft bgs) :
Pump Intake Depth (ft bgs):
Height of MP (ft ags) :

SAMPLE DETAILS

Fall 07 Static Water Level (ft bgs)
Fall 07 Total Se (mg/L) :

NOTES:
Bottom of borehole at 115' below ground surface.

Open Hole

RECORD OF BOREHOLE: MMW017B

P4 Production
Southeast Idaho Mine-Specific
Selenium Program

Project No. 1010076.011602

IDWR Tag No	: D0048734	Drilling Method / Rig	: Air Rotary / Atlas Copco TH-60
Drilling Date(s)	: 8/24/07	Drilled By	: J. Arfman (Boart Longyear)
Latitude	: 42 49 59.6	Logged By	: D. Brame (MWH)
Longitude	: 111 29 47.4	Installed By	: R. Chipman (Boart Longyear)
Elevation (ft)	: 6315.2	Suveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1		open from previous drilling. see log for MMW017A	Alluvium
25	2		sandy clay (CL), light brownish grey (10YR6/2), sand is very fine grained.	

Well Details

CONSTRUCTION DETAILS

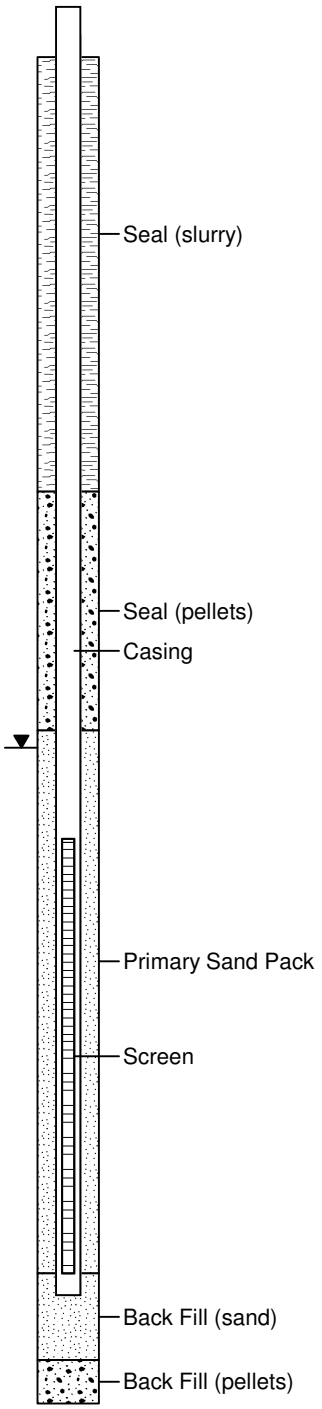
Installation Date	8/27/07
Boring Total Depth (ft bgs)	62
Well Total Depth (ft bgs)	57
Casing Type	Sched. 40 PVC
Screen Slot Size	0.010
Screen Length (ft)	20
Screened Interval (ft bgs)	56-36
Sand Size at Screen	20x40
Primary Filter Interval (ft bgs)	56-31
Secondary Filter Interval (ft bgs)	N/A
Bentonite Seal (3/8" pellet) Interval (ft bgs)	31-20
Bentonite Seal (slurry) Interval (ft bgs)	20-0
Formation at Screen	Alluv. (very fine sandy clay)
Depth Water Encountered when Drilling (ft bgs)	35
Sump	N/A
Drill Shoe Burial	N/A
Backfill	Pellets: 62-60, Sand: 60-56
Steel Casing Depth (ft bgs)	N/A
Pump Depth (ft bgs)	56
Pump Intake Depth (ft bgs)	N/A
Height of MP (ft ags)	3

SAMPLE DETAILS

Fall 07 Static Water Level (ft bgs)	32.8
Fall 07 Total Se (mg/L)	0.13

NOTES:
Bottom of borehole at 62' below ground surface.

Well: MMW017
Elev.: 6315.2



RECORD OF BOREHOLE: MMW018

P4 Production
Southeast Idaho Mine-Specific
Selenium Program

Project No. 1010076.011602

IDWR Tag No	: D0048735	Drilling Method / Rig	: Air Rotary / Atlas Copco TH-60
Drilling Date(s)	: 8/12/07	Drilled By	: J. Arfman (Boart Longyear)
Latitude	: 42 49 39.4	Logged By	: B. Eloff (MWH)
Longitude	: 111 28 04.5	Installed By	: R. Chipman (Boart Longyear)
Elevation (ft)	: not surveyed	Suveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1		sandy clay (CL), yellowish brown (10YR5/4), fine sand.	Alluvium
30	2		siltstone, light olive brown (2.5Y5/4), finely laminated.	Dinwoody

Well Details

CONSTRUCTION DETAILS

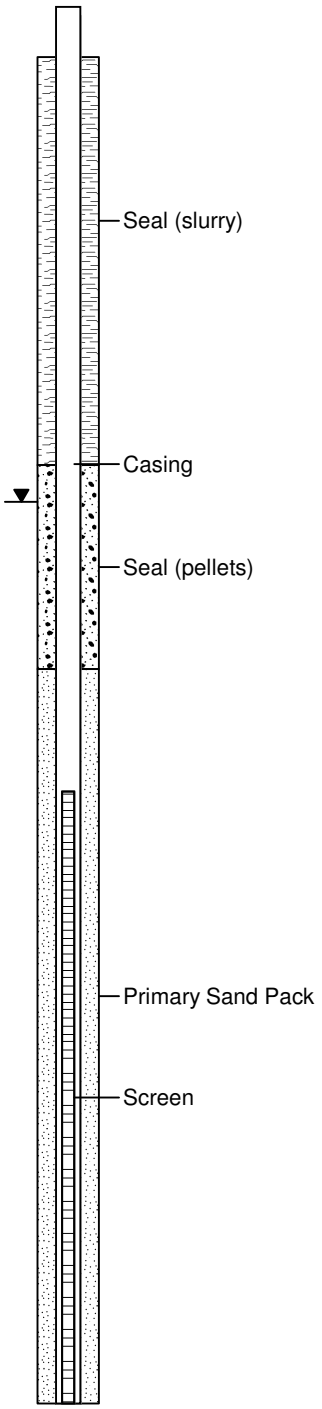
Installation Date	8/12/07
Boring Total Depth (ft bgs)	33
Well Total Depth (ft bgs)	33
Casing Type	Sched. 80 PVC
Screen Slot Size	0.010
Screen Length (ft)	15
Screened Interval (ft bgs)	33-18
Sand Size at Screen	20x40
Primary Filter Interval (ft bgs)	33-15
Secondary Filter Interval (ft bgs)	N/A
Bentonite Seal (3/8" pellet) Interval (ft bgs)	15-10
Bentonite Seal (slurry) Interval (ft bgs)	10-0
Formation at Screen	Alluvium and Dinwoody
Depth Water Encountered when Drilling (ft bgs)	31
Sump	N/A
Drill Shoe Burial	N/A
Backfill	N/A
Steel Casing Depth (ft bgs)	N/A
Pump Depth (ft bgs)	30
Pump Intake Depth (ft bgs)	N/A
Height of MP (ft ags)	3

SAMPLE DETAILS

Fall 07 Static Water Level (ft bgs)	11.9
Fall 07 Total Se (mg/L)	0.029

NOTES:
Bottom of borehole at 33' below ground surface.

Well: MMW018
Elev.: not surveyed



RECORD OF BOREHOLE: MMW019

P4 Production
Southeast Idaho Mine-Specific
Selenium Program

Project No. 1010076.011602

IDWR Tag No	: D0048730	Drilling Method / Rig	: Air Rotary / Atlas Copco TH-60
Drilling Date(s)	: 8/10/07	Drilled By	: J. Arfman (Boart Longyear)
Latitude	: 42 53 50.2	Logged By	: B. Eloff (MWH)
Longitude	: 111 29 25.4	Installed By	: R. Chipman (Boart Longyear)
Elevation (ft)	: not surveyed	Suveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1		clayey gravel (GC), dark brown (10YR3/3), damp to moist, gravel is comprised of angular shale and mudstone, black (10YR2/1).	Phosphoria
5	2		mudstone, black (10YR2/1), angular. lots of water at 10.5'.	
10				

Well Details

CONSTRUCTION DETAILS

Installation Date	8/10/07
Boring Total Depth (ft bgs)	14
Well Total Depth (ft bgs)	14
Casing Type	Sched. 40 PVC
Screen Slot Size	0.020
Screen Length (ft)	10
Screened Interval (ft bgs)	14-4
Sand Size at Screen	10x20
Primary Filter Interval (ft bgs)	14-3
Secondary Filter Interval (ft bgs)	N/A
Bentonite Seal (3/8" pellet) Interval (ft bgs)	3-1
Bentonite Seal (slurry) Interval (ft bgs)	N/A
Formation at Screen	Phosphoria
Depth Water Encountered when Drilling (ft bgs)	10
Sump	N/A
Drill Shoe Burial	N/A
Backfill	N/A
Steel Casing Depth (ft bgs)	N/A
Pump Depth (ft bgs)	12
Pump Intake Depth (ft bgs)	N/A
Height of MP (ft ags)	3

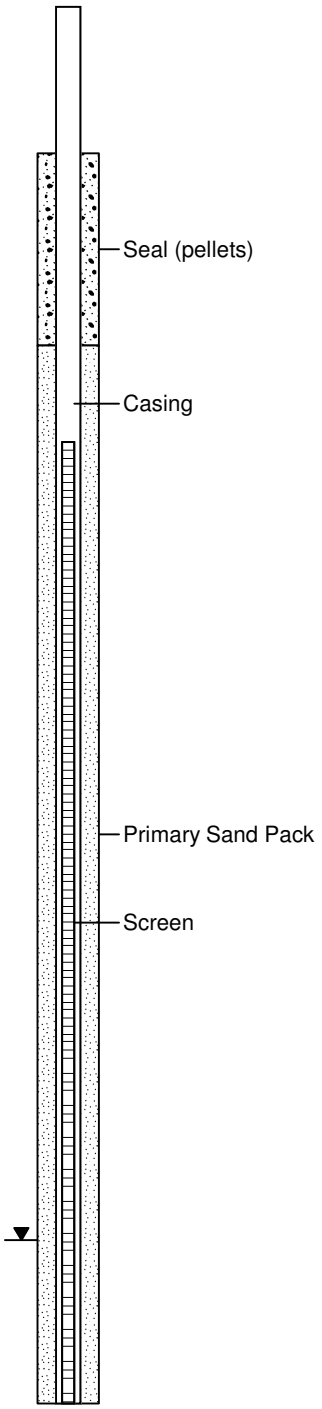
SAMPLE DETAILS

Fall 07 Static Water Level (ft bgs)	13.3
Fall 07 Total Se (mg/L)	<0.0010

NOTES:
Bottom of borehole at 15' below ground surface.

Driller reported very soft drilling at the bottom of the borehole.

Well: MMW019
Elev.: not surveyed



RECORD OF BOREHOLE: MMW020A

P4 Production
Southeast Idaho Mine-Specific
Selenium Program

Project No. 1010076.011602

IDWR Tag No	: N/A	Drilling Method / Rig	: Air Rotary / Atlas Copco TH-60
Drilling Date(s)	: 9/22/07	Drilled By	: J. Arfman (Boart Longyear)
Latitude	: 42 49 36.4	Logged By	: D. Brame (MWH)
Longitude	: 111 29 03.3	Installed By	: R. Chipman (Boart Longyear)
Elevation (ft)	: 6536.8	Suveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Well: MMW020A
Elev.: 6536.8

Depth in Feet	Sample	Time	DESCRIPTION	Formation	Well Details
0–60	1	1321	chert, black (10YR2/1) with some yellow (10YR7/8) staining.	Phosphoria (Rex Chert)	CONSTRUCTION DETAILS Installation Date : Boring Total Depth (ft bgs): Well Total Depth (ft bgs) : Casing Type : Screen Slot Size : Screen Length (ft) : Screened Interval (ft bgs) : Sand Size at Screen : Primary Filter Interval (ft bgs) Secondary Filter Interval : (ft bgs) : Bentonite Seal (3/8" pellet): Interval (ft bgs) : Bentonite Seal (slurry) : Interval (ft bgs) : Formation at Screen : Depth Water Encountered : when Drilling (ft bgs) : Sump : Drill Shoe Burial : Backfill : Steel Casing Depth : (ft bgs) : Pump Depth (ft bgs) : Pump Intake Depth (ft bgs): Height of MP (ft ags) : SAMPLE DETAILS Fall 07 Static Water Level (ft bgs) Fall 07 Total Se (mg/L) :
60–120	2	1412			NOTES: Advanced casing in open boring to 60' below ground surface. Boulder obstructed boring. Attempted to drill out boulder but decided to abandon hole and drill new hole 100' southeast.

Open Hole

RECORD OF BOREHOLE: MMW020B

P4 Production
Southeast Idaho Mine-Specific
Selenium Program

Project No. 1010076.011602

IDWR Tag No	: D0048736	Drilling Method / Rig	: Air Rotary / Atlas Copco TH-60
Drilling Date(s)	: 9/23/07-9/27/07	Drilled By	: J. Arfman (Boart Longyear)
Latitude	: 42 49 36.4	Logged By	: D. Brame (MWH)
Longitude	: 111 29 03.3	Installed By	: R. Chipman (Boart Longyear)
Elevation (ft)	: 6536.8	Suveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Well: MMW020
Elev.: 6536.8

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0–70	1	0920	chert, black (10YR2/1) with some yellow (10YR7/8) staining.	Phosphoria (Rex Chert)

Well Details

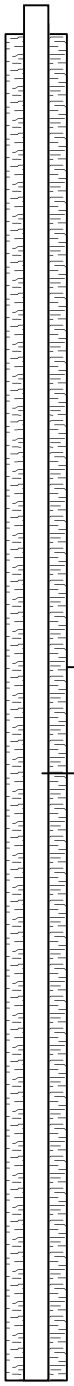
CONSTRUCTION DETAILS

Installation Date	10/5/07
Boring Total Depth (ft bgs)	416
Well Total Depth (ft bgs)	408
Casing Type	Sched. 80 PVC
Screen Slot Size	0.010
Screen Length (ft)	20
Screened Interval (ft bgs)	408-388
Sand Size at Screen	20x40
Primary Filter Interval (ft bgs)	408-378
Secondary Filter Interval (ft bgs)	N/A
Bentonite Seal (3/8" pellet) Interval (ft bgs)	378-368
Bentonite Seal (slurry) Interval (ft bgs)	368-0
Formation at Screen	Wells
Depth Water Encountered when Drilling (ft bgs)	225, 250, 315, 370
Sump	N/A
Drill Shoe Burial	Pellets 416-413 20x40 sand 413-408
Backfill (ft bgs)	N/A
Pump Depth (ft bgs)	320
Pump Intake Depth (ft bgs)	403
Height of MP (ft ags)	3

SAMPLE DETAILS

Fall 07 Static Water Level (ft bgs)	284.3
Fall 07 Total Se (mg/L)	0.017

NOTES:
Bottom of borehole at 416' below ground surface.



RECORD OF BOREHOLE: MMW020B

P4 Production
Southeast Idaho Mine-Specific
Selenium Program

Project No. 1010076.011602

IDWR Tag No	: D0048736	Drilling Method / Rig	: Air Rotary / Atlas Copco TH-60
Drilling Date(s)	: 9/23/07-9/27/07	Drilled By	: J. Arfman (Boart Longyear)
Latitude	: 42 49 36.4	Logged By	: D. Brame (MWH)
Longitude	: 111 29 03.3	Installed By	: R. Chipman (Boart Longyear)
Elevation (ft)	: 6536.8	Suveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Well: MMW020
Elev.: 6536.8

Depth in Feet	Sample	Time	DESCRIPTION	Formation
140–145	1	0920		Phosphoria (Rex Chert)
145–170	2	0953	mudstone, dark grey (10YR3/1).	
170–195	3	1302	siltstone, black (10YR2/1), fine grained, oolitic.	
195–200	4	1317	siltstone, black (10YR2/1), very fine grained, calcareous, oolitic.	
200–225	5	0803	siltstone, black (10YR2/1), fine to medium grained.	
225–240	6	0816	mudstone, black (10YR2/1).	
240–250	7	0854	siltstone, black (10YR2/1), very fine grained, slightly calcareous, oolitic.	
250–260	8	0858	mudstone, dark grey (10YR3/1), calcareous.	
260–275	9	0944	mudstone, dark grey (10YR3/1).	
275–280	10	1018	silty mudstone, black (10YR2/1), very fine grained, oolitic, calcareous.	

Well Details

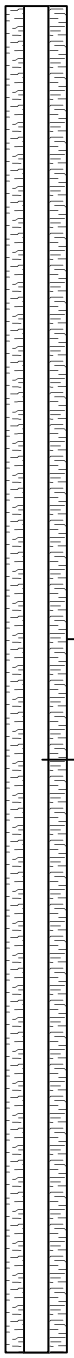
CONSTRUCTION DETAILS

Installation Date	10/5/07
Boring Total Depth (ft bgs)	416
Well Total Depth (ft bgs)	408
Casing Type	Sched. 80 PVC
Screen Slot Size	0.010
Screen Length (ft)	20
Screened Interval (ft bgs)	408-388
Sand Size at Screen	20x40
Primary Filter Interval (ft bgs)	408-378
Secondary Filter Interval (ft bgs)	N/A
Bentonite Seal (3/8" pellet) Interval (ft bgs)	378-368
Bentonite Seal (slurry) Interval (ft bgs)	368-0
Formation at Screen	Wells
Depth Water Encountered when Drilling (ft bgs)	225, 250, 315, 370
Sump	N/A
Drill Shoe Burial	Pellets 416-413 20x40 sand 413-408
Backfill (ft bgs)	N/A
Pump Depth (ft bgs)	320
Pump Intake Depth (ft bgs)	403
Height of MP (ft ags)	3

SAMPLE DETAILS

Fall 07 Static Water Level (ft bgs)	284.3
Fall 07 Total Se (mg/L)	0.017

NOTES:
Bottom of borehole at 416' below ground surface.



RECORD OF BOREHOLE: MMW020B

P4 Production
Southeast Idaho Mine-Specific
Selenium Program

Project No. 1010076.011602

IDWR Tag No	: D0048736	Drilling Method / Rig	: Air Rotary / Atlas Copco TH-60
Drilling Date(s)	: 9/23/07-9/27/07	Drilled By	: J. Arfman (Boart Longyear)
Latitude	: 42 49 36.4	Logged By	: D. Brame (MWH)
Longitude	: 111 29 03.3	Installed By	: R. Chipman (Boart Longyear)
Elevation (ft)	: 6536.8	Suveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Well: MMW020
Elev.: 6536.8

Depth in Feet	Sample	Time	DESCRIPTION	Formation
280	10	1018		Phosphoria (Rex Chert)
285	11	1030	mudstone, black (10YR2/1), calcareous.	
290				
295				
300	12	1110	mudstone, dark yellowish-brown (10YR4/6).	
305				
310	13	1114	mudstone, black (10YR2/1), calcareous.	
315	14	1202	mudstone, black (10YR2/1).	
320				
325				
330	15	1209	siltstone, black (10YR2/1), fine to medium grained, oolitic.	
335	16	1216	mudstone, black (10YR2/1), calcareous, oolitic.	
340	17	1339	siltstone, black (10YR2/1), fine to medium grained, oolitic.	
345				
350	18		mudstone, black (10YR2/1), calcareous.	
	19	1346		
355	20		siltstone, black (10YR2/1), fine to medium grained, oolitic.	
	21	1352		
360	22	1501	siltstone, black (10YR2/1), fine grained, oolitic.	
365	23	1505	mudstone, black (10YR2/1), calcareous.	
370	24			Wells
375	25	1640	siltstone, black (10YR2/1), medium grained, slightly calcareous, oolitic.	
380			siltstone, black (10YR2/1), fine to medium grained, oolitic.	
385			limestone, light brownish-grey (10YR6/2), calcareous.	
390			sandstone, grey (GLEY5/N) with some yellow (10YR7/8) staining, fine grained, slightly calcareous.	
395				
400			water found at 15 gpm.	
405	26	1650	sandstone, dark grey (GLEY4/N), fine grained.	
410				
415			water found at 15 gpm.	
420				

Well Details

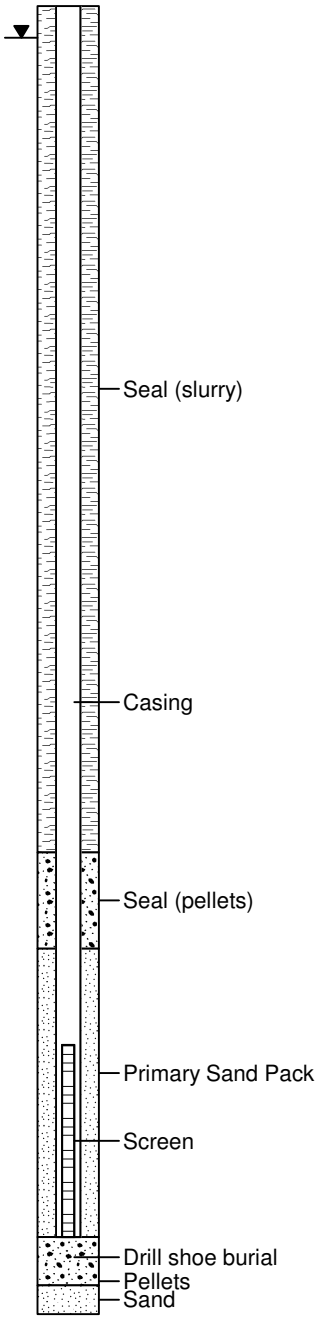
CONSTRUCTION DETAILS

Installation Date	10/5/07
Boring Total Depth (ft bgs)	416
Well Total Depth (ft bgs)	408
Casing Type	Sched. 80 PVC
Screen Slot Size	0.010
Screen Length (ft)	20
Screened Interval (ft bgs)	408-388
Sand Size at Screen	20x40
Primary Filter Interval (ft bgs)	408-378
Secondary Filter Interval (ft bgs)	N/A
Bentonite Seal (3/8" pellet) Interval (ft bgs)	378-368
Bentonite Seal (slurry) Interval (ft bgs)	368-0
Formation at Screen	Wells
Depth Water Encountered when Drilling (ft bgs)	225, 250, 315, 370
Sump	N/A
Drill Shoe Burial	Pellets 416-413 20x40 sand 413-408
Backfill (ft bgs)	N/A
Pump Depth (ft bgs)	320
Pump Intake Depth (ft bgs)	403
Height of MP (ft ags)	3

SAMPLE DETAILS

Fall 07 Static Water Level (ft bgs)	284.3
Fall 07 Total Se (mg/L)	0.017

NOTES:
Bottom of borehole at 416' below ground surface.



RECORD OF BOREHOLE: MMW021B

P4 Production
Southeast Idaho Mine-Specific
Selenium Program

Project No. 1010076.011602

IDWR Tag No	: D0048737	Drilling Method / Rig	: Air Rotary / Atlas Copco TH-60
Drilling Date(s)	: 9/10-9/11/07, 9/14/07	Drilled By	: J. Arfman (Boart Longyear)
Latitude	: 42 49 35.6	Logged By	: T. Adams (MWH)
Longitude	: 111 29 23.9	Installed By	: R. Chipman (Boart Longyear)
Elevation (ft)	: 6444.5	Suveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Well: MMW021B
Elev.: 6444.5

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0			clayey gravel (CL), pale brown to greyish brown.	Waste Rock
25			sandstone, light grey, very fine grained.	Wells
40			sandstone, light grey, and mudstone, olive brown.	
45			sandstone, light grey-yellowish brown, predominantly very fine grained, locally calcareous.	
125			dolomite limestone, dark grey.	
130				

Well Details

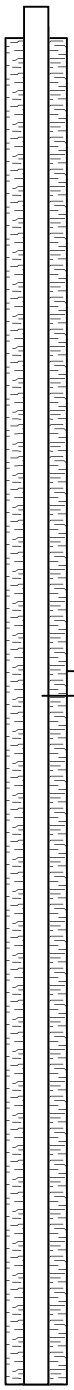
CONSTRUCTION DETAILS

Installation Date	9/24/07
Boring Total Depth (ft bgs)	260
Well Total Depth (ft bgs)	250
Casing Type	Sched. 80 PVC
Screen Slot Size	0.010
Screen Length (ft)	20
Screened Interval (ft bgs)	250-230
Sand Size at Screen	20x40
Primary Filter Interval (ft bgs)	250-219
Secondary Filter Interval (ft bgs)	N/A
Bentonite Seal (3/8" pellet) Interval (ft bgs)	219-210
Bentonite Seal (slurry) Interval (ft bgs)	210-0
Formation at Screen	Wells
Depth Water Encountered when Drilling (ft bgs)	229, 238
Sump	N/A
Drill Shoe Burial	Pellets 260-255 20x40 sand 255-250
Steel Casing Depth (ft bgs)	N/A
Pump Depth (ft bgs)	242
Pump Intake Depth (ft bgs)	N/A
Height of MP (ft ags)	3

SAMPLE DETAILS

Fall 07 Static Water Level (ft bgs)	208.9
Fall 07 Total Se (mg/L)	0.047

NOTES:
Bottom of borehole 260' below grand surface.



RECORD OF BOREHOLE: MMW021B

P4 Production
Southeast Idaho Mine-Specific
Selenium Program

Project No. 1010076.011602

IDWR Tag No	: D0048737	Drilling Method / Rig	: Air Rotary / Atlas Copco TH-60
Drilling Date(s)	: 9/10-9/11/07, 9/14/07	Drilled By	: J. Arfman (Boart Longyear)
Latitude	: 42 49 35.6	Logged By	: T. Adams (MWH)
Longitude	: 111 29 23.9	Installed By	: R. Chipman (Boart Longyear)
Elevation (ft)	: 6444.5	Suveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet | Sample | Time | DESCRIPTION | Formation | Well Details

Well: MMW021B
Elev.: 6444.5

130, 135, 140, 145, 150, 155, 160, 165, 170, 175, 180, 185, 190, 195, 200, 205, 210, 215, 220, 225, 230, 235, 240, 245, 250, 255, 260

sandstone, pale brown-yellowish brown, very fine grained.

mudstone, light olive brown and grey.

sandstone, reddish brown to brownish yellow, very fine grained.

mudstone, grey to light olive brown.

dolomite, grey.

sandstone, light yellowish brown-grey-yellow, very fine to medium grained.

fracture at 229'.

Formation: Wells

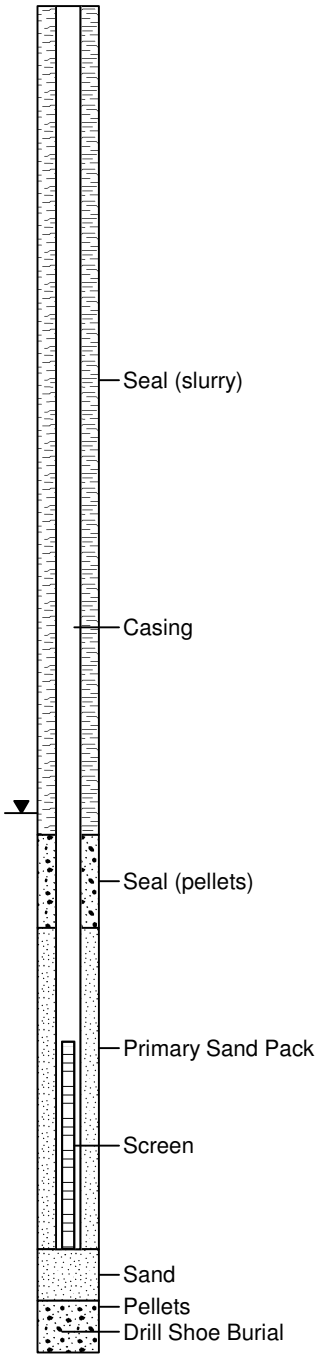
CONSTRUCTION DETAILS

Installation Date	9/24/07
Boring Total Depth (ft bgs)	260
Well Total Depth (ft bgs)	250
Casing Type	Sched. 80 PVC
Screen Slot Size	0.010
Screen Length (ft)	20
Screened Interval (ft bgs)	250-230
Sand Size at Screen	20x40
Primary Filter Interval (ft bgs)	250-219
Secondary Filter Interval (ft bgs)	N/A
Bentonite Seal (3/8" pellet) Interval (ft bgs)	219-210
Bentonite Seal (slurry) Interval (ft bgs)	210-0
Formation at Screen	Wells
Depth Water Encountered when Drilling (ft bgs)	229, 238
Sump	N/A
Drill Shoe Burial	Pellets 260-255 20x40 sand 255-250
Steel Casing Depth (ft bgs)	N/A
Pump Depth (ft bgs)	242
Pump Intake Depth (ft bgs)	N/A
Height of MP (ft ags)	3

SAMPLE DETAILS

Fall 07 Static Water Level (ft bgs)	208.9
Fall 07 Total Se (mg/L)	0.047

NOTES:
Bottom of borehole 260' below grand surface.



RECORD OF BOREHOLE: MMW022

P4 Production
Southeast Idaho Mine-Specific
Selenium Program

Project No. 1010076.011602

IDWR Tag No	: D0048731	Drilling Method / Rig	: Air Rotary / Atlas Copco TH-60
Drilling Date(s)	: 7/14/07-7/15/07	Drilled By	: J. Arfman (Boart Longyear)
Latitude	: 42 53 09.2	Logged By	: D. Brame (MWH)
Longitude	: 111 28 18.3	Installed By	: R. Chipman (Boart Longyear)
Elevation (ft)	: not surveyed	Suveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	1040	boulder	W.R.
	2	1055	overburden	
5	3	1057	siltstone, light olive brown (2.5Y5/4), finely laminated.	Dinwoody
10	4	1058	limestone, grey-brown (2.5YR5/2) embedded with siltstone, light olive brown (2.5Y5/4).	
15	5	1232	limestone, grey-brown (2.5YR5/2).	
20	6	1238	limestone, grey-brown (2.5YR5/2) embedded with siltstone, light olive brown (2.5Y5/4).	
25				
30				
35	7	1243	limestone, grey-brown (2.5YR5/2) embedded with black grains.	
40	8	1259	limestone, grey-brown (2.5YR5/2) embedded with siltstone, light olive brown (2.5Y5/4).	
45				
50				
55				
60	9	1308	limestone, grey-brown (2.5YR5/2).	
65				
70	10	1310	siltstone, light olive brown (2.5Y5/4), finely laminated.	
75	11	1322	limestone, grey-brown (2.5YR5/2).	
80				
85				
90	12	1329	siltstone, light olive brown (2.5Y5/4), finely laminated.	
95				
100	13	1355	limestone, grey-brown (2.5YR5/2) embedded with siltstone, light olive brown (2.5Y5/4).	
105				
110				
115				
120				

Well Details

CONSTRUCTION DETAILS

Installation Date	7/28/07
Boring Total Depth (ft bgs)	360
Well Total Depth (ft bgs)	326
Casing Type	Sched. 80 PVC
Screen Slot Size	0.020
Screen Length (ft)	20
Screened Interval (ft bgs)	326-306
Sand Size at Screen	10x20
Primary Filter Interval (ft bgs)	326-286
Secondary Filter Interval (ft bgs)	20x40 sand 286-281
Bentonite Seal (3/8" pellet) Interval (ft bgs)	281-271
Bentonite Seal (slurry) Interval (ft bgs)	271-0
Formation at Screen	Dinwoody
Depth Water Encountered when Drilling (ft bgs)	320, 340
Sump	N/A
Drill Shoe Burial	N/A
Backfill (ft bgs)	Boring Caved 360-326
Pump Depth (ft bgs)	223
Pump Intake Depth (ft bgs)	323
Height of MP (ft ags)	3

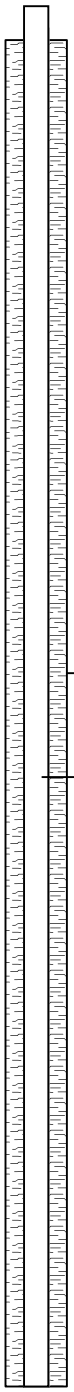
SAMPLE DETAILS

Fall 07 Static Water Level (ft bgs)	204.6
Fall 07 Total Se (mg/L)	0.017

NOTES:
Bottom of borehole is at 326' below ground surface.

W.R. - Waste Rock

Well: MMW022
Elev.: not surveyed



RECORD OF BOREHOLE: MMW022

P4 Production
Southeast Idaho Mine-Specific
Selenium Program

Project No. 1010076.011602

IDWR Tag No	: D0048731	Drilling Method / Rig	: Air Rotary / Atlas Copco TH-60
Drilling Date(s)	: 7/14/07-7/15/07	Drilled By	: J. Arfman (Boart Longyear)
Latitude	: 42 53 09.2	Logged By	: D. Brame (MWH)
Longitude	: 111 28 18.3	Installed By	: R. Chipman (Boart Longyear)
Elevation (ft)	: not surveyed	Suveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
120	13	1355		Dinwoody
125	14	1406	siltstone, light olive brown (2.5Y5/4), finely laminated.	
130				
135				
140	15	1432	limestone, dark grey (2.5Y4/1).	
145	16	1458	limestone, grey-brown (2.5YR5/2).	
150				
155				
160				
165	17	1506	limestone, grey-brown (2.5YR5/2) embedded with siltstone, light olive brown (2.5Y5/4).	
170				
175	18	1509	limestone, grey-brown (2.5YR5/2).	
180	19	1531	siltstone, light olive brown (2.5Y5/4), finely laminated.	
185	20	1544	limestone, grey-brown (2.5YR5/2) embedded with siltstone, light olive brown (2.5Y5/4).	
190				
195				
200	21	1612	limestone, grey-brown (2.5YR5/2) embedded with siltstone, light olive brown (2.5Y5/4).	
205				
210				
215				
220				
225				
230				
235	22	1009	siltstone, light olive brown (2.5Y5/4), finely laminated.	
240				

Well Details

CONSTRUCTION DETAILS

Installation Date	7/28/07
Boring Total Depth (ft bgs)	360
Well Total Depth (ft bgs)	326
Casing Type	Sched. 80 PVC
Screen Slot Size	0.020
Screen Length (ft)	20
Screened Interval (ft bgs)	326-306
Sand Size at Screen	10x20
Primary Filter Interval (ft bgs)	326-286
Secondary Filter Interval	20x40 sand
(ft bgs)	286-281
Bentonite Seal (3/8" pellet)	281-271
Interval (ft bgs)	
Bentonite Seal (slurry)	271-0
Interval (ft bgs)	
Formation at Screen	Dinwoody
Depth Water Encountered	320, 340
when Drilling (ft bgs)	
Sump	N/A
Drill Shoe Burial	N/A
Backfill	Boring Caved 360-326
(ft bgs)	
Pump Depth (ft bgs)	223
Pump Intake Depth (ft bgs)	323
Height of MP (ft ags)	3

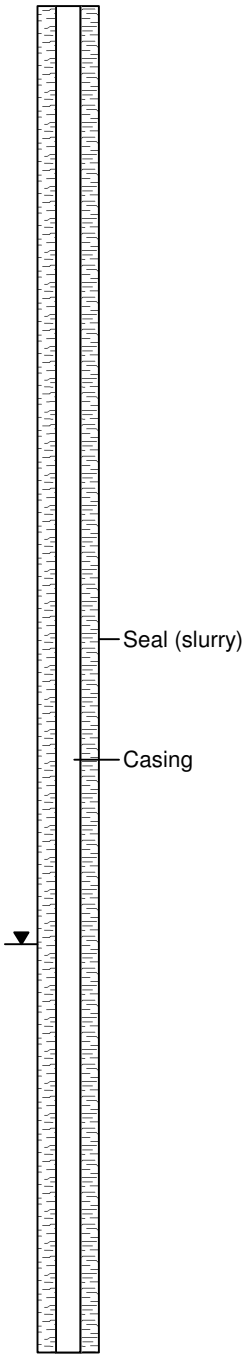
SAMPLE DETAILS

Fall 07 Static Water Level (ft bgs)	204.6
Fall 07 Total Se (mg/L)	0.017

NOTES:
Bottom of borehole is at 326' below ground surface.

W.R. - Waste Rock

Well: MMW022
Elev.: not surveyed



RECORD OF BOREHOLE: MMW022

P4 Production
Southeast Idaho Mine-Specific
Selenium Program

Project No. 1010076.011602

IDWR Tag No	: D0048731	Drilling Method / Rig	: Air Rotary / Atlas Copco TH-60
Drilling Date(s)	: 7/14/07-7/15/07	Drilled By	: J. Arfman (Boart Longyear)
Latitude	: 42 53 09.2	Logged By	: D. Brame (MWH)
Longitude	: 111 28 18.3	Installed By	: R. Chipman (Boart Longyear)
Elevation (ft)	: not surveyed	Suveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Well: MMW022
Elev.: not surveyed

Depth in Feet	Sample	Time	DESCRIPTION	Formation
240–245	22	1009		Dinwoody
245–255	23	1026	limestone, grey-brown (2.5YR5/2) embedded with siltstone, light olive brown (2.5Y5/4).	Dinwoody
255–270	24	1029	limestone, grey-brown (2.5YR5/2).	Dinwoody
270–305	25	1057	limestone, grey (2.5YR5/1).	Dinwoody
305–330	26	1126	limestone, grey-brown (2.5YR5/2) embedded with siltstone, light olive brown (2.5Y5/4).	Dinwoody
330–360	27	1150	siltstone, light olive brown (2.5Y5/4), finely laminated.	Dinwoody

Well Details

CONSTRUCTION DETAILS

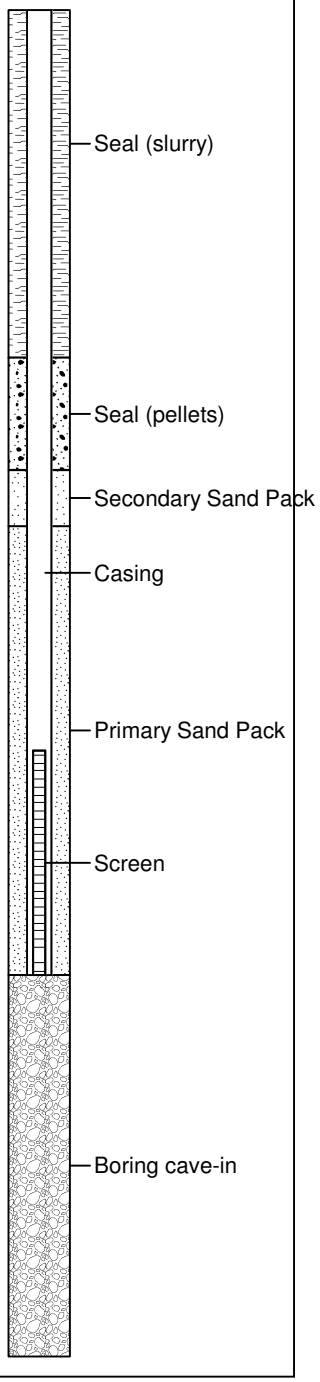
Installation Date	7/28/07
Boring Total Depth (ft bgs)	360
Well Total Depth (ft bgs)	326
Casing Type	Sched. 80 PVC
Screen Slot Size	0.020
Screen Length (ft)	20
Screened Interval (ft bgs)	326-306
Sand Size at Screen	10x20
Primary Filter Interval (ft bgs)	326-286
Secondary Filter Interval (ft bgs)	20x40 sand 286-281
Bentonite Seal (3/8" pellet) Interval (ft bgs)	281-271
Bentonite Seal (slurry) Interval (ft bgs)	271-0
Formation at Screen	Dinwoody
Depth Water Encountered when Drilling (ft bgs)	320, 340
Sump	N/A
Drill Shoe Burial	N/A
Backfill (ft bgs)	Boring Caved 360-326
Pump Depth (ft bgs)	223
Pump Intake Depth (ft bgs)	323
Height of MP (ft ags)	3

SAMPLE DETAILS

Fall 07 Static Water Level (ft bgs)	204.6
Fall 07 Total Se (mg/L)	0.017

NOTES:
Bottom of borehole is at 326' below ground surface.

W.R. - Waste Rock



RECORD OF BOREHOLE: MMW023

P4 Production
Southeast Idaho Mine-Specific
Selenium Program

Project No. 1010076.011602

IDWR Tag No	: D0048732	Drilling Method / Rig	: Air Rotary / Atlas Copco TH-60
Drilling Date(s)	: 8/29-30/07, 9/6-8/07	Drilled By	: J. Arfman (Boart Longyear)
Latitude	: 42 54 20.20	Logged By	: D. Brame (MWH)
Longitude	: 111 30 27.50	Installed By	: R. Chipman (Boart Longyear)
Elevation (ft)	: not surveyed	Suveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0–5	1	1243	siltstone, black (10YR/2), very fine grained, oolitic.	Phosphoria
15–20	2	1341	mudstone, very dark grey-brown (10YR3/2).	Phosphoria
25–50	3	1519	mudstone, black (10YR2/1).	Phosphoria
75–80	4	1600	siltstone, black (10YR2/1), very fine grained.	Phosphoria
90	5	1607	mudstone, black (10YR2/1).	Phosphoria
95–105	6	0820	mudstone, very dark grey (10YR3/1), calcareous.	Phosphoria
115–120	7	0859	siltstone, black (10YR2/1), fine to medium grained, slightly calcareous.	Phosphoria

Well Details

CONSTRUCTION DETAILS

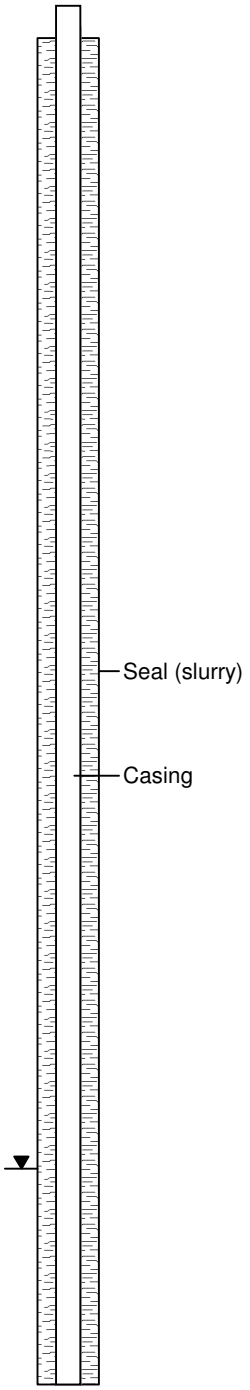
Installation Date	:	9/11/07
Boring Total Depth (ft bgs)	:	362
Well Total Depth (ft bgs)	:	357
Casing Type	:	Sched. 80 PVC
Screen Slot Size	:	0.010
Screen Length (ft)	:	5
Screened Interval (ft bgs)	:	357-352
Sand Size at Screen	:	20x40
Primary Filter Interval (ft bgs)		357-350
Secondary Filter Interval (ft bgs)	:	N/A
Bentonite Seal (3/8" pellet) Interval (ft bgs)	:	350-340
Bentonite Seal (slurry) Interval (ft bgs)	:	340-0
Formation at Screen	:	Wells
Depth Water Encountered when Drilling (ft bgs)	:	128, 188
Sump	:	N/A
Drill Shoe Burial	:	Pellets 362-361 20x40 sand 361-357
Backfill (ft bgs)	:	N/A
Pump Depth (ft bgs)	:	132
Pump Intake Depth (ft bgs)	:	352
Height of MP (ft ags)	:	3

SAMPLE DETAILS

Fall 07 Static Water Level (ft bgs)		105.94
Fall 07 Total Se (mg/L)	:	0.0030

NOTES:
Bottom of borehole at 360' below ground surface.

Well: MMW023
Elev.: not surveyed



RECORD OF BOREHOLE: MMW023

P4 Production
Southeast Idaho Mine-Specific
Selenium Program

Project No. 1010076.011602

IDWR Tag No	: D0048732	Drilling Method / Rig	: Air Rotary / Atlas Copco TH-60
Drilling Date(s)	: 8/29-30/07, 9/6-8/07	Drilled By	: J. Arfman (Boart Longyear)
Latitude	: 42 54 20.20	Logged By	: D. Brame (MWH)
Longitude	: 111 30 27.50	Installed By	: R. Chipman (Boart Longyear)
Elevation (ft)	: not surveyed	Suveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Well: MMW023
Elev.: not surveyed

Depth in Feet	Sample	Time	DESCRIPTION	Formation
125–150	8	1032	mudstone, black (10YR2/1), calcareous.	Phosphoria
150–155	9	1046	limestone, black (10YR2/1).	Phosphoria
155–175	10	0840	mudstone, black (10YR2/1), calcareous.	Phosphoria
175–185	11	0925	siltstone, black (10YR2/1), very fine grained, calcareous.	Phosphoria
185–195	12	0951	mudstone, black (10YR2/1), calcareous.	Phosphoria
195–210	13	1131	siltstone, black (10YR2/1), fine to medium grained, slightly calcareous, oolitic.	Phosphoria
210–220	14	1200	mudstone, black (10YR2/1), calcareous, oolitic.	Phosphoria
220–230	15	1210	siltstone, black (10YR2/1), medium grained, oolitic.	Phosphoria
230–245	16	1335	mudstone, black (10YR2/1), calcareous.	Phosphoria
245–250	17	1343	siltstone, black (10YR2/1), fine grained, oolitic.	Phosphoria

Well Details

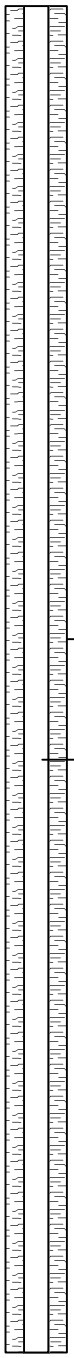
CONSTRUCTION DETAILS

Installation Date	9/11/07
Boring Total Depth (ft bgs)	362
Well Total Depth (ft bgs)	357
Casing Type	Sched. 80 PVC
Screen Slot Size	0.010
Screen Length (ft)	5
Screened Interval (ft bgs)	357-352
Sand Size at Screen	20x40
Primary Filter Interval (ft bgs)	357-350
Secondary Filter Interval (ft bgs)	N/A
Bentonite Seal (3/8" pellet) Interval (ft bgs)	350-340
Bentonite Seal (slurry) Interval (ft bgs)	340-0
Formation at Screen	Wells
Depth Water Encountered when Drilling (ft bgs)	128, 188
Sump	N/A
Drill Shoe Burial	Pellets 362-361 20x40 sand 361-357
Backfill (ft bgs)	N/A
Pump Depth (ft bgs)	132
Pump Intake Depth (ft bgs)	352
Height of MP (ft ags)	3

SAMPLE DETAILS

Fall 07 Static Water Level (ft bgs)	105.94
Fall 07 Total Se (mg/L)	0.0030

NOTES:
Bottom of borehole at 360' below ground surface.



RECORD OF BOREHOLE: MMW023

P4 Production
Southeast Idaho Mine-Specific
Selenium Program

Project No. 1010076.011602

IDWR Tag No	: D0048732	Drilling Method / Rig	: Air Rotary / Atlas Copco TH-60
Drilling Date(s)	: 8/29-30/07, 9/6-8/07	Drilled By	: J. Arfman (Boart Longyear)
Latitude	: 42 54 20.20	Logged By	: D. Brame (MWH)
Longitude	: 111 30 27.50	Installed By	: R. Chipman (Boart Longyear)
Elevation (ft)	: not surveyed	Suveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Well: MMW023
Elev.: not surveyed

Depth in Feet	Sample	Time	DESCRIPTION	Formation
250–255	18	0825	mudstone, black (10YR2/1), calcareous.	Phosphoria
255–260	19	0852	siltstone, black (10YR2/1), fine to medium grained, oolitic.	Phosphoria
260–265	20	1005	siltstone, black (10YR2/1), calcareous.	Phosphoria
265–270	21	1014	siltstone, black (10YR2/1), fine grained, oolitic.	Phosphoria
270–275	22	1040	mudstone, black (10YR2/1), calcareous.	Phosphoria
275–280	23	1505	siltstone, black (10YR2/1), fine grained, oolitic.	Phosphoria
280–285	24	1513	siltstone, black (10YR2/1), fine to medium grained, slightly calcareous, oolitic.	Phosphoria
285–290	25	1534	limestone, grey-brown (10YR5/2), calcareous.	Phosphoria
290–295	26	1538	siltstone, black (10YR2/1), fine to medium grained, slightly calcareous, oolitic.	Phosphoria
295–300	27	1555	siltstone, black (10YR2/1), medium grained,slightly calcareous, oolitic.	Phosphoria
300–305	28	1600	siltstone, black (10YR2/1), fine to medium grained, oolitic.	Phosphoria
305–310	29	1601	limestone, light brown-grey (10YR6/2), calcareous.	Wells
310–315	30	1607	sandstone, light grey (10YR7/1), fine grained, moderately calcareous.	Wells
315–375				

Well Details

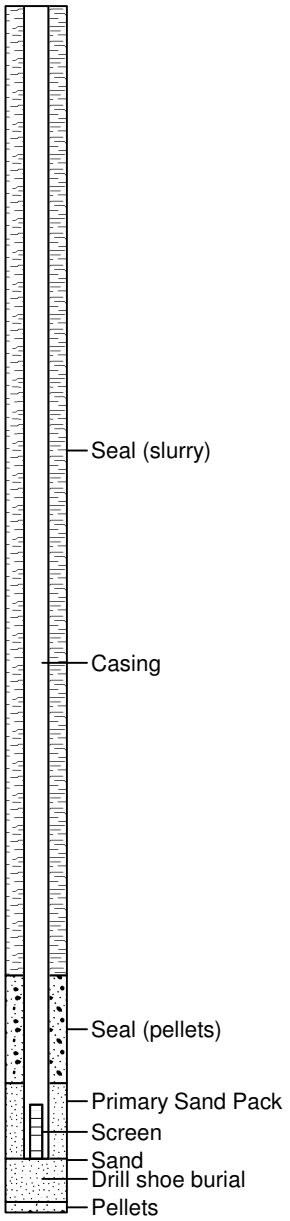
CONSTRUCTION DETAILS

Installation Date	9/11/07
Boring Total Depth (ft bgs)	362
Well Total Depth (ft bgs)	357
Casing Type	Sched. 80 PVC
Screen Slot Size	0.010
Screen Length (ft)	5
Screened Interval (ft bgs)	357-352
Sand Size at Screen	20x40
Primary Filter Interval (ft bgs)	357-350
Secondary Filter Interval (ft bgs)	N/A
Bentonite Seal (3/8" pellet) Interval (ft bgs)	350-340
Bentonite Seal (slurry) Interval (ft bgs)	340-0
Formation at Screen	Wells
Depth Water Encountered when Drilling (ft bgs)	128, 188
Sump	N/A
Drill Shoe Burial	Pellets 362-361 20x40 sand 361-357
Backfill (ft bgs)	N/A
Pump Depth (ft bgs)	132
Pump Intake Depth (ft bgs)	352
Height of MP (ft ags)	3

SAMPLE DETAILS

Fall 07 Static Water Level (ft bgs)	105.94
Fall 07 Total Se (mg/L)	0.0030

NOTES:
Bottom of borehole at 360' below ground surface.



RECORD OF BOREHOLE: MMW024

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Dual Rotary / Foremost DR-12
Drilling Date(s)	: 7/22/2008-7/24/2008	Drilled By	: J. Crossman (AK Drilling, INC.)
Latitude	: N42 52 11.73	Logged By	: B. Massey (MWH)
Longitude	: W111 24 11.86	Installed By	: J. Crossman (AK Drilling, INC.)
Elevation (ft) AMSL	: 6702.64 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Well: MMW024
Elev.: 6702.64 AMSL

Depth in Feet	Sample	Time	DESCRIPTION	Formation
100–105	21		limestone, dark reddish gray (10R 4/1), with claystone interbeds, olive gray (5Y 4/2)	Dinwoody
105–110	22			
110–115	23			
115–120	24			
120–125	25			
125–130	26			
130–135	27		claystone, reddish gray (10R 6/1)	
135–140	28			
140–145	29		limestone, very dark gray fractured around 140ft bgs claystone interbeds from 140ft bgs to 200ft bgs, reddish gray (10R 6/1)	
145–150	30			
150–155	31			
155–160	32			
160–165	33			
165–170	34			
170–175	35			
175–180	36			
180–185	37		claystone, olive gray (5Y 4/2) with some limstone interbeds, extremly hard	
185–190	38			
190–195	39			
195–200	40			

Well Details

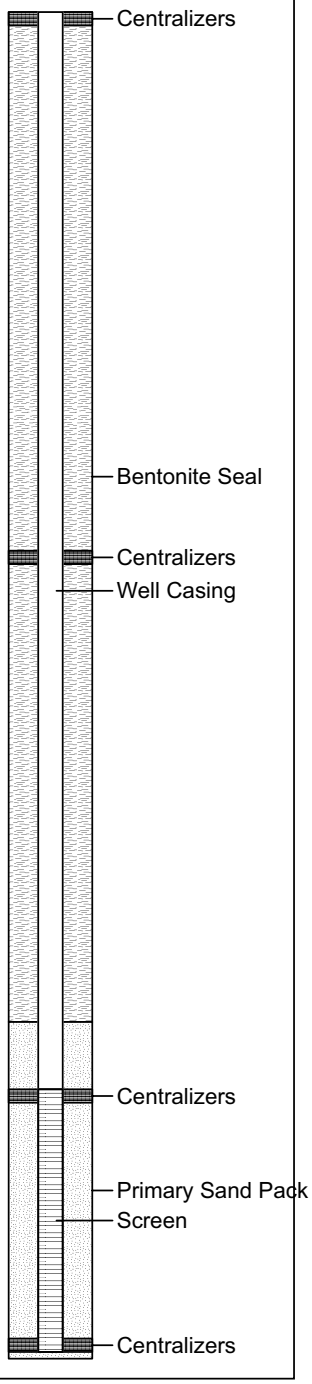
CONSTRUCTION DETAILS

Installation Date	: 7/25/2008
Boring Total Depth (ft bgs)	: 201
Well Total Depth (ft bgs)	: 200
Casing Type	: Schedule 40 PVC
Screen Slot Size	: 0.020
Screen Length (ft)	: 20
Screened Interval (ft bgs)	: 180-200
Sand Size at Screen	: 10X20
Filter Interval (ft bgs)	: 175-201
Secondary Filter Interval (ft bgs)	: NA
Bentonite Seal (Chips) Interval (ft bgs)	: 0-175
Bentonite Seal (slurry) Interval (ft bgs)	: Not used
Formation at Screen	: Dinwoody
Depth Water Encountered when Drilling (ft bgs)	: 15, 60, 100, 140
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: 16
Backfill (ft bgs)	: NA
Steel Casing Depth (ft bgs)	: 16
Pump Depth (ft bgs)	: 195
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: 4.95

SAMPLE DETAILS

Fall 08 Static Water Level (ft bmp)	: 65.22
Fall 08 Total Se (mg/L)	: 0.014

NOTES:
Bottom of borehole is at 201ft bgs.
Cuttings were always wet due to water being injected as drilling fluid.



RECORD OF BOREHOLE: MMW025

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Dual Rotary / Foremost DR-12
Drilling Date(s)	: 7/27/2008-7/28/2008	Drilled By	: J. Crossman (AK Drilling, INC.)
Latitude	: 42 51 49.16	Logged By	: B. Massey (MWH)
Longitude	: 111 23 31.95	Installed By	: J. Crossman (AK Drilling, INC.)
Elevation (ft) AMSL	: 6645.64 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	815	SILTY CLAY, sandy clay (SC) and gravel, grayish brown (7.5YR 4/2), hard	Alluvium
5	2	820		
10	3	822		
15	4	832		
20	5	904	at 20 ft bgs becomes mostly sandy clay bright brownish yellow, (10YR 6/6).	
25	6	908		
30	7	911		
35	8	919		
40	9	927		
45	10	940		
50	11	950	gravel mixed with fines	
55	12	1000	clay, light yellowish brown (10YR 6/4)	
60	13	1202		
65	14	1206		
70	15	1208	sandy clay, strong brown (7.5YR 4/6)	
75	16	1218		
80	17	1258		
85	18	1302		
90	19	1304		
95	20	1310		
100				

Well Details

CONSTRUCTION DETAILS

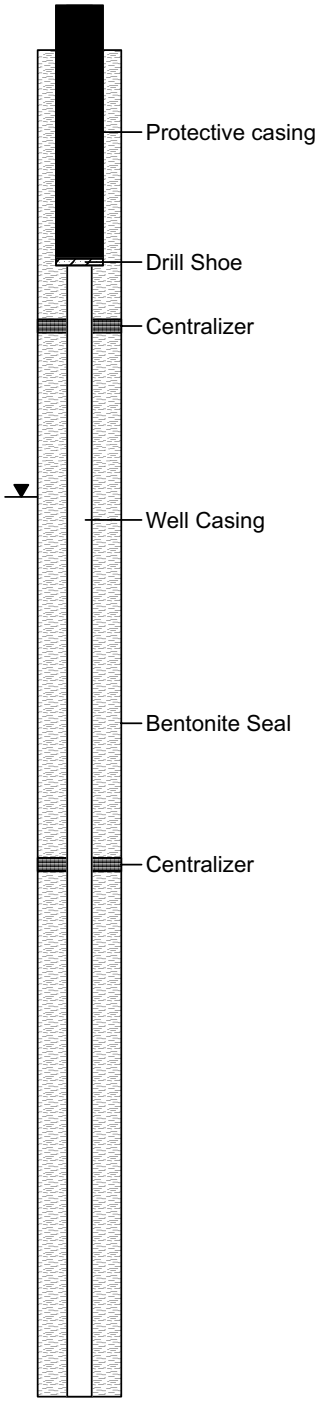
Installation Date	: 7/28/2008
Boring Total Depth (ft bgs)	: 201
Well Total Depth (ft bgs)	: 200
Casing Type	: Schedule 40 PVC
Screen Slot Size	: 0.020
Screen Length (ft)	: 20
Screened Interval (ft bgs)	: 180-200
Sand Size at Screen	: 10X20
Filter Interval (ft bgs)	: 175-201
Secondary Filter Interval (ft bgs)	: NA
Bentonite Seal (Chips) Interval (ft bgs)	: 0-175
Bentonite Seal (slurry) Interval (ft bgs)	: Not used
Formation at Screen	: Dinwoody
Depth Water Encountered when Drilling (ft bgs)	: 58, 160
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: 16
Backfill (ft bgs)	: NA
Steel Casing Depth (ft bgs)	: 16
Pump Depth (ft bgs)	: 192
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: 3.32

SAMPLE DETAILS

Fall 08 Static Water Level (ft bmp)	: 33.6
Fall 08 Total Se (mg/L)	: 0.00088

NOTES:
Bottom of borehole at 201ft bgs.
Cuttings were always wet due to water being injected as drilling fluid.

Well: MMW025
Elev.: 6645.64 AMSL



RECORD OF BOREHOLE: MMW025

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Dual Rotary / Foremost DR-12
Drilling Date(s)	: 7/27/2008-7/28/2008	Drilled By	: J. Crossman (AK Drilling, INC.)
Latitude	: 42 51 49.16	Logged By	: B. Massey (MWH)
Longitude	: 111 23 31.95	Installed By	: J. Crossman (AK Drilling, INC.)
Elevation (ft) AMSL	: 6645.64 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
- ▼ Water Level Before Sampling
- ▽ N/A

Well: MMW025
Elev.: 6645.64 AMSL

Depth in Feet	Sample	Time	DESCRIPTION	Formation
100	21		sandy clay to gravel, strong brown (7.5YR 5/6)	Alluvium
105	22			
110	23			
115	24		clayey silt, sand, well graded, claystone, brownish yellow (10YR 6/8)	Dinwoody
120	25			
125	26		at 124ft bgs Clay interbeds to 135ft bgs	
130	27			
135	28			
140	29			
145	30		claystone, olive gray (5Y 4/2) and black	
150	31			
155	32			
160	33			
165	34			
170	35			
175	36			
180	37			
185	38			
190	39			
195	40			
200				

Well Details

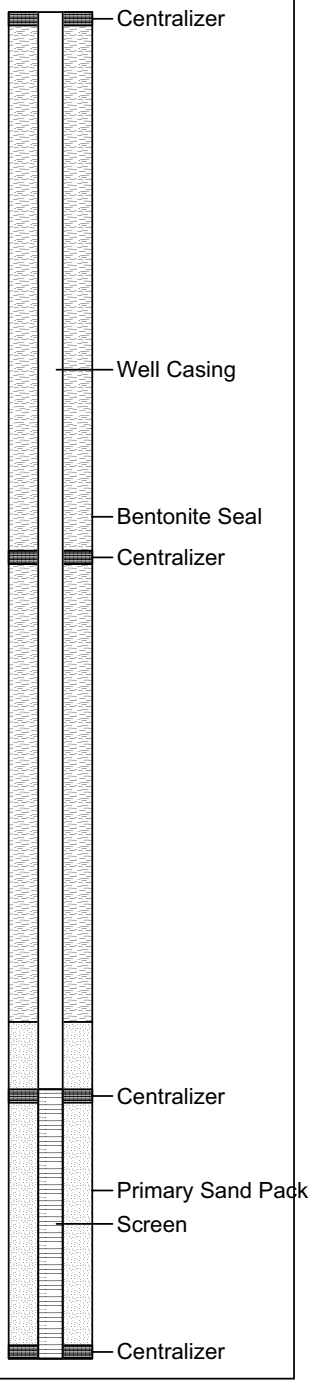
CONSTRUCTION DETAILS

Installation Date	: 7/28/2008
Boring Total Depth (ft bgs)	: 201
Well Total Depth (ft bgs)	: 200
Casing Type	: Schedule 40 PVC
Screen Slot Size	: 0.020
Screen Length (ft)	: 20
Screened Interval (ft bgs)	: 180-200
Sand Size at Screen	: 10X20
Filter Interval (ft bgs)	: 175-201
Secondary Filter Interval (ft bgs)	: NA
Bentonite Seal (Chips) Interval (ft bgs)	: 0-175
Bentonite Seal (slurry) Interval (ft bgs)	: Not used
Formation at Screen	: Dinwoody
Depth Water Encountered when Drilling (ft bgs)	: 58, 160
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: 16
Backfill (ft bgs)	: NA
Steel Casing Depth (ft bgs)	: 16
Pump Depth (ft bgs)	: 192
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: 3.32

SAMPLE DETAILS

Fall 08 Static Water Level (ft bmp)	: 33.6
Fall 08 Total Se (mg/L)	: 0.00088

NOTES:
Bottom of borehole at 201ft bgs.
Cuttings were always wet due to water being injected as drilling fluid.



RECORD OF BOREHOLE: MMW026

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Dual Rotary / Foremost DR-12
Drilling Date(s)	: 8/6/2008-8/10/2008	Drilled By	: J. Crossman (AK Drilling, INC.)
Latitude	: 42 51 56.48	Logged By	: B. Massey (MWH)
Longitude	: 111 23 25.74	Installed By	: J. Crossman (AK Drilling, INC.)
Elevation (ft) AMSL	: 6638.72 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
- ▼ Water Level Before Sampling
- ▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	1152	sandy clay with gravel (SP-SC), light brown (7.5YR 6/3)	Alluvium
5	2	1224		
10	3	1227		
15	4	1229		
20	5	1232	poorly sorted gravel with sandy clay with (GP-GC), light brown (7.5YR 6/3)	
25	6	1300		
30	7	1302		
35	8	1304		
40	9	1306		
45	10	1405		
50	11	1409		
55	12	1417		
60	13	1453		
65	14	1456		
70	15	1458		
75	16	1500		
80	17	1527		
85	18	1529		
90	19	1532		
95	20	1539		
100				

Well Details

CONSTRUCTION DETAILS

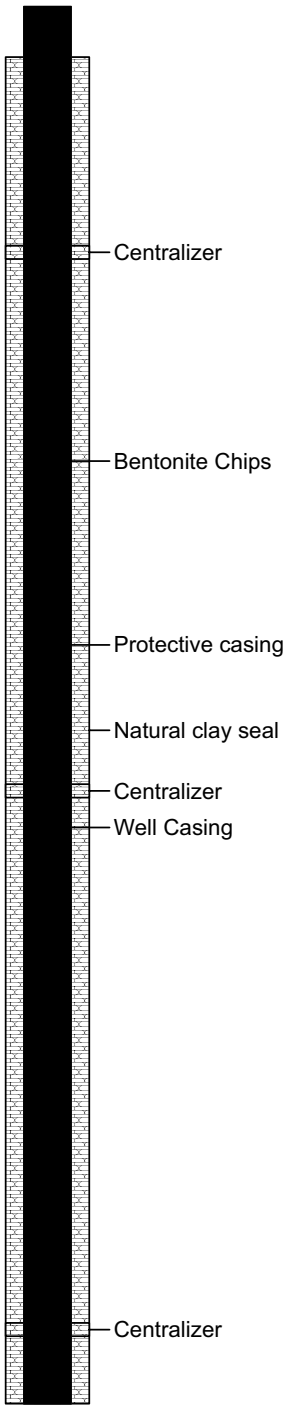
Installation Date	: 8/11/2008
Boring Total Depth (ft bgs)	: 363
Well Total Depth (ft bgs)	: 355
Casing Type	: Schedule 80 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 20
Screened Interval (ft bgs)	: 335-335
Sand Size at Screen	: 20x40
Filter Interval (ft bgs)	: 330-355
Secondary Filter Interval (ft bgs)	: NA
Bentonite Seal (Chips) Interval (ft bgs)	: 0-330
Bentonite Seal (slurry) Interval (ft bgs)	: Not used
Formation at Screen	: Wells
Depth Water Encountered when Drilling (ft bgs)	: 6, 65, 100, 200, 300
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: 322
Backfill (ft bgs)	: NA
Steel Casing Depth (ft bgs)	: 322
Pump Depth (ft bgs)	: 350
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: 4.07

SAMPLE DETAILS

Fall 08 Static Water Level (ft bmp)	: 287.6
Fall 08 Total Se (mg/L)	: 0.0013

NOTES:
Bottom of borehole at 363ft bgs.
Borehole caved to 355ft bgs.
Expansive clays prevented the well casing from being pulled back at 322ft bgs.
Protective casing is filled with bentonite chips from the filter pack to the surface.
Cuttings were always wet due to water being injected as drilling fluid.

Well: MMW026
Elev.: 6638.72 AMSL



RECORD OF BOREHOLE: MMW026

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Dual Rotary / Foremost DR-12
Drilling Date(s)	: 8/6/2008-8/10/2008	Drilled By	: J. Crossman (AK Drilling, INC.)
Latitude	: 42 51 56.48	Logged By	: B. Massey (MWH)
Longitude	: 111 23 25.74	Installed By	: J. Crossman (AK Drilling, INC.)
Elevation (ft) AMSL	: 6638.72 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Well: MMW026
Elev.: 6638.72 AMSL

Depth in Feet	Sample	Time	DESCRIPTION	Formation
100	21	1608	gravel poorly sorted with sandy clay (GP-GC) , light brown (7.5YR 6/3)	Alluvium
105	22	1606		
110	23	1610		
115	24	1615		
120	25	758		
125	26	802		
130	27	805		
135	28	815	clay (CL), olive (5Y 4/6) with some very coarse sand and gravel	
140	29	842		
145	30	845		
150	31	847		
155	32	850	very coarse sand with some clay and gravel (SP-SC)	
160	33	917		
165	34	919		
170	35	921		
175	36	924		
180	37	1141		
185	38	1140	sandstone, strong brown (7.5YR 5/8) and, greenish gray (1GLEY 6/10)	
190	39	1147		
195	40	1151	clay, yellowish red (5YR 5/8)	
200				

Well Details

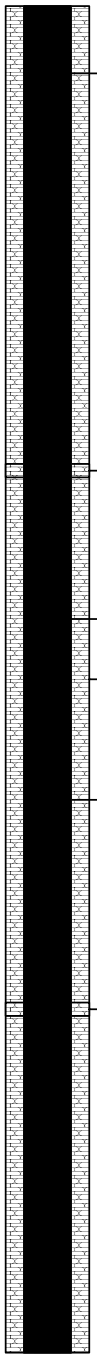
CONSTRUCTION DETAILS

Installation Date	: 8/11/2008
Boring Total Depth (ft bgs)	: 363
Well Total Depth (ft bgs)	: 355
Casing Type	: Schedule 80 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 20
Screened Interval (ft bgs)	: 335-335
Sand Size at Screen	: 20x40
Filter Interval (ft bgs)	: 330-355
Secondary Filter Interval (ft bgs)	: NA
Bentonite Seal (Chips) Interval (ft bgs)	: 0-330
Bentonite Seal (slurry) Interval (ft bgs)	: Not used
Formation at Screen	: Wells
Depth Water Encountered when Drilling (ft bgs)	: 6, 65, 100, 200, 300
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: 322
Backfill (ft bgs)	: NA
Steel Casing Depth (ft bgs)	: 322
Pump Depth (ft bgs)	: 350
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: 4.07

SAMPLE DETAILS

Fall 08 Static Water Level (ft bmp)	: 287.6
Fall 08 Total Se (mg/L)	: 0.0013

NOTES:
Bottom of borehole at 363ft bgs.
Borehole caved to 355ft bgs.
Expansive clays prevented the well casing from being pulled back at 322ft bgs.
Protective casing is filled with bentonite chips from the filter pack to the surface.
Cuttings were always wet due to water being injected as drilling fluid.



RECORD OF BOREHOLE: MMW026

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Dual Rotary / Foremost DR-12
Drilling Date(s)	: 8/6/2008-8/10/2008	Drilled By	: J. Crossman (AK Drilling, INC.)
Latitude	: 42 51 56.48	Logged By	: B. Massey (MWH)
Longitude	: 111 23 25.74	Installed By	: J. Crossman (AK Drilling, INC.)
Elevation (ft) AMSL	: 6638.72 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Well: MMW026
Elev.: 6638.72 AMSL

Depth in Feet	Sample	Time	DESCRIPTION	Formation
200	41	1215	clay, yellowish red (5YR 5/8)	Alluvium
205	42	1219		
210	43	1222		
215	44	1224		
220	45	1255	sandstone, yellowish red (10YR 5/8)	Wells
225	46	1302		
230	47	1305		
235	48	1307		
240	49	1303	gray limestone with sandstone interbeds, calcareous	
245	50	1307		
250	51	1321		
255	52	1324		
260	53	1345		
265	54	1349		
270	55	1359		
275	56	1405		
280	57	1418		
285	58	1420	light gray limestone with clay, yellowish red (5YR 5/6) interbeds, calcareous	
290	59	1425		
295	60	1430		
300				

Well Details

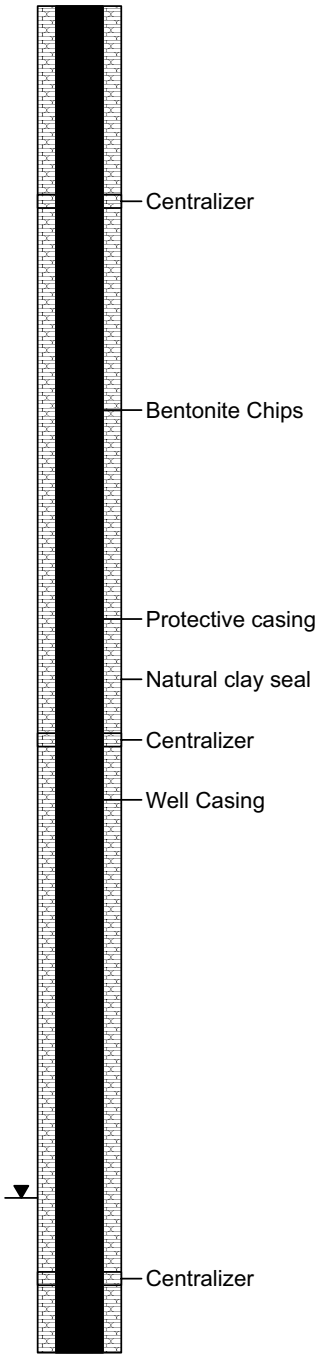
CONSTRUCTION DETAILS

Installation Date	: 8/11/2008
Boring Total Depth (ft bgs)	: 363
Well Total Depth (ft bgs)	: 355
Casing Type	: Schedule 80 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 20
Screened Interval (ft bgs)	: 335-335
Sand Size at Screen	: 20x40
Filter Interval (ft bgs)	: 330-355
Secondary Filter Interval (ft bgs)	: NA
Bentonite Seal (Chips) Interval (ft bgs)	: 0-330
Bentonite Seal (slurry) Interval (ft bgs)	: Not used
Formation at Screen	: Wells
Depth Water Encountered when Drilling (ft bgs)	: 6, 65, 100, 200, 300
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: 322
Backfill (ft bgs)	: NA
Steel Casing Depth (ft bgs)	: 322
Pump Depth (ft bgs)	: 350
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: 4.07

SAMPLE DETAILS

Fall 08 Static Water Level (ft bmp)	: 287.6
Fall 08 Total Se (mg/L)	: 0.0013

NOTES:
Bottom of borehole at 363ft bgs.
Borehole caved to 355ft bgs.
Expansive clays prevented the well casing from being pulled back at 322ft bgs.
Protective casing is filled with bentonite chips from the filter pack to the surface.
Cuttings were always wet due to water being injected as drilling fluid.



RECORD OF BOREHOLE: MMW026

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Dual Rotary / Foremost DR-12
Drilling Date(s)	: 8/6/2008-8/10/2008	Drilled By	: J. Crossman (AK Drilling, INC.)
Latitude	: 42 51 56.48	Logged By	: B. Massey (MWH)
Longitude	: 111 23 25.74	Installed By	: J. Crossman (AK Drilling, INC.)
Elevation (ft) AMSL	: 6638.72 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Well: MMW026
Elev.: 6638.72 AMSL

Depth in Feet	Sample	Time	DESCRIPTION	Formation
300	61	1448	clay, yellowish red (5YR 5/6) with very light gray sandstone, calcareous	Wells
305	62	1502	very light gray sandstone, reddish yellow (10YR 6/6)	
310	63	1508		
315	64	1534		
320	65	1516		
325	66	1522		
330	67	1527		
335	68	1532		
340	69	1549		
345	70	1553	sandstone, light yellowish brown (2.5Y 6/3)	
350	71	1600		
355	72	1606		
360				
365				
370				
375				
380				
385				
390				
395				
400				

Well Details

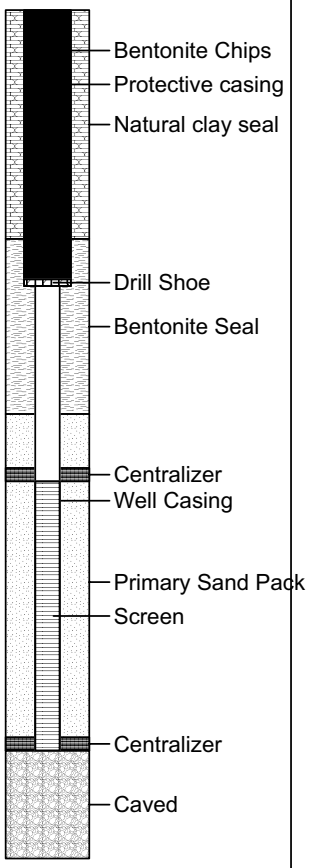
CONSTRUCTION DETAILS

Installation Date	: 8/11/2008
Boring Total Depth (ft bgs)	: 363
Well Total Depth (ft bgs)	: 355
Casing Type	: Schedule 80 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 20
Screened Interval (ft bgs)	: 335-335
Sand Size at Screen	: 20x40
Filter Interval (ft bgs)	: 330-355
Secondary Filter Interval (ft bgs)	: NA
Bentonite Seal (Chips) Interval (ft bgs)	: 0-330
Bentonite Seal (slurry) Interval (ft bgs)	: Not used
Formation at Screen	: Wells
Depth Water Encountered when Drilling (ft bgs)	: 6, 65, 100, 200, 300
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: 322
Backfill (ft bgs)	: NA
Steel Casing Depth (ft bgs)	: 322
Pump Depth (ft bgs)	: 350
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: 4.07

SAMPLE DETAILS

Fall 08 Static Water Level (ft bmp)	: 287.6
Fall 08 Total Se (mg/L)	: 0.0013

NOTES:
Bottom of borehole at 363ft bgs.
Borehole caved to 355ft bgs.
Expansive clays prevented the well casing from being pulled back at 322ft bgs.
Protective casing is filled with bentonite chips from the filter pack to the surface.
Cuttings were always wet due to water being injected as drilling fluid.



RECORD OF BOREHOLE: MMW027

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Dual Rotary / Foremost DR-12
Drilling Date(s)	: 8/13/2008-8/15/2008	Drilled By	: J. Crossman (AK Drilling, INC.)
Latitude	: 42 53 28.97	Logged By	: B. Massey (MWH)
Longitude	: 111 25 53.49	Installed By	: J. Crossman (AK Drilling, INC.)
Elevation (ft) AMSL	: 6505.11 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	1103	sandy clay and gravel, grayish brown to brown (7.5YR 4/2), hard	Alluvium
5	2	1107		
10	3	1109		
15	4	1116		
20	5	1136	vesicular basalt, light gray, hard	Basalt
25	6	1139		
30	7	1141		
35	8	1145		
40	9	911		
45	10	915	clay, yellowish brown (10YR 5/8)	Alluvium
50	11	920		
55	12	927	claystone, calcareous light olive gray (5Y6/2)	Dinwoody
60	13	925	limestone redish gray to black (2.5YR 2.5/1), calcareous; claystone, lightolive brown (2.5Y5/4) and limestone, calcareous	
65	14	949	sand, poorly graded, limestone dark gray and red to black (2.5YR 2.5/1), calcareous	
70	15	957		
75	16	1002		
80	17	1031	claystone, light olive brown (2.5Y 5/3), calcareous	
85	18	1036		
90	19	1041		
95	20	1045		
100				

Well Details

CONSTRUCTION DETAILS

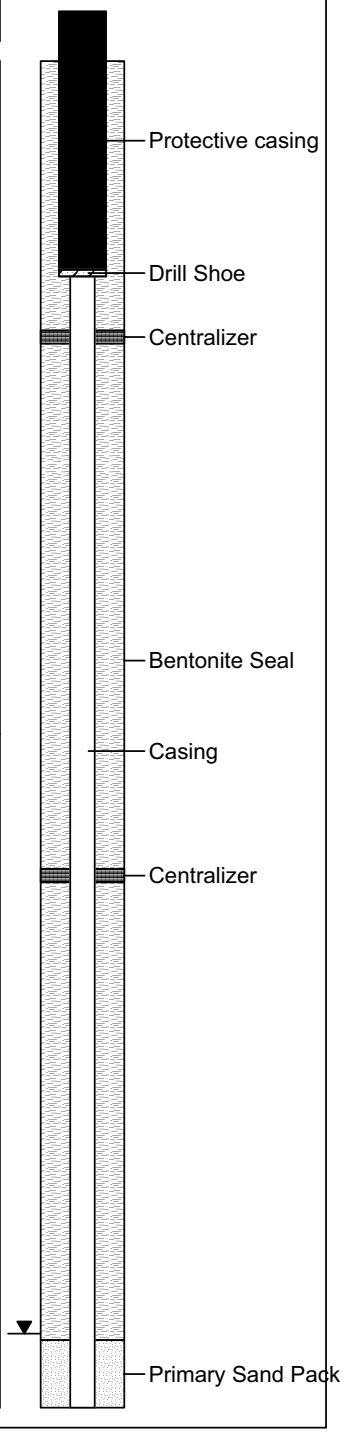
Installation Date	: 8/15/2008
Boring Total Depth (ft bgs)	: 123
Well Total Depth (ft bgs)	: 120
Casing Type	: Schedule 40 PVC
Screen Slot Size	: 0.020
Screen Length (ft)	: 20
Screened Interval (ft bgs)	: 100-120
Sand Size at Screen	: 10X20
Filter Interval (ft bgs)	: 95-120
Secondary Filter Interval (ft bgs)	: NA
Bentonite Seal (Chips) Interval (ft bgs)	: 0-95
Bentonite Seal (slurry) Interval (ft bgs)	: Not used
Formation at Screen	: Dinwoody
Depth Water Encountered when Drilling (ft bgs)	: 88
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: 16
Backfill (ft bgs)	: NA
Steel Casing Depth (ft bgs)	: 16
Pump Depth (ft bgs)	: 115
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: 3.68

SAMPLE DETAILS

Fall 08 Static Water Level (ft bmp)	: 94.45
Fall 08 Total Se (mg/L)	: 0.31

NOTES:
Bottom of borehole at 123 ft bgs.
Cuttings were always wet due to water being injected as drilling fluid.

Well: MMW027
Elev.: 6505.11 AMSL



RECORD OF BOREHOLE: MMW027

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Dual Rotary / Foremost DR-12
Drilling Date(s)	: 8/13/2008-8/15/2008	Drilled By	: J. Crossman (AK Drilling, INC.)
Latitude	: 42 53 28.97	Logged By	: B. Massey (MWH)
Longitude	: 111 25 53.49	Installed By	: J. Crossman (AK Drilling, INC.)
Elevation (ft) AMSL	: 6505.11 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
100	21	1113	silty clay, claystone light olive brown (2.5Y 5/3), calcareous	Dinwoody
105	22	1117		
110	23	1121		
115	24	1125		
120				
125				
130				
135				
140				
145				
150				
155				
160				
165				
170				
175				
180				
185				
190				
195				
200				

Well Details

CONSTRUCTION DETAILS

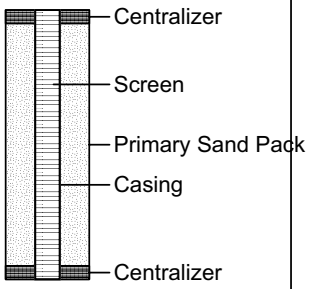
Installation Date	: 8/15/2008
Boring Total Depth (ft bgs)	: 123
Well Total Depth (ft bgs)	: 120
Casing Type	: Schedule 40 PVC
Screen Slot Size	: 0.020
Screen Length (ft)	: 20
Screened Interval (ft bgs)	: 100-120
Sand Size at Screen	: 10X20
Filter Interval (ft bgs)	: 95-120
Secondary Filter Interval (ft bgs)	: NA
Bentonite Seal (Chips) Interval (ft bgs)	: 0-95
Bentonite Seal (slurry) Interval (ft bgs)	: Not used
Formation at Screen	: Dinwoody
Depth Water Encountered when Drilling (ft bgs)	: 88
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: 16
Backfill (ft bgs)	: NA
Steel Casing Depth (ft bgs)	: 16
Pump Depth (ft bgs)	: 115
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: 3.68

SAMPLE DETAILS

Fall 08 Static Water Level (ft bmp)	: 94.45
Fall 08 Total Se (mg/L)	: 0.31

NOTES:
Bottom of borehole at 123 ft bgs.
Cuttings were always wet due to water being injected as drilling fluid.

Well: MMW027
Elev.: 6505.11 AMSL



RECORD OF BOREHOLE: MMW028

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Dual Rotary / Foremost DR-12
Drilling Date(s)	: 7/14/2008	Drilled By	: J. Crossman (AK Drilling, INC.)
Latitude	: 42 53 50.24	Logged By	: B. Massey (MWH)
Longitude	: 111 29 0.00	Installed By	: J. Crossman (AK Drilling, INC.)
Elevation (ft) AMSL	: 6316.63 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	815	sandy clay (SC) and gravel, grayish brown to brown (7.5YR 4/2), Hard	Alluvium
5	2	820		
10	3	822		
15	4	832		
20	5	904	at 20ft bgs becomes mostly sandy clay bright yellowish brown, (10YR 6/6).	
25	6	908		
30	7	911		
35	8	919		
40	9	927	vesicular basalt, light gray to black, very hard and fractured.	Basalt
45	10	940		
50	11	950		
55	12	1000		
60	13	1202		
65	14	1206	sandy clay to gravel (GP-GC), yellowish brown (10YR 5/6)	Alluvium
70	15	1208	silty sand (ML), sandstone, tan, dark red and brown	Dinwoody
75	16	1218		
80	17	1258		
85	18	1302	claystone, light olive brown (2.5YR 5/6)	
90	19	1304		
95	20	1310	at 95ft bgs sandstone interbed, dark red and gray brown	
100				

Well Details

CONSTRUCTION DETAILS

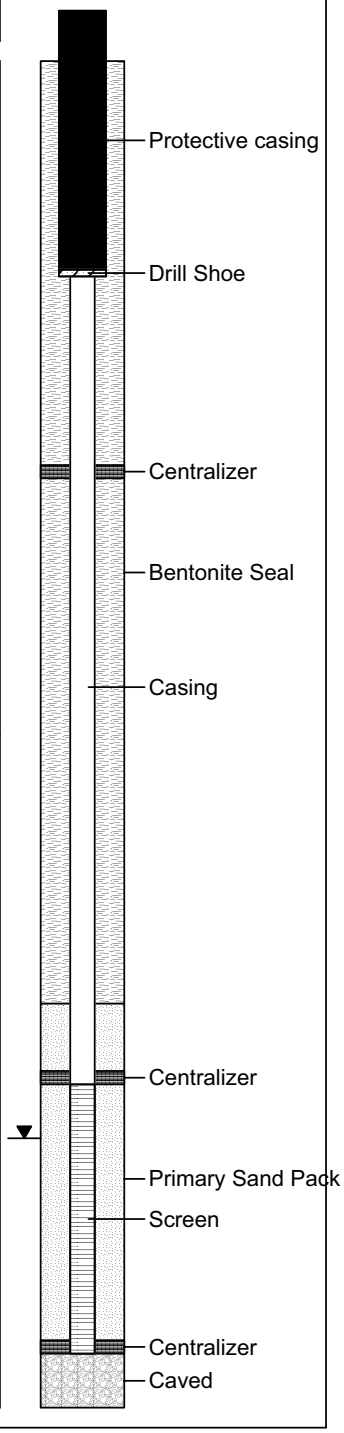
Installation Date	: 7/15/2008
Boring Total Depth (ft bgs)	: 100
Well Total Depth (ft bgs)	: 96
Casing Type	: Schedule 40 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 20
Screened Interval (ft bgs)	: 76-96
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 70-96
Secondary Filter Interval (ft bgs)	: NA
Bentonite Seal (Chips) Interval (ft bgs)	: 0-70
Bentonite Seal (slurry) Interval (ft bgs)	: Not used
Formation at Screen	: Dinwoody
Depth Water Encountered when Drilling (ft bgs)	: 80, 100
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: 16
Backfill (ft bgs)	: NA
Steel Casing Depth (ft bgs)	: 16
Pump Depth (ft bgs)	: 90
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: 4.16

SAMPLE DETAILS

Fall 08 Static Water Level (ft bmp)	: 79.18
Fall 08 Total Se (mg/L)	: 0.0026

NOTES:
Bottom of borehole at 100ft bgs.
Bore hole caved to 96ft bgs.
Cuttings were always wet due to water being injected as drilling fluid.

Well: MMW028
Elev.: 6316.63 AMSL



RECORD OF BOREHOLE: MMW029

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Dual Rotary / Foremost DR-12
Drilling Date(s)	: 7/16/2008	Drilled By	: J. Crossman (AK Drilling, INC.)
Latitude	: 42 49 34.78	Logged By	: B. Massey (MWH)
Longitude	: 111 28 8.73	Installed By	: J. Crossman (AK Drilling, INC.)
Elevation (ft) AMSL	: 6504.64 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0–25	1–5	1502–1535	Well Graded, gravel (GP), well graded with clayey silt and sand (GW-GC), grayish brown to brown (7.5YR 4/2), Hard	Alluvium
25–60	6–12	1538–1627	claystone, olive green, medum at 40ft bgs Color changes to light gray	Dinwoody

Well Details

CONSTRUCTION DETAILS

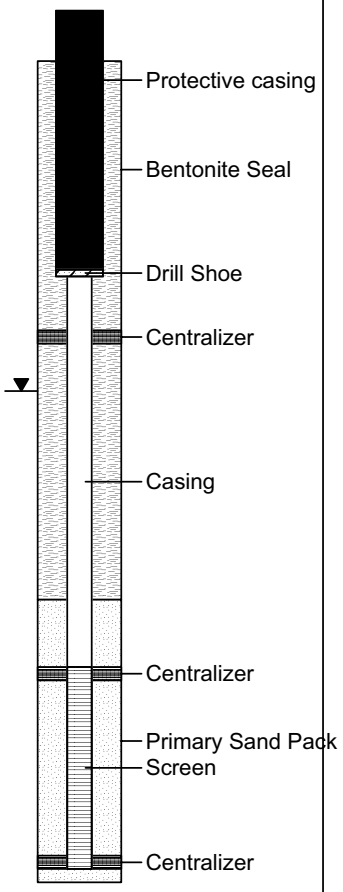
Installation Date	: 7/17/2008
Boring Total Depth (ft bgs)	: 61
Well Total Depth (ft bgs)	: 60
Casing Type	: Schedule 40 PVC
Screen Slot Size	: 0.020
Screen Length (ft)	: 15
Screened Interval (ft bgs)	: 45-60
Sand Size at Screen	: 10X20
Filter Interval (ft bgs)	: 40-60
Secondary Filter Interval (ft bgs)	: NA
Bentonite Seal (Chips) Interval (ft bgs)	: 0-40
Bentonite Seal (slurry) Interval (ft bgs)	: Not used
Formation at Screen	: Dinwoody
Depth Water Encountered when Drilling (ft bgs)	: 60
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: 16
Backfill (ft bgs)	: NA
Steel Casing Depth (ft bgs)	: 16
Pump Depth (ft bgs)	: 55
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: 4.28

SAMPLE DETAILS

Fall 08 Static Water Level (ft bmp)	: 25.67
Fall 08 Total Se (mg/L)	: 0.81

NOTES:
Bottom of borehole at 61ft bgs.
Cuttings were always wet due to water being injected as drilling fluid.

Well: MMW029
Elev.: 6504.64 AMSL



RECORD OF BOREHOLE: MMW030

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Dual Rotary / Foremost DR-12
Drilling Date(s)	: 7/08/2008-7/09/2008	Drilled By	: J. Crossman (AK Drilling, INC.)
Latitude	: 42 49 10.72	Logged By	: B. Massey (MWH)
Longitude	: 111 29 17.04	Installed By	: J. Crossman (AK Drilling, INC.)
Elevation (ft) AMSL	: 6362.90 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	1634	sandy clay and gravel (CL), grayish brown to brown (10YR 5/3), Hard	Alluvium
5	2	1635		
10	3	1637		
15	4	1640		
20	5	1700		
25	6	1710		
30	7	1713		
35	8	1716		
40	9	1750	clay/claystone, gray to greenish gray (10GY 5/1), meduim hardness	
45	10	1753		
50	11	1756	poorly sorted clay and gravel (CL-GP), brown	
55	12	1758		
60	13	0701		
65	14	0704		
70	15	0707		
75	16	0712	limestone, olive green, medium	Wells
80	17	0731		
85	18	0735		
90	19	0739		
95	20	0745		
100				

Well Details

CONSTRUCTION DETAILS

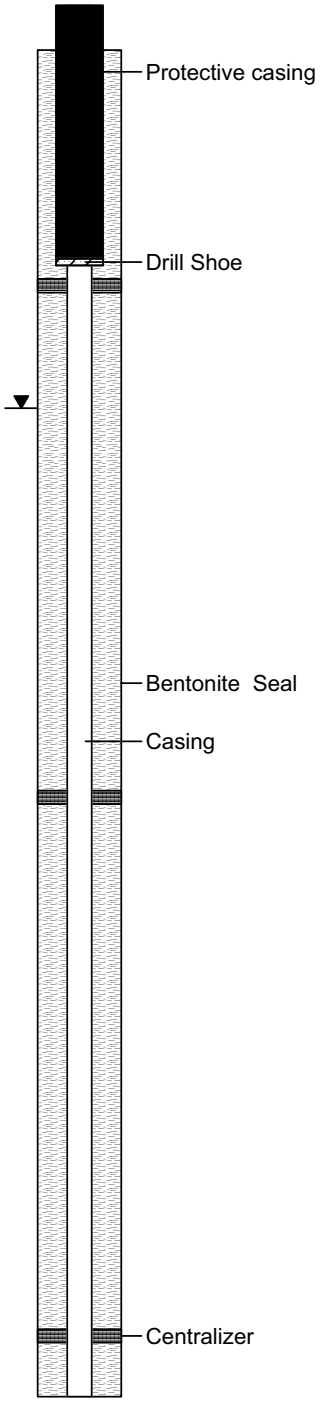
Installation Date	: 7/10/2008
Boring Total Depth (ft bgs)	: 221
Well Total Depth (ft bgs)	: 155
Casing Type	: Schedule 40 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 20
Screened Interval (ft bgs)	: 135-155
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 130-155
Secondary Filter Interval (ft bgs)	: NA
Bentonite Seal (Chips) Interval (ft bgs)	: 0-130
Bentonite Seal (slurry) Interval (ft bgs)	: Not used
Formation at Screen	: Wells
Depth Water Encountered when Drilling (ft bgs)	: 155
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: 16
Backfill (ft bgs)	: 155-221
Steel Casing Depth (ft bgs)	: 16
Pump Depth (ft bgs)	: 150
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: 3.32

SAMPLE DETAILS

Fall 08 Static Water Level (ft bmp)	: 25.81
Fall 08 Total Se (mg/L)	: <0.00010

NOTES:
Bottom of borehole at 221ft bgs.
Backfilled with bentonite chips from 155-221ft bgs.
Cuttings were always wet due to water being injected as drilling fluid.

Well: MMW030
Elev.: 6362.90 AMSL



RECORD OF BOREHOLE: MMW030

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Dual Rotary / Foremost DR-12
Drilling Date(s)	: 7/08/2008-7/09/2008	Drilled By	: J. Crossman (AK Drilling, INC.)
Latitude	: 42 49 10.72	Logged By	: B. Massey (MWH)
Longitude	: 111 29 17.04	Installed By	: J. Crossman (AK Drilling, INC.)
Elevation (ft) AMSL	: 6362.90 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Well: MMW030
Elev.: 6362.90 AMSL

Depth in Feet	Sample	Time	DESCRIPTION	Formation
100	21	0756	limestone, olive green, medium	Wells
105	22	0800		
110	23	0802		
115	24	0809		
120	25	0953		
125	26	1001		
130	27	1006		
135	28	1010		
140	29	1037		
145	30	1041		
150	31	1044		
155	32	1055		
160	33	1111	limestone light gray and chert mix	
165	34	1115		
170	35	1119	chert, black	Meade Peak
175	36	1123		
180	37	1142		
185	38	1145		
190	39	1149		
195	40	1154		
200				

Well Details

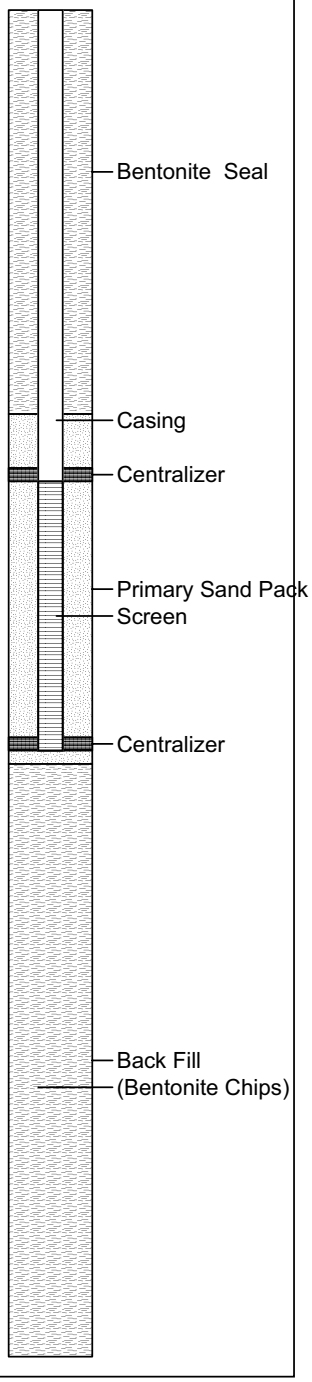
CONSTRUCTION DETAILS

Installation Date	: 7/10/2008
Boring Total Depth (ft bgs)	: 221
Well Total Depth (ft bgs)	: 155
Casing Type	: Schedule 40 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 20
Screened Interval (ft bgs)	: 135-155
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 130-155
Secondary Filter Interval (ft bgs)	: NA
Bentonite Seal (Chips) Interval (ft bgs)	: 0-130
Bentonite Seal (slurry) Interval (ft bgs)	: Not used
Formation at Screen	: Wells
Depth Water Encountered when Drilling (ft bgs)	: 155
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: 16
Backfill (ft bgs)	: 155-221
Steel Casing Depth (ft bgs)	: 16
Pump Depth (ft bgs)	: 150
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: 3.32

SAMPLE DETAILS

Fall 08 Static Water Level (ft bmp)	: 25.81
Fall 08 Total Se (mg/L)	: <0.00010

NOTES:
Bottom of borehole at 221ft bgs.
Backfilled with bentonite chips from 155-221ft bgs.
Cuttings were always wet due to water being injected as drilling fluid.



RECORD OF BOREHOLE: MMW030

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Dual Rotary / Foremost DR-12
Drilling Date(s)	: 7/08/2008-7/09/2008	Drilled By	: J. Crossman (AK Drilling, INC.)
Latitude	: 42 49 10.72	Logged By	: B. Massey (MWH)
Longitude	: 111 29 17.04	Installed By	: J. Crossman (AK Drilling, INC.)
Elevation (ft) AMSL	: 6362.90 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
200	41	1215		Meade Peak
205	42	1218		
210	43	1222		
215	44	1225		
220				
225				
230				
235				
240				
245				
250				
255				
260				
265				
270				
275				
280				
285				
290				
295				
300				

Well Details

CONSTRUCTION DETAILS

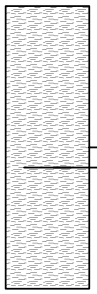
Installation Date	: 7/10/2008
Boring Total Depth (ft bgs)	: 221
Well Total Depth (ft bgs)	: 155
Casing Type	: Schedule 40 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 20
Screened Interval (ft bgs)	: 135-155
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 130-155
Secondary Filter Interval (ft bgs)	: NA
Bentonite Seal (Chips) Interval (ft bgs)	: 0-130
Bentonite Seal (slurry) Interval (ft bgs)	: Not used
Formation at Screen	: Wells
Depth Water Encountered when Drilling (ft bgs)	: 155
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: 16
Backfill (ft bgs)	: 155-221
Steel Casing Depth (ft bgs)	: 16
Pump Depth (ft bgs)	: 150
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: 3.32

SAMPLE DETAILS

Fall 08 Static Water Level (ft bmp)	: 25.81
Fall 08 Total Se (mg/L)	: <0.00010

NOTES:
Bottom of borehole at 221ft bgs.
Backfilled with bentonite chips from 155-221ft bgs.
Cuttings were always wet due to water being injected as drilling fluid.

Well: MMW030
Elev.: 6362.90 AMSL



RECORD OF BOREHOLE: MMW031

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Dual Rotary / Foremost DR-12
Drilling Date(s)	: 7/11/2008-7/12/2008	Drilled By	: J. Crossman (AK Drilling, INC.)
Latitude	: N42 50 11.87	Logged By	: B. Massey (MWH)
Longitude	: W111 29 43.05	Installed By	: J. Crossman (AK Drilling, INC.)
Elevation (ft) AMSL	: 6349.84 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	1212	sandy clay (CL), grayish brown to brown (7.5YR 4/2), hard	Alluvium
5	2	1213	at 5' clay-gravel poorly sorted	
10	3	1216		
15	4	1219		
20	5	1248		
25	6	1251		
30	7	1255		
35	8	1259		
40	9	1323	very coarse sand and gravel (Cl-GP), with less than 25% clay, yellowish brown (10YR 5/6)	
45	10	1327		
50	11	1329		
55	12	1332		
60	13	1355		
65	14	1358		
70	15	1402		
75	16	1406		
80	17	1435		
85	18	1438		
90	19	1443		
95	20	1450		
100				

Well Details

CONSTRUCTION DETAILS

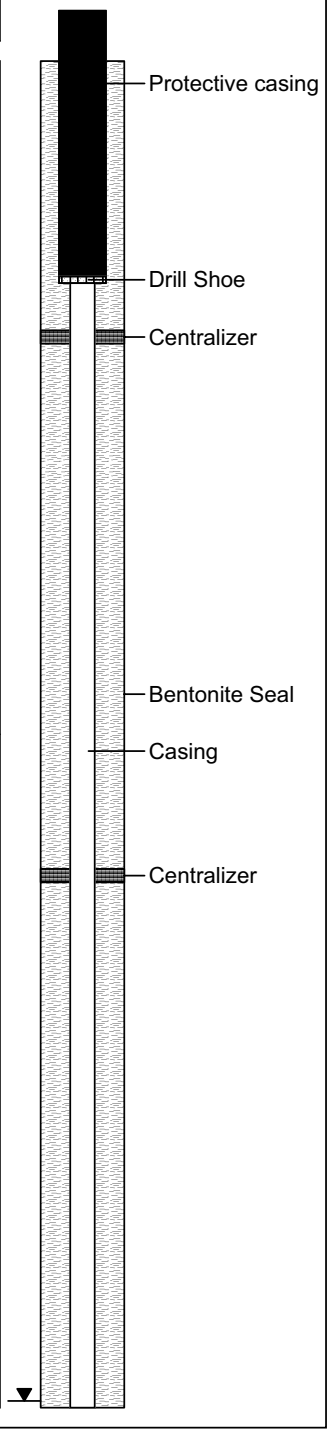
Installation Date	: 7/12/2008
Boring Total Depth (ft bgs)	: 201
Well Total Depth (ft bgs)	: 200
Casing Type	: Schedule 40 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 20
Screened Interval (ft bgs)	: 180-200
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 175-200
Secondary Filter Interval (ft bgs)	: N/A
Bentonite Seal (Chips) Interval (ft bgs)	: 0-175
Bentonite Seal (slurry) Interval (ft bgs)	: Not used
Formation at Screen	: Wells
Depth Water Encountered when Drilling (ft bgs)	: 120, 185
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: 16
Backfill (ft bgs)	: NA
Steel Casing Depth (ft bgs)	: 16
Pump Depth (ft bgs)	: 195
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: 3.17

SAMPLE DETAILS

Fall 08 Static Water Level (ft bmp)	: 99.73
Fall 08 Total Se (mg/L)	: 0.00087

NOTES:
Bottom of borehole at 201ft bgs.
Cuttings were always wet due to water being injected as drilling fluid.

Well: MMW031
Elev.: 6349.84 AMSL



RECORD OF BOREHOLE: MMW031

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Dual Rotary / Foremost DR-12
Drilling Date(s)	: 7/11/2008-7/12/2008	Drilled By	: J. Crossman (AK Drilling, INC.)
Latitude	: N42 50 11.87	Logged By	: B. Massey (MWH)
Longitude	: W111 29 43.05	Installed By	: J. Crossman (AK Drilling, INC.)
Elevation (ft) AMSL	: 6349.84 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Well: MMW031
Elev.: 6349.84 AMSL

Depth in Feet	Sample	Time	DESCRIPTION	Formation
100	21	1518	very course sand with some clay, dark yellowish brown (10YR 4/6)	Alluvium
105	22	1520		
110	23	1522		
115	24	1530		
120	25	1557		
125	26	1606		
130	27	1609		
135	28	1616		
140	29	1645		
145	30	1648		
150	31	1652		
155	32	1655		
160	33	1716	sand stone, brown gray and light gray	Wells
165	34	1721		
170	35	1723	at 170ft bgs sand stone is dark gray to black mixed with red dark yellow brown sandstone.	
175	36	1726		
180	37	1745	at 180ft bgs sand stone becomes yellowish red (5YR 5/6) and light gray.	
185	38	1749		
190	39	1750		
195	40	1753		
200				

Well Details

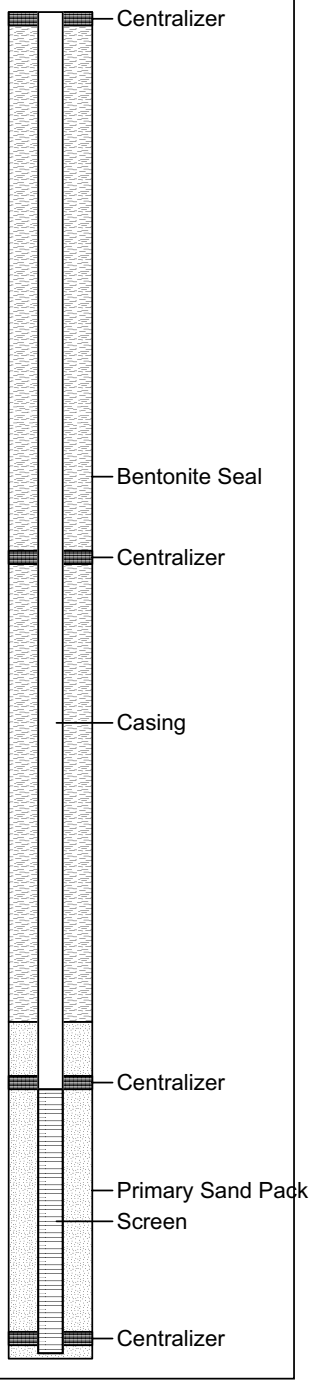
CONSTRUCTION DETAILS

Installation Date	: 7/12/2008
Boring Total Depth (ft bgs)	: 201
Well Total Depth (ft bgs)	: 200
Casing Type	: Schedule 40 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 20
Screened Interval (ft bgs)	: 180-200
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 175-200
Secondary Filter Interval (ft bgs)	: N/A
Bentonite Seal (Chips) Interval (ft bgs)	: 0-175
Bentonite Seal (slurry) Interval (ft bgs)	: Not used
Formation at Screen	: Wells
Depth Water Encountered when Drilling (ft bgs)	: 120, 185
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: 16
Backfill (ft bgs)	: NA
Steel Casing Depth (ft bgs)	: 16
Pump Depth (ft bgs)	: 195
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: 3.17

SAMPLE DETAILS

Fall 08 Static Water Level (ft bmp)	: 99.73
Fall 08 Total Se (mg/L)	: 0.00087

NOTES:
Bottom of borehole at 201ft bgs.
Cuttings were always wet due to water being injected as drilling fluid.



RECORD OF BOREHOLE: MMW032

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Air Rotary
Drilling Date(s)	: 8/26/09	Drilled By	: Kip Rahmig (Independent)
Latitude	: N 42 50' 15.5"	Logged By	: J. Yurkovich (MWH)
Longitude	: W 111 28' 36.3"	Installed By	: Kip Rahmig (Independent)
Elevation (ft) AMSL	: 6,460 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Sample	Time	DESCRIPTION	Formation
1	0830	Silty sand, dry, brown (7.5YR, 4/3).	Alluvium
2	0833		
3	0835	Silty sand, moist, brown (7.5YR, 4/3).	
4	0840	Sandy clay, trace gravel, red-brown (5YR, 5/2), med plasticity, wet.	
5	0900		
6	0910	Gravely sand with clay, black and brown (7.5YR, 5/2), poorly graded, wet, clay nodules present.	
7	0912		
8	0916		
9	0922	Sandy gravel with clay, brown (7.5YR, 5/3), wet. Clay: 15% Sand: 30% Gravel: 55%	
10	0926	Gravelly sand, dark brown (7.5YR, 2.5/1), wet.	
11	0932	Weathered bedrock, brown (10YR, 5/4), poorly graded, wet.	
12	0938	Mudstone and some sandstone, yellowish-brown (10YR, 5/4), some slightly calcareous, up to fine grained sand.	Dinwoody
13	0944		
14	0954	Mudstone, non-calcareous, black (GLEY, 2.5/10B), wet, cuttings, siliceous (cherty).	Phosphoria
15	0956		
16	0958		
17	1000		
18	1002		
19	1004		
20	1006		

Depth in Feet: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100

Well Details

CONSTRUCTION DETAILS

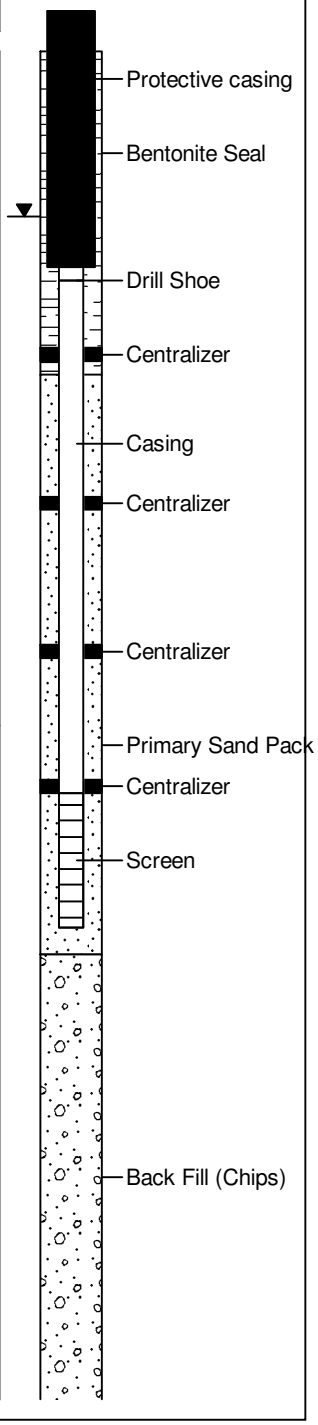
Installation Date	: 8/27/2009
Boring Total Depth (ft bgs)	: 160
Well Total Depth (ft bgs)	: 65
Casing Type	: Schedule 40 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 10
Screened Interval (ft bgs)	: 65-55
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 67-24
Secondary Filter Interval (ft bgs)	: N/A
Bentonite Seal (Chips)	:
Interval (ft bgs)	: 24-0
Bentonite Seal (slurry)	:
Interval (ft bgs)	: NA
Formation at Screen	: Dinwoody
Depth Water Encountered: when Drilling (ft bgs)	: 35
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	:
Backfill (ft bgs)	: 160-67
Steel Casing Depth (ft bgs)	: 17
Pump Depth (ft bgs)	: 61
Pump Intake Depth (ft bgs)	: 61
Height of MP (ft ags)	: 3

SAMPLE DETAILS

Fall 09 Static Water Level (ft bmp)	: 35
Fall 09 Total Se (mg/L)	:

NOTES:
Bottom of borehole at 160ft bgs.
Cuttings were always wet due to water being injected as drilling fluid, or produced by formations.
Backfilled to 67 ft bgs to place the well screen within the target formation.
Borehole collapsed or sand bridged during filter pack placement-composition of 24-65' is unknown with sand and native material.

Well: MMW032
Elev.: 6,460 AMSL



RECORD OF BOREHOLE: MMW032

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Air Rotary
Drilling Date(s)	: 8/26/09	Drilled By	: Kip Rahmig (Independent)
Latitude	: N 42 50' 15.5"	Logged By	: J. Yurkovich (MWH)
Longitude	: W 111 28' 36.3"	Installed By	: Kip Rahmig (Independent)
Elevation (ft) AMSL	: 6,460 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
100	21	1008	Mudstone, same as above.	Phosphoria
105	22	1010		
110	23	1012		
115	24	1014		
120	25	1016		
125	26	1018		
130	27	1020		
135	28	1022		
140	29	1024		
145	30	1026		
150	31	1028		
155	32	1030		
160				
165				
170				
175				
180				
185				
190				
195				
200				

Well Details

CONSTRUCTION DETAILS

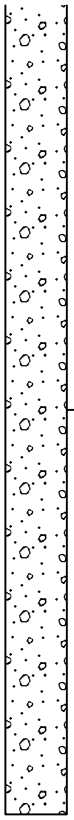
Installation Date	: 8/27/2009
Boring Total Depth (ft bgs)	: 160
Well Total Depth (ft bgs)	: 65
Casing Type	: Schedule 40 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 10
Screened Interval (ft bgs)	: 65-55
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 67-24
Secondary Filter Interval (ft bgs)	: N/A
Bentonite Seal (Chips)	:
Interval (ft bgs)	: 24-0
Bentonite Seal (slurry)	:
Interval (ft bgs)	: NA
Formation at Screen	: Dinwoody
Depth Water Encountered: when Drilling (ft bgs)	: 35
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	:
Backfill (ft bgs)	: 160-67
Steel Casing Depth (ft bgs)	: 17
Pump Depth (ft bgs)	: 61
Pump Intake Depth (ft bgs)	: 61
Height of MP (ft ags)	: 3

SAMPLE DETAILS

Fall 09 Static Water Level :(ft bmp)	: 35
Fall 09 Total Se (mg/L)	:

NOTES:
Bottom of borehole at 160ft bgs.
Cuttings were always wet due to water being injected as drilling fluid, or produced by formations.
Backfilled to 67 ft bgs to place the well screen within the target formation.
Borehole collapsed or sand bridged during filter pack placement-composition of 24-65' is unknown with sand and native material.

Well: MMW032
Elev.: 6,460 AMSL



RECORD OF BOREHOLE: MMW033

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Air Rotary
Drilling Date(s)	: 8/28/09	Drilled By	: Kip Rahmig (Independent)
Latitude	: N 42 49' 58.8"	Logged By	: J. Yurkovich (MWH)
Longitude	: W 111 28' 19.8"	Installed By	: Kip Rahmig (Independent)
Elevation (ft) AMSL	: 6,516 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	0922	Sandy silt, dry, brown (10YR, 5/3).	Alluvium
5	2	0925		
10	3	0930	Sandy silt with some clay, dry, brown (10YR, 5/3), slightly plastic.	
15	4	0935	Clayey sand, olive-brown (2.5YR, 6/3), wet.	
20	5	1030	Rock @ 18' bgs. Mudstone, olive-brown (2.5YR, 6/3), calcareous.	Dinwoody
25	6	1040		
30	7	1045	Claystone, olive-brown (2.5YR, 6/3), calcareous, some mudstone.	
35	8	1050	Mudstone, olive-brown (2.5YR, 4/2), calcareous, some limestone with calcite veining.	
40	9	1055		
45	10	1058		
50	11	1100		
55	12	1102	Mudstone, gray (1GLEY, 5/N), calcareous.	
60	13	1104	Mudstone, some fine sand, greenish-gray (1GLEY, 6/10), calcareous.	
65	14	1106		
70	15	1108		
75	16	1110		
80	17	1113		
85	18	1117	becomes olive-brown, producing 10-15GPM.	
90	19	1121		
95	20	1124		
100				

Well Details

CONSTRUCTION DETAILS

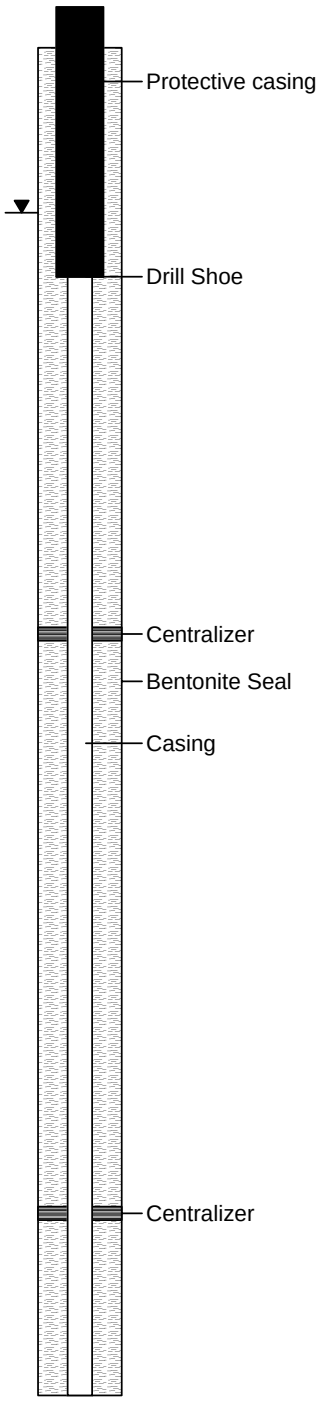
Installation Date	: 8/28/2009
Boring Total Depth (ft bgs)	: 160
Well Total Depth (ft bgs)	: 150
Casing Type	: Schedule 40 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 20
Screened Interval (ft bgs)	: 148-128
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 155-124
Secondary Filter Interval	: N/A
(ft bgs)	:
Bentonite Seal (Chips)	:
Interval (ft bgs)	: 124-0
Bentonite Seal (slurry)	:
Interval (ft bgs)	: NA
Formation at Screen	: Dinwoody
Depth Water Encountered	:
when Drilling (ft bgs)	: 17
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	:
Backfill (ft bgs)	: 155-150 (Sand)
Steel Casing Depth	:
(ft bgs)	: 17
Pump Depth (ft bgs)	: 141
Pump Intake Depth (ft bgs)	: 141
Height of MP (ft ags)	: 3

SAMPLE DETAILS

Fall 09 Static Water Level (ft bmp) : 20
Fall 09 Total Se (mg/L) :

NOTES:
Bottom of borehole at 160ft bgs.
Cuttings were always wet due to water being injected as drilling fluid, or produced by formations.
Backfilled with sand to 150 ft bgs to place the well screen within the target formation.

Well: MMW033
Elev.: 6,516 AMSL



RECORD OF BOREHOLE: MMW033

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Air Rotary
Drilling Date(s)	: 8/28/09	Drilled By	: Kip Rahmig (Independent)
Latitude	: N 42 49' 58.8"	Logged By	: J. Yurkovich (MWH)
Longitude	: W 111 28' 19.8"	Installed By	: Kip Rahmig (Independent)
Elevation (ft) AMSL	: 6,516 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
100	21	1127	Mudstone, olive-brown (2.5YR, 4/2), some sand, calcareous.	Dinwoody
105	22	1130		
110	23	1135	Claystone, gray (GLEY 1, 4/N), glossy, slightly calcareous to non-calcareous.	
115	24	1138		
120	25	1141		
125	26	1144	Limestone and mudstone, medium gray (GLEY 1, 5/N), fissle, calcareous.	
130	27	1147		
135	28	1150		
140	29	1152	Limestone and mudstone, olive-gray mix, (GLEY 1, 5/N), fissle limestone, calcareous mudstone.	
145	30	1155		
150	31	1158	Limestone, gray (GLEY 1, 5/N).	
155	32	1200		
160				
165				
170				
175				
180				
185				
190				
195				
200				

Well Details

CONSTRUCTION DETAILS

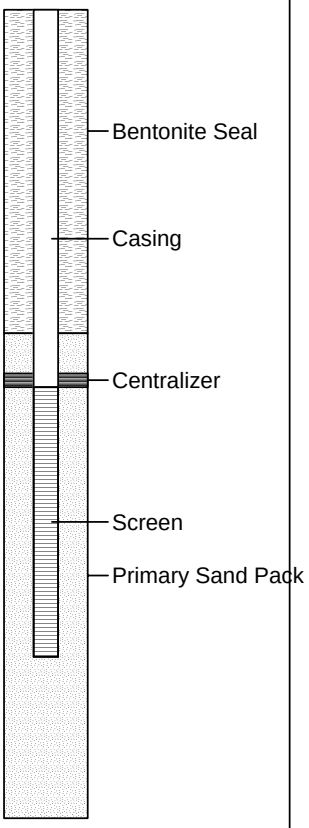
Installation Date	: 8/28/2009
Boring Total Depth (ft bgs)	: 160
Well Total Depth (ft bgs)	: 150
Casing Type	: Schedule 40 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 20
Screened Interval (ft bgs)	: 148-128
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 155-124
Secondary Filter Interval	: N/A
(ft bgs)	:
Bentonite Seal (Chips)	:
Interval (ft bgs)	: 124-0
Bentonite Seal (slurry)	:
Interval (ft bgs)	: NA
Formation at Screen	: Dinwoody
Depth Water Encountered	:
when Drilling (ft bgs)	: 17
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	:
Backfill (ft bgs)	: 155-150 (Sand)
Steel Casing Depth	:
(ft bgs)	: 17
Pump Depth (ft bgs)	: 141
Pump Intake Depth (ft bgs)	: 141
Height of MP (ft ags)	: 3

SAMPLE DETAILS

Fall 09 Static Water Level (ft bmp) : 20
Fall 09 Total Se (mg/L) :

NOTES:
Bottom of borehole at 160ft bgs.
Cuttings were always wet due to water being injected as drilling fluid, or produced by formations.
Backfilled with sand to 150 ft bgs to place the well screen within the target formation.

Well: MMW033
Elev.: 6,516 AMSL



RECORD OF BOREHOLE: MMW034

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Air Rotary
Drilling Date(s)	: 9/1/09-9/2/29	Drilled By	: Kip Rahmig (Independent)
Latitude	: N 42 52' 09.1"	Logged By	: J. Yurkovich (MWH)
Longitude	: W 111 24' 14.8"	Installed By	: Kip Rahmig (Independent)
Elevation (ft) AMSL	: 6,637 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Sample	Time	DESCRIPTION	Formation
1	1615	Sandy clay, dark brown (7.5YR, 4/2), dry.	Alluvium
2	1617		
3	1618	Sandy clay, little-some gravels, moist, olive-yellow (2.5Y, 6/6).	
4	1620	Fat clay, olive-yellow, moist, high plasticity, some sand and gravel, gravels are olive colored, like Dinwoody (2.5Y, 6/6) and calcareous.	
5	1650		
		Siltstone, olive-yellow (2.5Y, 6/6).	Dinwoody
6	1655	Siltstone, light olive-brown (2.5Y, 5/4), wet.	
7	1657	Mudstone, dark red-brown and olive (5YR, 3/3) and (5Y,5/3), with some clay nodules, calcareous, and laminated.	
8	1703		
9	1706		
10	1708		
11	1710		
12	1712		
13	1714		
14	1715		
15	1717		
16	1719		
17	0822	Mudstone, dark reddish-brown, (5YR, 3/3), calcareous, some clay nodules.	
18	0825	Mudstone, now olive (5Y, 5/3).	
19	0828		
20	0833	Limestone, very dark brown and olive mix (7.5YR, 3/1) and (5Y, 5/3).	

Depth in Feet: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100

Well Details

CONSTRUCTION DETAILS

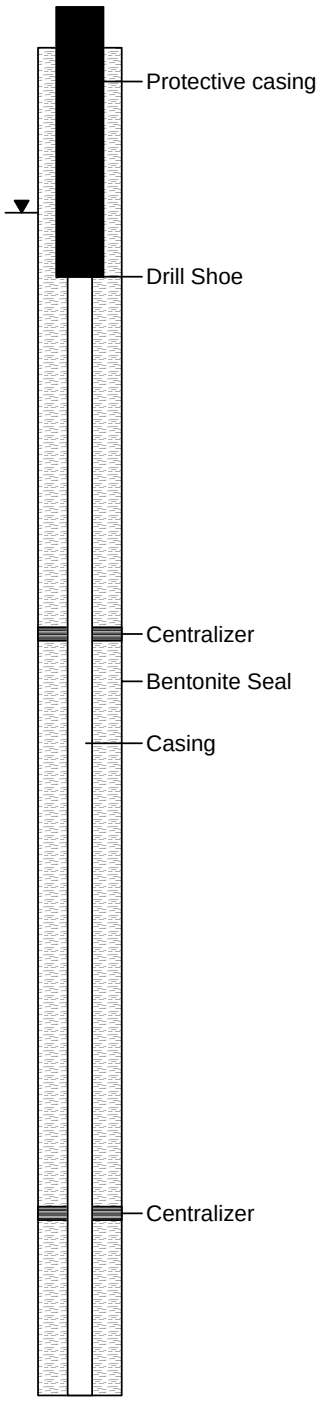
Installation Date	: 9/2/2009
Boring Total Depth (ft bgs)	: 160
Well Total Depth (ft bgs)	: 156
Casing Type	: Schedule 40 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 20
Screened Interval (ft bgs)	: 156-136
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 160-126
Secondary Filter Interval (ft bgs)	: N/A
Bentonite Seal (Chips) Interval (ft bgs)	: 126-0
Bentonite Seal (slurry) Interval (ft bgs)	: NA
Formation at Screen	: Dinwoody
Depth Water Encountered when Drilling (ft bgs)	: 10
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: 17
Backfill (ft bgs)	: 160-156 (Sand)
Steel Casing Depth (ft bgs)	: 17
Pump Depth (ft bgs)	: 146
Pump Intake Depth (ft bgs)	: 146
Height of MP (ft ags)	: 3

SAMPLE DETAILS

Fall 09 Static Water Level (ft bmp) : 13.13
Fall 09 Total Se (mg/L) :

NOTES:
Bottom of borehole at 160ft bgs.
Cuttings were always wet due to water being injected as drilling fluid, or produced by formation.
Backfilled with sand to 156 ft bgs to place the well screen within the target formation.

Well: MMW034
Elev.: 6,637 AMSL



RECORD OF BOREHOLE: MMW034

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Air Rotary
Drilling Date(s)	: 9/1/09-9/2/29	Drilled By	: Kip Rahmig (Independent)
Latitude	: N 42 52' 09.1"	Logged By	: J. Yurkovich (MWH)
Longitude	: W 111 24' 14.8"	Installed By	: Kip Rahmig (Independent)
Elevation (ft) AMSL	: 6,637 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Sample	Time	DESCRIPTION	Formation
21	0837		Dinwoody
22	0840		
23	0844		
24	0847	same as above except less reddish-brown, more olive.	
25	0850		
26	0853		
27	0856		
28	0904	same as above, except more olive-gray, (5Y, 4/2).	
29	0907	Limestone, olive-gray and very dark gray mix, (5Y, 4/2) and (2.5Y, 3/1).	
30	0909		
31	0913	Limestone, same as before, except just olive (5Y, 5/4), black laminations, and calcareous.	
32		becomes reddish-brown/olive mix.	

Depth in Feet: 100, 105, 110, 115, 120, 125, 130, 135, 140, 145, 150, 155, 160, 165, 170, 175, 180, 185, 190, 195, 200

Well Details

CONSTRUCTION DETAILS

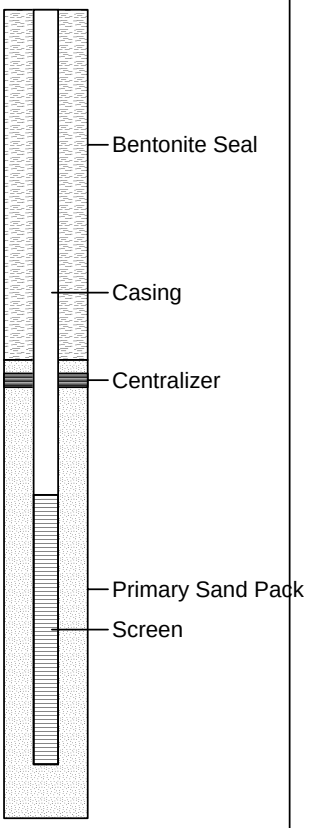
Installation Date	: 9/2/2009
Boring Total Depth (ft bgs)	: 160
Well Total Depth (ft bgs)	: 156
Casing Type	: Schedule 40 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 20
Screened Interval (ft bgs)	: 156-136
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 160-126
Secondary Filter Interval	: N/A
(ft bgs)	:
Bentonite Seal (Chips)	:
Interval (ft bgs)	: 126-0
Bentonite Seal (slurry)	:
Interval (ft bgs)	: NA
Formation at Screen	: Dinwoody
Depth Water Encountered	:
when Drilling (ft bgs)	: 10
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: 17
Backfill (ft bgs)	: 160-156 (Sand)
Steel Casing Depth	:
(ft bgs)	: 17
Pump Depth (ft bgs)	: 146
Pump Intake Depth (ft bgs)	: 146
Height of MP (ft ags)	: 3

SAMPLE DETAILS

Fall 09 Static Water Level (ft bmp) : 13.13
Fall 09 Total Se (mg/L) :

NOTES:
Bottom of borehole at 160ft bgs.
Cuttings were always wet due to water being injected as drilling fluid, or produced by formation.
Backfilled with sand to 156 ft bgs to place the well screen within the target formation.

Well: MMW034
Elev.: 6,637 AMSL



RECORD OF BOREHOLE: MMW035

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Air Rotary
Drilling Date(s)	: 8/29/09-8/30/29	Drilled By	: Kip Rahmig (Independent)
Latitude	: N 42 53' 29.5"	Logged By	: J. Yurkovich (MWH)
Longitude	: W 111 25' 54.3"	Installed By	: Kip Rahmig (Independent)
Elevation (ft) AMSL	: 6,494 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	1346	Sandy clay with gravel, dark red-brown (5YR, 2.5/2) dry, meduim to high plasticity.	Alluvium
5	2	1348	as above, except gravel is basaltic and light brown (7.5YR, 6/4).	
10	3	1350		
15	4	1352		
20	5	1355	Vesicular basalt, hard (GLEY 2, 4/5PB).	Basalt
25	6	1420		
30	7	1537		
35	8	1541	Sandy clay with gravel, redish-brown, high plasticity.	Alluvium
40	9	1547		
45	10	1550	same as above, except yellowish-brown (10YR, 5/6).	
50	11	1552	Claystone, calcareous, light olive-brown (2.5YR, 5/4).	Dinwoody
55	12	1555		
60	13	1558		
65	14	1600		
70	15	1603		
75	16	1605		
80	17	0815	Sandstone, poorly graded, calcareous, limestone, light olive-brown.	
85	18	0820	20% white quartz fragments.	
90	19	0825	Claystone, calcareous, light olive-brown (2.5YR, 5/4).	
95	20	0830	same as above except olive-gray (5Y, 4/2).	
100			same as above except olive (5Y, 5/3).	

Well Details

CONSTRUCTION DETAILS

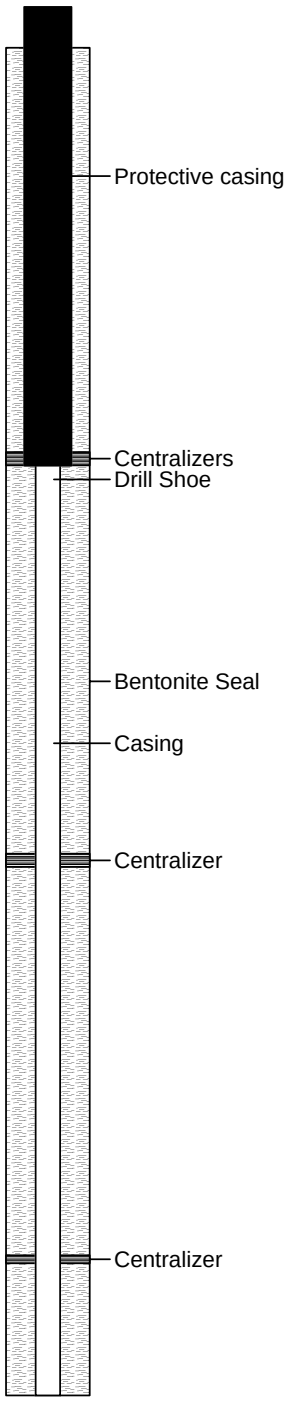
Installation Date	: 8/30/2009
Boring Total Depth (ft bgs)	: 200
Well Total Depth (ft bgs)	: 199
Casing Type	: Schedule 40 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 20
Screened Interval (ft bgs)	: 199-179
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 200-176
Secondary Filter Interval (ft bgs)	: N/A
Bentonite Seal (Chips) Interval (ft bgs)	: 176-0
Bentonite Seal (slurry) Interval (ft bgs)	: NA
Formation at Screen	: Dinwoody
Depth Water Encountered when Drilling (ft bgs)	: 76
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: 31
Backfill (ft bgs)	: NA
Steel Casing Depth (ft bgs)	: 31
Pump Depth (ft bgs)	: 146
Pump Intake Depth (ft bgs)	: 146
Height of MP (ft ags)	: 3

SAMPLE DETAILS

Fall 09 Static Water Level (ft bmp) : 83.52
Fall 09 Total Se (mg/L) :

NOTES:
Bottom of borehole at 200ft bgs.
Cuttings were always wet due to water being injected as drilling fluid, or produced by formation.

Well: MMW035
Elev.: 6,494 AMSL



RECORD OF BOREHOLE: MMW035

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Air Rotary
Drilling Date(s)	: 8/29/09-8/30/29	Drilled By	: Kip Rahmig (Independent)
Latitude	: N 42 53' 29.5"	Logged By	: J. Yurkovich (MWH)
Longitude	: W 111 25' 54.3"	Installed By	: Kip Rahmig (Independent)
Elevation (ft) AMSL	: 6,494 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Well: MMW035
Elev.: 6,494 AMSL

Depth in Feet	Sample	Time	DESCRIPTION	Formation
100	21	0833	Mudstone, calcareous, some clay nodules present, olive-yellow (5Y, 6/4).	Dinwoody
105	22	0835		
110	23	0840		
115	24	0844	same as above, except less clay, olive-gray (5Y, 4/2).	
120	25	0855		
125	26	0858		
130	27	0900		
135	28	0903	same as above except olive (5Y, 4/3).	
140	29	0908	becomes (5Y, 5/3).	
145	30	0911		
150	31	0914		
155	32	0918		
160	33	0920	same as above except olive-gray (5Y, 4/2).	
165	34	0930		
170	35	0940	same as above except more olive-gray (5Y, 5/2).	
175	36	0944	same as above except olive (5Y, 4/4).	
180	37	0950		
185	38	0955	some laminations present.	
190	39	1000		
195	40	1004		
200				

Well Details

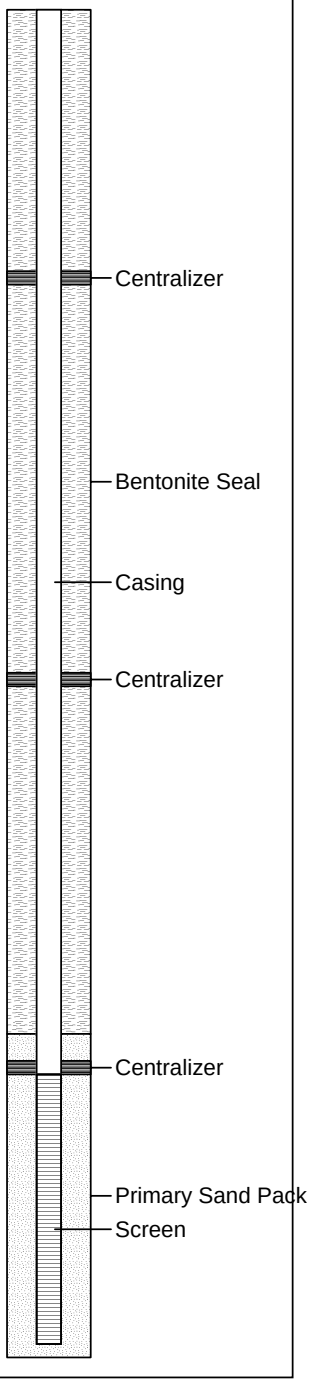
CONSTRUCTION DETAILS

Installation Date	: 8/30/2009
Boring Total Depth (ft bgs)	: 200
Well Total Depth (ft bgs)	: 199
Casing Type	: Schedule 40 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 20
Screened Interval (ft bgs)	: 199-179
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 200-176
Secondary Filter Interval	: N/A
(ft bgs)	:
Bentonite Seal (Chips)	:
Interval (ft bgs)	: 176-0
Bentonite Seal (slurry)	:
Interval (ft bgs)	: NA
Formation at Screen	: Dinwoody
Depth Water Encountered	:
when Drilling (ft bgs)	: 76
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: 31
Backfill (ft bgs)	: NA
Steel Casing Depth	:
(ft bgs)	: 31
Pump Depth (ft bgs)	: 146
Pump Intake Depth (ft bgs)	: 146
Height of MP (ft ags)	: 3

SAMPLE DETAILS

Fall 09 Static Water Level (ft bmp) : 83.52
Fall 09 Total Se (mg/L) :

NOTES:
Bottom of borehole at 200ft bgs.
Cuttings were always wet due to water being injected as drilling fluid, or produced by formation.



RECORD OF BOREHOLE: MMW036

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Air Rotary
Drilling Date(s)	: 8/31/09-9/01/29	Drilled By	: Kip Rahmig (Independent)
Latitude	: N 42 53' 26.7"	Logged By	: J. Yurkovich (MWH)
Longitude	: W 111 26' 05.6"	Installed By	: Kip Rahmig (Independent)
Elevation (ft) AMSL	: 6,444 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	1045	Sandy clay with basaltic gravel, brown (7.5YR, 4/2), wet, medium to high plasticity.	Alluvium/Colluvuim
5	2	1047		
10	3	1050		
15	4	1053	same as above except light brown (7.5YR, 6/3).	
20	5	1112		
25	6	1115	same as above, except high plasticity.	
30	7	1117	same as above, except dark brown (7.5YR, 3/2).	
35	8	1120		
40	9	1122	same as above, except light brown (2.5YR, 6/4).	
45	10	1124		
50	11	1126		
55	12	1128		
60	13	1130	Gravelly sand with clay, brown (basaltic gravels) (7.5YR 5/4).	
65	14	1133	Gravelly sand, blackish-brown, (10YR, 4/2).	
70	15	1140		
75	16	1144	Gravelly sand and clay, yellowish-brown (10YR, 4/2).	
80	17	1146		
85	18		Clayey sand to gravel, yellowish-brown (10YR, 5/6).	
90	19		Basalt No circulation/cuttings; Rig is chattering hard.	Basalt
95	20			
100				

Well Details

CONSTRUCTION DETAILS

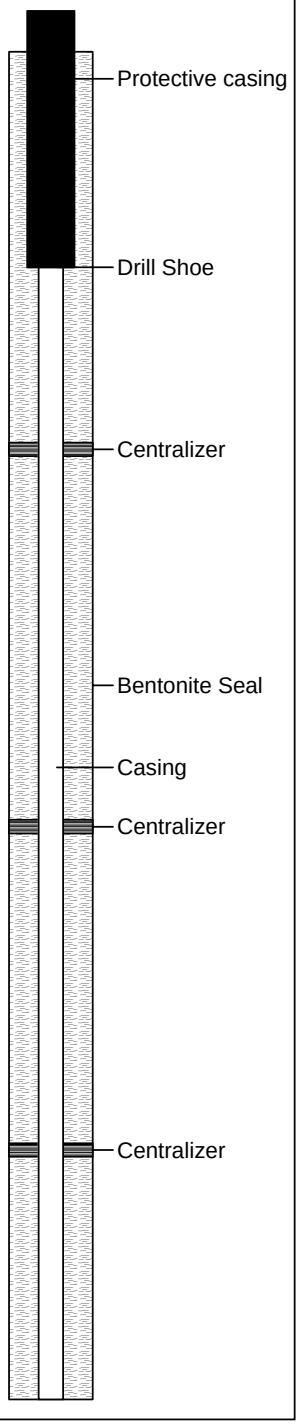
Installation Date	: 9/01/2009
Boring Total Depth (ft bgs)	: 160
Well Total Depth (ft bgs)	: 135
Casing Type	: Schedule 40 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 20
Screened Interval (ft bgs)	: 135-115
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 137-111
Secondary Filter Interval	: N/A
(ft bgs)	:
Bentonite Seal (Chips)	:
Interval (ft bgs)	: 160-137
Bentonite Seal (slurry)	:
Interval (ft bgs)	: NA
Formation at Screen	: Basalt
Depth Water Encountered	:
when Drilling (ft bgs)	: 105
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: 16
Backfill (ft bgs)	: NA
Steel Casing Depth	:
(ft bgs)	: 16
Pump Depth (ft bgs)	: 126
Pump Intake Depth (ft bgs)	: 126
Height of MP (ft ags)	: 3

SAMPLE DETAILS

Fall 09 Static Water Level (ft bmp) : 113.25
Fall 09 Total Se (mg/L) :

NOTES:
Bottom of borehole at 160ft bgs.
Cuttings were always wet due to water being injected as drilling fluid, or produced by formation.
Circulation lost in basalt.

Well: MMW036
Elev.: 6,444 AMSL



RECORD OF BOREHOLE: MMW036

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: None	Drilling Method / Rig	: Air Rotary
Drilling Date(s)	: 8/31/09-9/01/29	Drilled By	: Kip Rahmig (Independent)
Latitude	: N 42 53' 26.7"	Logged By	: J. Yurkovich (MWH)
Longitude	: W 111 26' 05.6"	Installed By	: Kip Rahmig (Independent)
Elevation (ft) AMSL	: 6,444 Measuring point	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Well: MMW036
Elev.: 6,444 AMSL

Depth in Feet	Sample	Time	DESCRIPTION	Formation
100–160	21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32		Basalt, hard drilling, no circulation or cuttings.	Basalt

Well Details

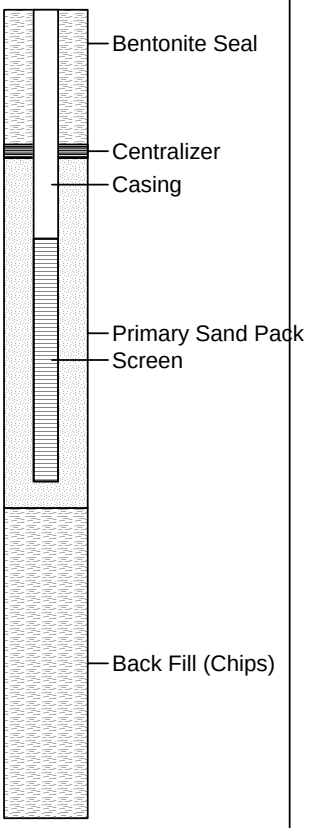
CONSTRUCTION DETAILS

Installation Date	: 9/01/2009
Boring Total Depth (ft bgs)	: 160
Well Total Depth (ft bgs)	: 135
Casing Type	: Schedule 40 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 20
Screened Interval (ft bgs)	: 135-115
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 137-111
Secondary Filter Interval	: N/A
(ft bgs)	:
Bentonite Seal (Chips)	:
Interval (ft bgs)	: 160-137
Bentonite Seal (slurry)	:
Interval (ft bgs)	: NA
Formation at Screen	: Basalt
Depth Water Encountered	:
when Drilling (ft bgs)	: 105
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: 16
Backfill (ft bgs)	: NA
Steel Casing Depth	:
(ft bgs)	: 16
Pump Depth (ft bgs)	: 126
Pump Intake Depth (ft bgs)	: 126
Height of MP (ft ags)	: 3

SAMPLE DETAILS

Fall 09 Static Water Level (ft bmp) : 113.25
Fall 09 Total Se (mg/L) :

NOTES:
Bottom of borehole at 160ft bgs.
Cuttings were always wet due to water being injected as drilling fluid, or produced by formation.
Circulation lost in basalt.



APPENDIX A5-5

DIRECT PUSH WELL (MBW) LOGS

RECORD OF BOREHOLE: MBW006

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: NA	Drilling Method / Rig	: Geoprobe 6620DT
Drilling Date(s)	: 5/13/2008	Drilled By	: M. Taggart (Earth Probe Env.)
Latitude	: N42 49 4.43	Logged By	: R. Wilson (MWH)
Longitude	: W111 29 23.00	Installed By	: M. Taggart (Earth Probe Env.)
Elevation (ft) AMSL	: 6328	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	1429	Silty clay (CL), dark brown to grayish brown, moist contains rootlets, slightly plastic	Alluvium
5	2	1434	Silty clay (CL), tan to olive gray, slightly to moderately plastic, contains angular to subrounded gravel up to 1/2" and rootlets, moist	
10	3	1435	Silty clay gravel with sand (CL-ML), brown to tan black wet, gravel is angular to subrounded up to 3/4". sand is fine to very coarse grained	
15				
20				
25				

Well Details

CONSTRUCTION DETAILS

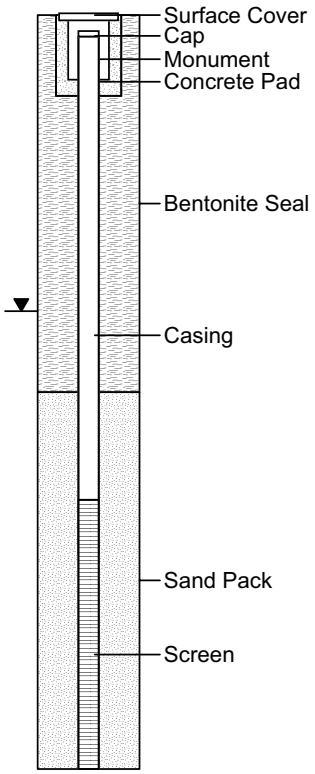
Installation Date	: 5/13/2008
Boring Total Depth (ft bgs)	: 14
Well Total Depth (ft bgs)	: 14
Casing Type	: Schedule 80 PVC
Screen Slot Size	: 0.011
Screen Length (ft)	: 5
Screened Interval (ft bgs)	: 9-14
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 7-14
Secondary Filter Interval (ft bgs)	: NA
Bentonite Seal (Chips) Interval (ft bgs)	: 0-7
Bentonite Seal (slurry) Interval (ft bgs)	: Not used
Formation at Screen	: Alluvium
Depth Water Encountered when Drilling (ft bgs)	: 8
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: NA
Backfill (ft bgs)	: NA
Steel Casing Depth (ft bgs)	: NA
Pump Depth (ft bgs)	: NA
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: NA

SAMPLE DETAILS

Spring 08 Static Water Level (ft bgs)	: 5.5
Spring 08 Total Se (mg/L)	: 0.34

NOTES:
Originally labeled and sampled as BH006.

Well: MBW006
Elev.: 6328 ft AMSL



RECORD OF BOREHOLE: MBW009

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: NA	Drilling Method / Rig	: Geoprobe 6620DT
Drilling Date(s)	: 5/14/2008	Drilled By	: P. Casey (Earth Probe Env.)
Latitude	: 42 49 13.24	Logged By	: R. Wilson (MWH)
Longitude	: 111 29 45.90	Installed By	: P. Casey (Earth Probe Env.)
Elevation (ft) AMSL	: 6307	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	1002	Clayey silt (ML), brown (5YR2.5/1), contains rootlets	Alluvium
			Silty clay (CL), brown (5yr 3/1), damp, moderately plastic, gravel 2/3" angular	
			Silty clay (CL), brown (5YR 4/4), moist to wet rootlets	
			Silty clay gravel (CL-ML), yellowish	
5			Fine to coarse gravel (GP), angular to subangular, brown (7.5YR 7/6), to black	
			Silty clay (CL), mottled medium brown (7.5YR 6/2), yellowish brown (7.5YR6/6), dark brown (7.5YR 3/4), damp to moist, contains rootlets	
	2	1007	Silty clay (CL), tan (7.5YR 6/4), moist to wet. sand is fine to medium grained	
10			Silty clay (CL), mottled tan (7.5YR 8/2), reddish brown (7.5YR 5/8) and black	
15				

Well Details

CONSTRUCTION DETAILS

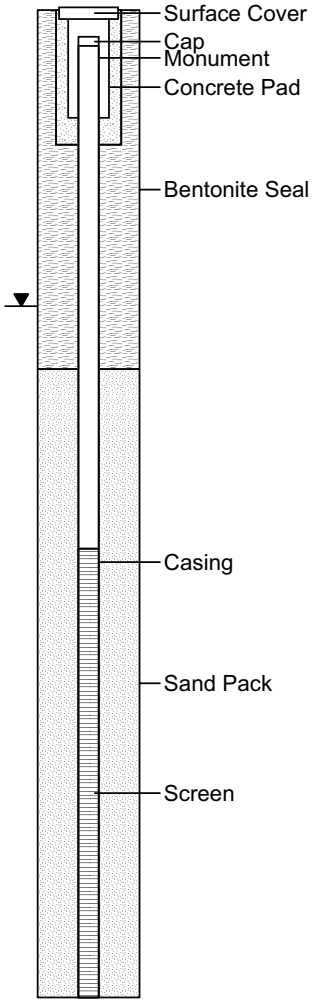
Installation Date	: 5/13/2008
Boring Total Depth (ft bgs)	: 11
Well Total Depth (ft bgs)	: 11
Casing Type	: Schedule 80 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 5
Screened Interval (ft bgs)	: 6-11
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 4-11
Secondary Filter Interval (ft bgs)	: NA
Bentonite Seal (Chips) Interval (ft bgs)	: 1.5-4
Bentonite Seal (slurry) Interval (ft bgs)	: Not used
Formation at Screen	: Alluvium
Depth Water Encountered when Drilling (ft bgs)	: 6
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: NA
Backfill (ft bgs)	: NA
Steel Casing Depth (ft bgs)	: NA
Pump Depth (ft bgs)	: NA
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: NA

SAMPLE DETAILS

Spring 08 Static Water Level (ft bgs)	: 3.3
Spring 08 Total Se (mg/L)	: 0.026

NOTES:
Originally labeled and sampled as BH009.

Well: MBW009
Elev.: 6307 ft AMSL



RECORD OF BOREHOLE: MBW011

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: NA	Drilling Method / Rig	: Geoprobe 6620DT
Drilling Date(s)	: 5/14/2008	Drilled By	: P. Casey (Earth Probe Env.)
Latitude	: N42 49 23.74	Logged By	: R.Wilson (MWH)
Longitude	: W111 29 36.13	Installed By	: P. Casey (Earth Probe Env.)
Elevation (ft) AMSL	: 6345	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	1159	Silt (ML), brown (5YR 2.5/1), damp to moist, contains rootlets	Alluvium
			Silty clay (CL-ML), brown (5YR 3/1), damp to moist, moderately plastic, contains rootlets	
			Silty clay (CL-ML), dark olive gray (5y 3/2), damp, moderately plastic, contains some fine to medium sand	
5			Silty clay (CL-ML), mottled medium brown (7.5YR 6/2), yellowish brown (7.5YR 6.6) dark brown (7.5 YR 3/4), damp, contains rootlets, contains gravel, grain size is large between 6 to 6.25 gravel is angular reddish brown	
	2	1207	Silty clay (CL-ML), grayish, bluish gray (5Y7/2), damp, moderately plastic	
10			Silty sand (ML), mottled reddish brown (7.5yr.5/8) tanish red (7.5YR 5/6), wet. sands fine grained	
	3			
15				
20				
25				

Well Details

CONSTRUCTION DETAILS

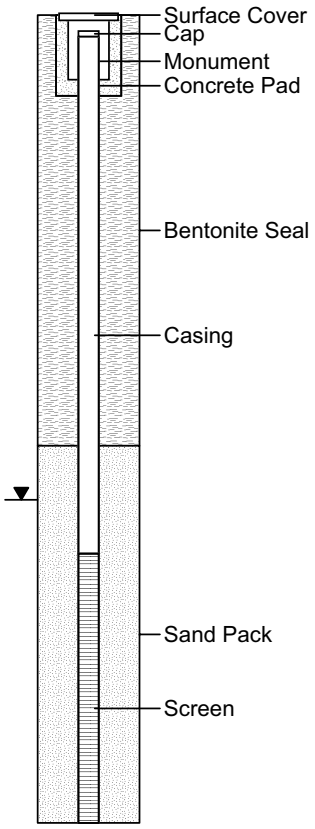
Installation Date	: 5/14/2008
Boring Total Depth (ft bgs)	: 15
Well Total Depth (ft bgs)	: 15
Casing Type	: Schedule 80 PVC
Screen Slot Size	: 0.011
Screen Length (ft)	: 5
Screened Interval (ft bgs)	: 10-15
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 8-15
Secondary Filter Interval	: NA
(ft bgs)	:
Bentonite Seal (Chips)	:
Interval (ft bgs)	: 1.5-8
Bentonite Seal (slurry)	: Not used
Interval (ft bgs)	:
Formation at Screen	: Alluvium
Depth Water Encountered	:
when Drilling (ft bgs)	: 9
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: NA
Backfill (ft bgs)	: NA
Steel Casing Depth	: NA
(ft bgs)	:
Pump Depth (ft bgs)	: NA
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: NA

SAMPLE DETAILS

Spring 08 Static Water Level (ft bgs) : 9
Spring 08 Total Se (mg/L) : 0.16

NOTES:
Originally labeled and sampled as BH011.

Well: MBW011
Elev.: 6345 ft AMSL



RECORD OF BOREHOLE: MBW026

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: NA	Drilling Method / Rig	: Geoprobe 6620DT
Drilling Date(s)	: 5/20/2008	Drilled By	: P. Casey (Earth Probe Env.)
Latitude	: N42 50 01.91	Logged By	: R.Wilson (MWH)
Longitude	: W111 29 54.8	Installed By	: P. Casey (Earth Probe Env.)
Elevation (ft) AMSL	: 6308	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	1600	Well graded, silty clay (CL-ML), dark brown (10YR 3/3), damp, medium density, contains rootlets at 2.4' becomes dark brown with some gravel (CL-ML)	Alluvium
5	2	1607	Silty sand with clay (SC-SM), light yellow brown (10YR 6/4), sand is very fine to fine, wet, loose to medium density at 8' becomes very pale brown and silty very fine sand (SW-SM)	
10				
15				
20				
25				

Well Details

CONSTRUCTION DETAILS

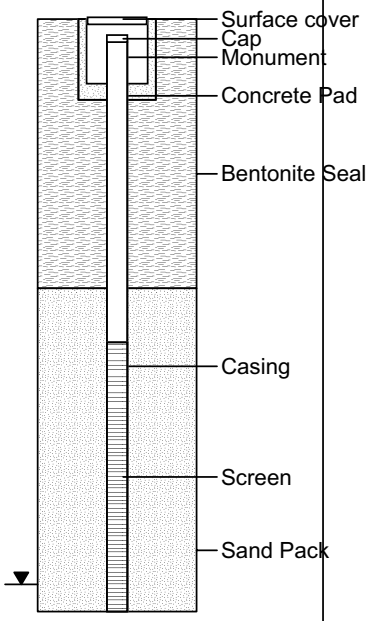
Installation Date	: 5/20/2008
Boring Total Depth (ft bgs)	: 11
Well Total Depth (ft bgs)	: 11
Casing Type	: Schedule 80 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 5
Screened Interval (ft bgs)	: 6-11
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 4-11
Secondary Filter Interval (ft bgs)	: NA
Bentonite Seal (Chips) Interval (ft bgs)	: 0-4
Bentonite Seal (slurry) Interval (ft bgs)	: Not used
Formation at Screen	: Alluvium
Depth Water Encountered when Drilling (ft bgs)	: 6
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: NA
Backfill (ft bgs)	: NA
Steel Casing Depth (ft bgs)	: NA
Pump Depth (ft bgs)	: NA
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: NA

SAMPLE DETAILS

Fall 08 Static Water Level (ft bgs)	10.5
Fall 08 Total Se (mg/L)	: 0.2

NOTES:
Originally labeled and sampled as BH026.
First sampled in Fall 2008.

Well: MBW026
Elev.: 6308 ft AMSL



RECORD OF BOREHOLE: MBW027

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: NA	Drilling Method / Rig	: Geoprobe 6620DT
Drilling Date(s)	: 5/21/2008	Drilled By	: M. Taggart (Earth Probe Env.)
Latitude	: 42 50 02.51	Logged By	: R.Wilson (MWH)
Longitude	: 111 29 51.53	Installed By	: M. Taggart (Earth Probe Env.)
Elevation (ft) AMSL	: 6312	Surveyed By	: S. Smith (Monsanto)

Water Levels
- Water Level Before Sampling
- N/A

Well: MBW027
Elev.: 6312 ft AMSL

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	0802	Silty clay (CL-ML), dark brown (10YR 3/3), damp, medium density, contains rootlets at 2.4' becomes dark brown with some gravel (CL-ML)	Alluvium
5	2	0811	Silty sand with clay (SC-SM), light yellow brown (10YR 6/4), sand is very fine to fin, wet, loose to medium density at 8' becomes very pale brown and silty very fine sand (CL-ML)	
10	3	0828	Silty sand SM Sand with silt (SP-SM). grey, loose, moist	
15	4	0835	Gravelly sand and clay(GP-GM), light brown gray (10YR 7/2), gravel up to1/2" ø, sand fine to very coarse	
20	5	0840	Clay (CH), reddish brown, damp, very stiff Silty clay (CL-ML), light gray (10YR 7/2), damp, medium stiffness	
25				

Well Details

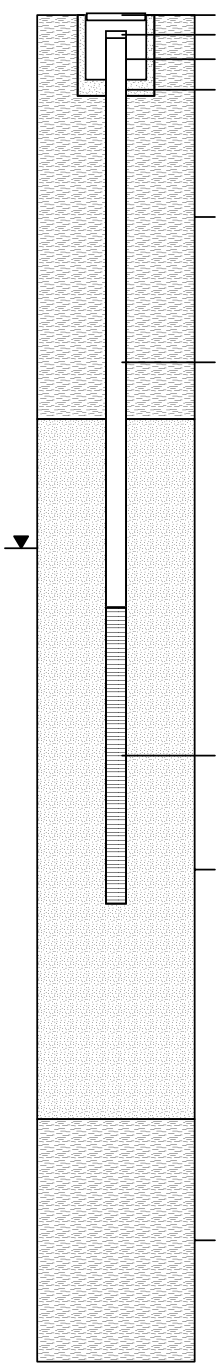
CONSTRUCTION DETAILS

Installation Date	: 5/21/2008
Boring Total Depth (ft bgs)	: 25
Well Total Depth (ft bgs)	: 16.5
Casing Type	: Schedule 80 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 5
Screened Interval (ft bgs)	: 11-16
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 7.5-20
Secondary Filter Interval (ft bgs)	: NA
Bentonite Seal (Chips)	:
Interval (ft bgs)	: 1.5-7.5
Bentonite Seal (slurry)	: Not used
Interval (ft bgs)	:
Formation at Screen	: Alluvium
Depth Water Encountered when Drilling (ft bgs)	: 6
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: NA
Backfill (ft bgs)	: 20-25
Steel Casing Depth (ft bgs)	: NA
Pump Depth (ft bgs)	: NA
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: NA

SAMPLE DETAILS

Spring 08 Static Water Level (ft bgs): 9.9
Spring 08 Total Se (mg/L) : 0.016

NOTES:
Originally labeled and sampled as BH027.



RECORD OF BOREHOLE: MBW028

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: NA	Drilling Method / Rig	: Geoprobe 6620DT
Drilling Date(s)	: 5/21/2008	Drilled By	: M. Taggart (Earth Probe Env.)
Latitude	: 42 49 34.72	Logged By	: R. Wilson (MWH)
Longitude	: 111 29 40.12	Installed By	: M. Taggart (Earth Probe Env.)
Elevation (ft) AMSL	: 6348	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Well: MBW028
Elev.: 6348 ft AMSL

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	1448	Silty clay (CL-ML), dark gray (7.5YR 4/1), soft, damp to moist	Alluvium
			Clay (CL), light brown (7.5YR 6/3), medium hardness moist	
5			Silty sand (SM), light brown/tan (10YR 6/4), hard moist	
	2	1457	Clay (CL), light brown (7.5YR 6/3), medium hardness, moist	
			Silty sand (SM), light brown/tan (10YR 6/4), hard, damp	
10			Clay (CL), brown (7.5YR 4/6), very hard moist at 11" becomes medium-hard	
	3	1502	Silty sand (SM), light brown/tan (10YR 6/4), hard, damp	
			Silty clay (CL-ML), light brown (10YR 6/4), damp	
15	4	1505	Sand (SP) brown (7.5YR 5/2) 5% black sand gains	
20				
25				

Well Details

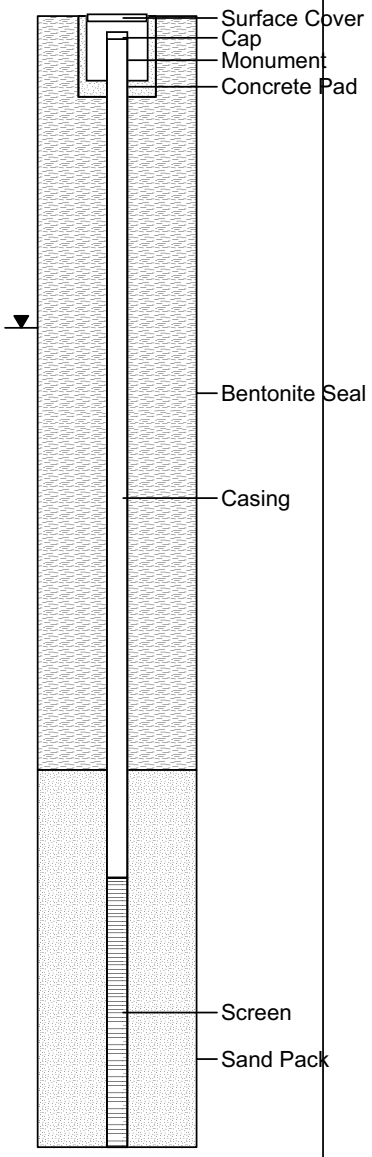
CONSTRUCTION DETAILS

Installation Date	: 5/21/2008
Boring Total Depth (ft bgs)	: 21
Well Total Depth (ft bgs)	: 21
Casing Type	: Schedule 80 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 5
Screened Interval (ft bgs)	: 16-21
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 14-21
Secondary Filter Interval (ft bgs)	: NA
Bentonite Seal (Chips) Interval (ft bgs)	: 1.5-14
Bentonite Seal (slurry) Interval (ft bgs)	: Not used
Formation at Screen	: Alluvium
Depth Water Encountered when Drilling (ft bgs)	: 8
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: NA
Backfill (ft bgs)	: NA
Steel Casing Depth (ft bgs)	: NA
Pump Depth (ft bgs)	: NA
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: NA

SAMPLE DETAILS

Spring 08 Static Water Level (ft bgs)	5.79
Spring 08 Total Se (mg/L)	: 0.62

NOTES:
Originally labeled and sampled as BH028.



RECORD OF BOREHOLE: MBW032

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: NA	Drilling Method / Rig	: Geoprobe 6620DT
Drilling Date(s)	: 5/28/2008	Drilled By	: P. Casey (Earth Probe Env.I)
Latitude	: 42 49 34.20	Logged By	: B. Massey(MWH)
Longitude	: 111 28 10.57	Installed By	: P. Casey (Earth Probe Env.)
Elevation (ft) AMSL	: 6503	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0			Mixed clays, sands and gravels	Alluvium
5				
10				
15				
20				
25				

Well Details

CONSTRUCTION DETAILS

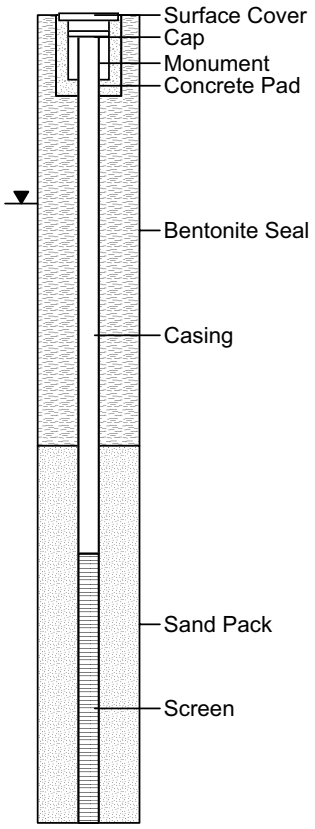
Installation Date	: 5/28/2008
Boring Total Depth (ft bgs)	: 15
Well Total Depth (ft bgs)	: 15
Casing Type	: Schedule 80 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 5
Screened Interval (ft bgs)	: 10-15
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 8-15
Secondary Filter Interval (ft bgs)	: NA
Bentonite Seal (Chips) Interval (ft bgs)	: 0-8
Bentonite Seal (slurry) Interval (ft bgs)	: Not used
Formation at Screen	: Alluvium
Depth Water Encountered when Drilling (ft bgs)	: 8
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: NA
Backfill (ft bgs)	: NA
Steel Casing Depth (ft bgs)	: NA
Pump Depth (ft bgs)	: NA
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: NA

SAMPLE DETAILS

Spring 08 Static Water Level (ft bgs)	: 3.5
Spring 08 Total Se (mg/L)	: 0.63

NOTES:
Stage 2 borehole, core not taken.
Originally labeled and sampled as BH032.

Well: MBW032
Elev.: 6503 ft AMSL



RECORD OF BOREHOLE: MBW048

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: NA	Drilling Method / Rig	: Geoprobe 6620DT
Drilling Date(s)	: 5/30/2008	Drilled By	: P. Casey (Earth Probe Env.I)
Latitude	: N42 50 04.04	Logged By	: B. Massey(MWH)
Longitude	: W111 27 53.40	Installed By	: P. Casey (Earth Probe Env.)
Elevation (ft) AMSL	: 6434	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Well: MBW048
Elev.: 6434 ft AMSL

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	0923	Clay (CL), dark brown, soft, moist, and contains rootlets	Alluvium
			Clay (CL), Brown, wet	
			Sandy gravel with some clay (GP-GC), brown, saturated	
5	2	0925		
			Clay (CL), gray, green, brown, very hard, wet	
10				
15				
20				

Well Details

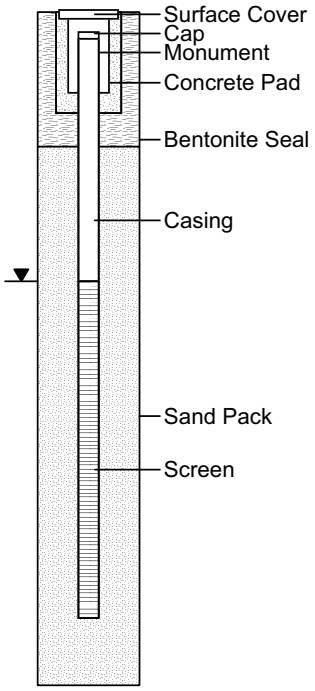
CONSTRUCTION DETAILS

Installation Date	: 5/30/2008
Boring Total Depth (ft bgs)	: 10
Well Total Depth (ft bgs)	: 9
Casing Type	: Schedule 80 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 5
Screened Interval (ft bgs)	: 4-9
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 2-9
Secondary Filter Interval (ft bgs)	: NA
Bentonite Seal (Chips) Interval (ft bgs)	: 0-2
Bentonite Seal (slurry) Interval (ft bgs)	: Not used
Formation at Screen	: Alluvium
Depth Water Encountered when Drilling (ft bgs)	: 2, 4
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: NA
Backfill (ft bgs)	: NA
Steel Casing Depth (ft bgs)	: NA
Pump Depth (ft bgs)	: NA
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: NA

SAMPLE DETAILS

Spring 08 Static Water Level (ft bgs)	:4
Spring 08 Total Se (mg/L)	: <0.001

NOTES:
Cores were very compacted, alluvial changes are estimated.
Originally labeled and sampled as BH048



RECORD OF BOREHOLE: MBW085

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: NA	Drilling Method / Rig	: Geoprobe 6620DT
Drilling Date(s)	: 6/12/2008	Drilled By	: M. Taggart (Earth Probe Env.)
Latitude	: N42 51 55.80	Logged By	: R. Wilson(MWH)
Longitude	: W111 24 01.33	Installed By	: M. Taggart (Earth Probe Env.)
Elevation (ft) AMSL	: 6620	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Well: MBW085
Elev.: 6620 ft AMSL

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	1308	Clayey silt with sand (CL-ML), olive brown, soft to medium stuff, moist contains rootlets	Alluvium
			Silt clay (CL-ML), gray to light brown, medium stiffness, moist	
5	2	NA	Silty clay (CL-ML), yellowish tan, moist, medium stiff, contains up to 1/2 phi, siltstone/claystone, saturated	
			Silty clay with sand and grave (Cl-ML), yellowish brown, stiff, moist to wet. Gravel up to 1/2" phi and is made up of yellow siltstone.	
10				
15				
20				
25				

Well Details

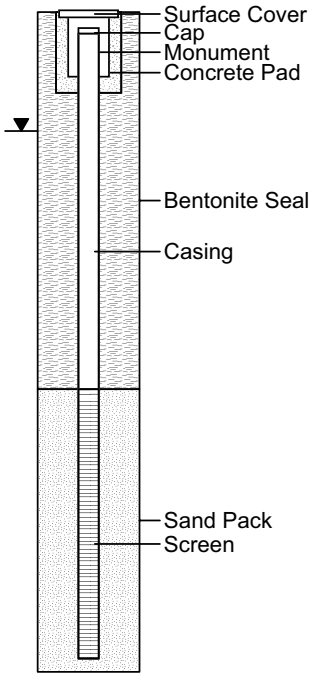
CONSTRUCTION DETAILS

Installation Date	: 6/12/2008
Boring Total Depth (ft bgs)	: 12.25
Well Total Depth (ft bgs)	: 12
Casing Type	: Schedule 80 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 5
Screened Interval (ft bgs)	: 7.25-12.25
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 7.00-12.25
Secondary Filter Interval	: NA
(ft bgs)	:
Bentonite Seal (Chips)	:
Interval (ft bgs)	: 0-7
Bentonite Seal (slurry)	: Not used
Interval (ft bgs)	:
Formation at Screen	: Alluvium
Depth Water Encountered	:
when Drilling (ft bgs)	: 6.9
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: NA
Backfill (ft bgs)	: NA
Steel Casing Depth	: NA
(ft bgs)	:
Pump Depth (ft bgs)	: NA
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: NA

SAMPLE DETAILS

Summer 08 Static Water Level (ft bgs)	:2.21
Spring 08 Total Se (mg/L)	: 0.001

NOTES:
Refusal at 12.25
Originally labeled and sampled as BH085.



RECORD OF BOREHOLE: MBW087

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: NA	Drilling Method / Rig	: Geoprobe 6620DT
Drilling Date(s)	: 5/28/2008	Drilled By	: M. Taggart (Earth Probe Env.)
Latitude	: N42 51 38.61	Logged By	: R. Wilson(MWH)
Longitude	: W111 23 41.52	Installed By	: M. Taggart (Earth Probe Env.)
Elevation (ft) AMSL	: 6574	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	1503	Silty clay (CL-ML), dark brown to olive, medium stuff, moist contains rootlets in upper 2.5ft	Alluvium
5	2	1505	Silty clay with gravel (CL-ML), reddish brown to dark gray, interbedded with gravely clay beds up to 1ft thick, gravel up to 1/2 phi, and angular to subrounded	
10			becomes hard at 11ft	
15				
20				
25				

Well Details

CONSTRUCTION DETAILS

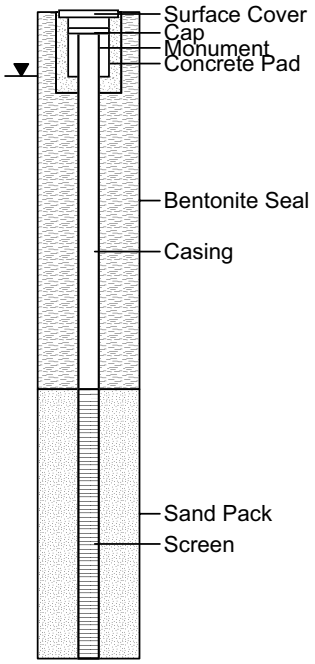
Installation Date	: 6/11/2008
Boring Total Depth (ft bgs)	: 10
Well Total Depth (ft bgs)	: 10
Casing Type	: Schedule 80 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 5
Screened Interval (ft bgs)	: 7-12
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 7-12
Secondary Filter Interval	: N/A
(ft bgs)	:
Bentonite Seal (Chips)	:
Interval (ft bgs)	: 0-7
Bentonite Seal (slurry)	: Not used
Interval (ft bgs)	:
Formation at Screen	: Alluvium
Depth Water Encountered	:
when Drilling (ft bgs)	: NR
Sump (ft ags)	: NA
Drill Shoe Burial (ft ags)	: NA
Backfill (ft ags)	: NA
Steel Casing Depth	: NA
(ft bgs)	:
Pump Depth (ft bgs)	: NA
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: NA

SAMPLE DETAILS

Spring 08 Static Water Level (ft bgs)	: 1.19
Spring 08 Total Se (mg/L)	: <0.001

NOTES:
Originally labeled and sampled as BH087.

Well: MBW087
Elev.: 6574 ft AMSL



RECORD OF BOREHOLE: MBW099

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: NA	Drilling Method / Rig	: Geoprobe 6620DT
Drilling Date(s)	: 6/13/2008	Drilled By	: M. Taggart (Earth Probe Env.)
Latitude	: N42 51 57.35	Logged By	: R. Wilson(MWH)
Longitude	: W111 23 25.34	Installed By	: M. Taggart (Earth Probe Env.)
Elevation (ft) AMSL	: 6604	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	1536	Silty clay (CL-ML), dark reddish brown(2.5YR 3/3), stuff, damp, moderately plastic, contains rootlets, occasional angular gravel	Alluvium
			Silty clay with gravel (CL-ML), reddish brown to dark gray, interbedded with gravely clay beds up to 1ft thick, gravel up to 1/2 phi, and angular to subrounded	
5	2	1541	Silty clay (CL-ML), strong brown (7.5YR 5/8), stiff, damp, contains some very coarse sand, at 3 feet BGS color become dark gray to black	
10	3	1545	Gravel (GP), with clay, medium dense, moist to wet, contains very course sand, gravel is angular to sub angular up to 1" phi	
			Silty clay with gravel (CL-ML), strong brown (7.5YR 5/8), black and gray, stiff, damp, gravel is predominately fine and angular to subangular	
15	4	1550	Clayey gravel (GC), predominately strong brown (7.5YR 5/8), some tan and reddish brown, stiff, damp. Gravel is fine to course, many rock types, angular to sub rounded, up to at lest 1" phi	
20	5	1556	Clayey silt (CL-ML), reddish yellow (7.5YR 6/6), stiff to hard, damp, some black to light blue to reddish brown	
25	6	1605	Gravelly silt (ML), predominately light brown, hard, saturated. gravel is angular to subrounded up to 1" phi. many rock types represented	
30			Clayey silty (CL-ML), brownish yellow,yellowish brown stuff, damp from26 to 27 contain occasional coarse sand at 28.5ft bgs becomes pale yellow	
35				
40				

Well Details

CONSTRUCTION DETAILS

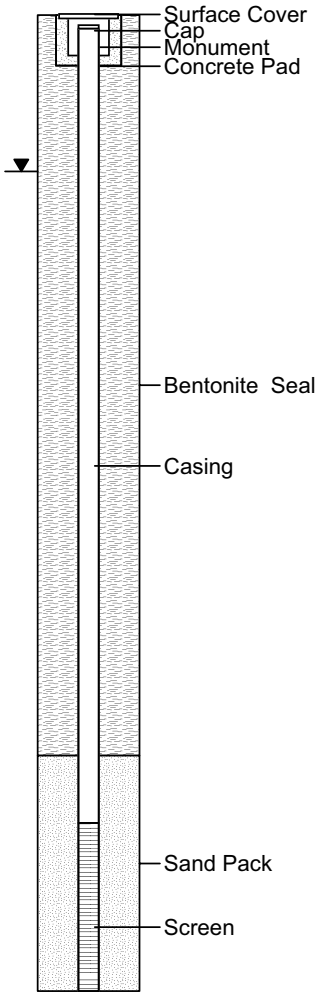
Installation Date	: 6/13/2008
Boring Total Depth (ft bgs)	: 29ft
Well Total Depth (ft bgs)	: 29ft
Casing Type	: Schedule 80 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 5
Screened Interval (ft bgs)	: 24-29
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 22-29
Secondary Filter Interval	: N/A
(ft bgs)	:
Bentonite Seal (Chips)	:
Interval (ft bgs)	: 0-22
Bentonite Seal (slurry)	: Not used
Interval (ft bgs)	:
Formation at Screen	: Alluvium
Depth Water Encountered	:
when Drilling (ft bgs)	: NR
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: NA
Backfill (ft bgs)	: NA
Steel Casing Depth	: NA
(ft bgs)	:
Pump Depth (ft bgs)	: NA
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: NA

SAMPLE DETAILS

Spring 08 Static Water Level (ft bgs)	: 4.65
Spring 08 Total Se (mg/L)	: <0.001

NOTES:
Originally labeled and sampled as BH099.

Well: MBW099
Elev.: 6604 ft AMSL



RECORD OF BOREHOLE: MBW107

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: NA	Drilling Method / Rig	: Geoprobe 6620DT
Drilling Date(s)	: 6/16/2008	Drilled By	: M. Taggart (Earth Probe Env.)
Latitude	: N42 53 28.60	Logged By	: R. Wilson (MWH)
Longitude	: W111 25 53.16	Installed By	: M. Taggart (Earth Probe Env.)
Elevation (ft) AMSL	: 6483	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Well: MBW107
Elev.: 6483 ft AMSL

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0			Clayey silt (CL-ML), dark brown (7.5YR 3/3). contains rootlets, soft, damp	Alluvium
			Silty clay with sand (CL-ML), yellowish brown (10YR5/6), soft, moist, sand is very fine grained	
5				
10			at 9.3ft large gravels 3 inch in diameter	
			Sandy clay with fine gravel (CL-ML), dark yellow brown (10YR3/6) to yellow (10yr 8/8) to reddish brown, hard, moist	
15			Silty clay (CL-ML), brown (7.5YR 5/8), stiff, moist	
			Clayey silt (CL-ML), gray to strong brown, hard, damp, Weathered basalt inter bedded brown clay and weather basalt	
20				
25				
30			Wet between 30 and 35 feet	
35				
40				

Well Details

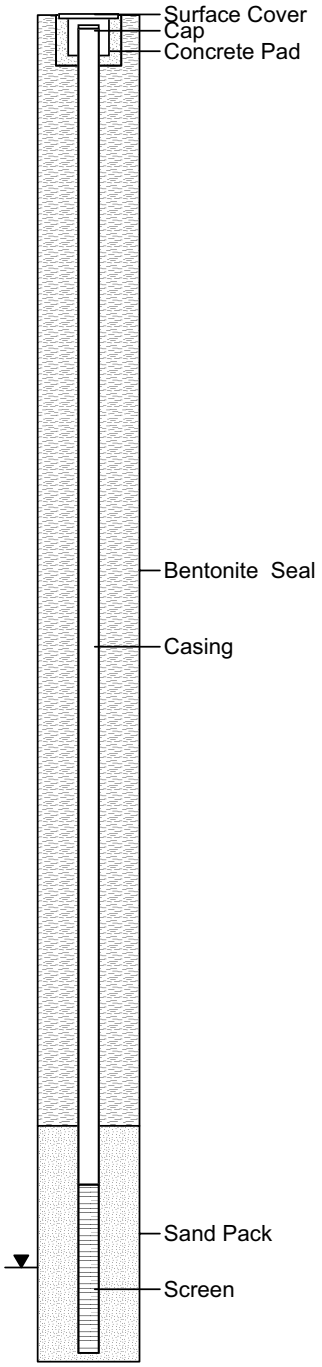
CONSTRUCTION DETAILS

Installation Date	: 6/16/2008
Boring Total Depth (ft bgs)	: 40
Well Total Depth (ft bgs)	: 39.75
Casing Type	: Schedule 80 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 5
Screened Interval (ft bgs)	: 35-40
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 33-40
Secondary Filter Interval	: NA
(ft bgs)	:
Bentonite Seal (Chips)	:
Interval (ft bgs)	: 0-33
Bentonite Seal (slurry)	: Not used
Interval (ft bgs)	:
Formation at Screen	: Alluvium
Depth Water Encountered	:
when Drilling (ft bgs)	: 30
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: NA
Backfill (ft bgs)	: NA
Steel Casing Depth	: NA
(ft bgs)	:
Pump Depth (ft bgs)	: NA
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: NA

SAMPLE DETAILS

Spring 08 Static Water Level (ft bgs)	: 37.2
Spring 08 Total Se (mg/L)	: 0.001

NOTES:
Originally labeled and sampled as BH107.



RECORD OF BOREHOLE: MBW112

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: NA	Drilling Method / Rig	: Geoprobe 6620DT
Drilling Date(s)	: 6/17/2008	Drilled By	: P. Casey (Earth Probe Env.)
Latitude	: N42 53 34.95	Logged By	: R.Wilson (MWH)
Longitude	: W111 26 10.92	Installed By	: P. Casey (Earth Probe Env.)
Elevation (ft) AMSL	: 6404	Surveyed By	: S. Smith (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ N/A

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0			Sandy silty with clay (CL-ML), dark brown, soft, damp, contains rootlets	Alluvium
			SAND, Interbedded gravels and clay (GC). gravel is at least 2.5ft thick damp to moist clay layers 3in thick dark brown	
5			Silty clay with gravel (CL-ML)	
			Silty clay (CL-ML), yellowish brown, medium stiff to hard, moist. contain occasional gravel up to 1/2 phi angular locally soft and dark brown	
10				
15			Clayey sand (CL), strong brown, soft to medium stiff, most to wet, sand is very fine grained with some medium to course	
20				
25				
30				

Well Details

CONSTRUCTION DETAILS

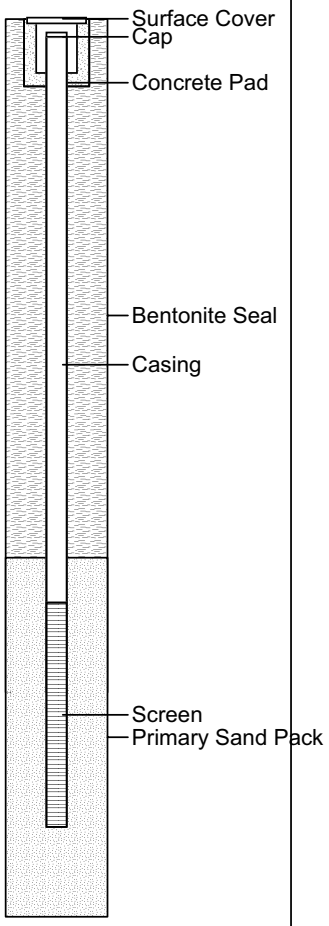
Installation Date	: 6/17/2008
Boring Total Depth (ft bgs)	: 20
Well Total Depth (ft bgs)	: 18
Casing Type	: Schedule 80 PVC
Screen Slot Size	: 0.010
Screen Length (ft)	: 5
Screened Interval (ft bgs)	: 13-18
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 12-20
Secondary Filter Interval (ft bgs)	: NA
Bentonite Seal (Chips) Interval (ft bgs)	: 0-12
Bentonite Seal (slurry) Interval (ft bgs)	: Not used
Formation at Screen	: Alluvuim
Depth Water Encountered when Drilling (ft bgs)	: Dry
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: NA
Backfill (ft bgs)	: NA
Steel Casing Depth (ft bgs)	: NA
Pump Depth (ft bgs)	: NA
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: NA

SAMPLE DETAILS

Spring 08 Static Water Level (ft bgs)	:Dry
Spring 08 Total Se (mg/L)	: NA

NOTES:
Originally labeled and sampled as BH032.

Well: MBW112
Elev.: 6404 ft AMSL



RECORD OF BOREHOLE: BH127

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: NA	Drilling Method / Rig	: Geoprobe 6620DT
Drilling Date(s)	: 5/11/2009	Drilled By	: M. Taggart (Earth Probe Env.)
Latitude	: N 42 49' 34"	Logged By	: D. Brame (MWH)
Longitude	: W 111 27' 25"	Installed By	: M. Taggart (Earth Probe Env.)
Elevation (ft) AMSL	: 6,416	Surveyed By	: D. Brame (MWH)

Sample Condition: Clay, Gravel, Sand, Silt

Water Levels: Sample Level, First Water

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	1240	Silty clay (CL-ML), very dark brown (10YR, 2/2), moist, very soft, medium plasticity, contains rootlets, no HCL reaction.	Alluvium
	2		Silty clay (CL-ML), brown (10YR, 5/3), moist, very soft, medium plasticity, no HCL reaction.	
5	3		Clay (CL), brown (5YR, 3/1), dry, very stiff, nonplastic, oxidized iron streaks, no HCL reaction.	
	4		Clayey gravel (GC), brown (10YR, 5/3), moist, stiff, low plasticity, no HCL reaction.	
10	5		Clay (CL), dark yellowish-brown (10YR, 4/4), dry, stiff, low plasticity, no HCL reaction.	
15	6		Clay (CL), dark yellowish-brown (10YR, 4/4), moist, soft, medium plasticity, no HCL reaction.	
20				
25				

Borehole Details

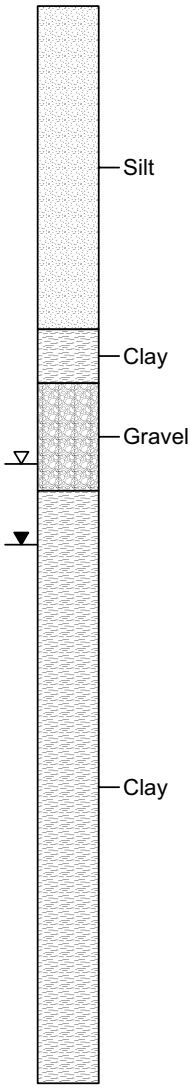
BOREHOLE DETAILS

Drilling Date : 5/11/2009
Boring Total Depth (ft bgs): 20
Depth Water Encountered : when Drilling (ft bgs) : 8.5

SAMPLE DETAILS

Depth Water Sampled (ft bgs) : 10.0
Spring 09 Diss. Se (mg/L) : 0.0046

NOTES:
Archived soil sample collected from 9 ft bgs.



RECORD OF BOREHOLE: MBW130

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: NA	Drilling Method / Rig	: Geoprobe 6620DT
Drilling Date(s)	: 5/11/2009	Drilled By	: M. Taggart (Earth Probe Env.)
Latitude	: N 42 49' 40"	Logged By	: D. Brame (MWH)
Longitude	: W 111 27' 10"	Installed By	: M. Taggart (Earth Probe Env.)
Elevation (ft) AMSL	: 6,399	Surveyed By	: D. Brame (MWH)

Water Levels
▼ Water Level Before Sampling
▽ Depth to First Water

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	1315	Clay (CH), very dark brown (10YR, 2/2), moist, soft, high plasticity, no HCL reaction.	Alluvium
	2		Clay (CH), dark yellowish-brown (10YR, 4/4), moist, soft, high plasticity, weak HCL reaction.	
5	3		Clayey gravel (GC), brown (10YR, 5/3), moist, low plasticity, no HCL reaction.	
	4		Clay (CH), dark yellowish-brown (10YR, 4/4), moist, medium soft, high plasticity, weak HCL reaction.	
10	5		Clay (CH), dark yellowish-brown (10YR, 4/4), moist, medium soft, high plasticity, weak HCL reaction.	
	6			
	7		Clayey gravel (GC), brown (10YR, 5/3), dry, low plasticity, no HCL reaction.	
	8		Clay (CL), brown (10YR, 5/3), moist, stiff, no HCL reaction.	
15			Clayey gravel (GC), brown (10YR, 5/3), dry, low plasticity, no HCL reaction.	
	9		Clayey sand (SC), yellowish-brown (10YR, 5/6), gravel up to 3/4" Ø, sand fine grained, wet, medium plasticity, no HCL reaction.	
20				
25				

Well Details

CONSTRUCTION DETAILS

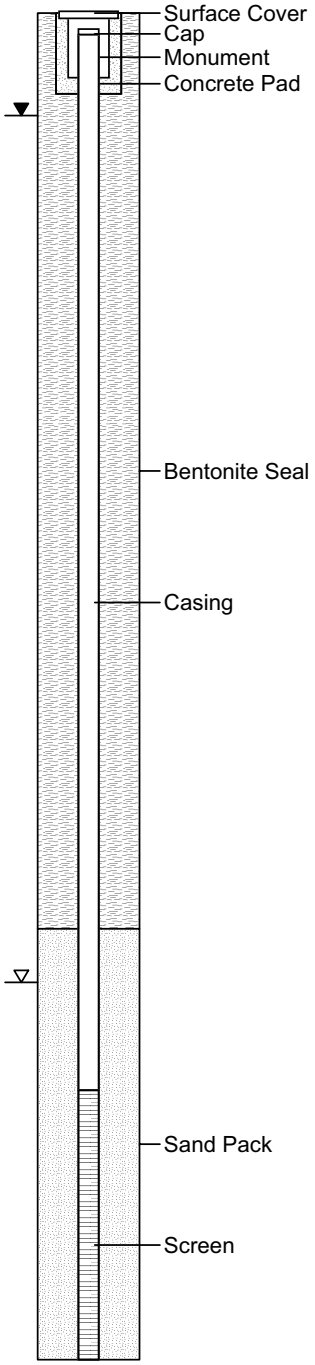
Installation Date	: 5/11/2009
Boring Total Depth (ft bgs)	: 25
Well Total Depth (ft bgs)	: 25
Casing Type	: Schedule 80 PVC
Screen Slot Size	: 0.011
Screen Length (ft)	: 5
Screened Interval (ft bgs)	: 20-25
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 17-25
Secondary Filter Interval	: NA
(ft bgs)	:
Bentonite Seal (Chips)	:
Interval (ft bgs)	: 0-17
Bentonite Seal (slurry)	: Not used
Interval (ft bgs)	:
Formation at Screen	: Alluvium
Depth Water Encountered	:
when Drilling (ft bgs)	: 18
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: NA
Backfill (ft bgs)	: NA
Steel Casing Depth	: NA
(ft bgs)	:
Pump Depth (ft bgs)	: NA
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: Ground Surface

SAMPLE DETAILS

Spring 09 Static Water Level (ft bgs)	: 1.9
Spring 09 Diss. Se (mg/L)	: 0.0022

NOTES:
Originally labeled and sampled as BH130.

Well: MBW130
Elev.: 6,399 ft AMSL



RECORD OF BOREHOLE: MBW131

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: NA	Drilling Method / Rig	: Geoprobe 6620DT
Drilling Date(s)	: 5/11/2009	Drilled By	: M. Taggart (Earth Probe Env.)
Latitude	: N 42 50' 24"	Logged By	: D. Brame (MWH)
Longitude	: W 111 28' 33"	Installed By	: M. Taggart (Earth Probe Env.)
Elevation (ft) AMSL	: 6,475	Surveyed By	: D. Brame (Monsanto)

Water Levels
▼ Water Level Before Sampling
▽ Depth to First Water

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	1640	Clay (CH), very dark brown (10YR, 2/2), wet, very soft, low plasticity, weak HCL reaction.	Alluvium
5	2		No sample collected.	
10				
15				
20				
25				

Well Details

CONSTRUCTION DETAILS

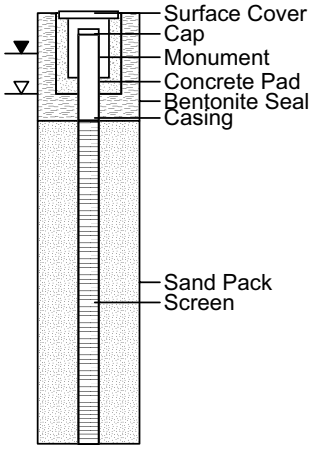
Installation Date	: 5/11/2009
Boring Total Depth (ft bgs)	: 8
Well Total Depth (ft bgs)	: 8
Casing Type	: Schedule 80 PVC
Screen Slot Size	: 0.011
Screen Length (ft)	: 5
Screened Interval (ft bgs)	: 3-8
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 2-8
Secondary Filter Interval (ft bgs)	: NA
Bentonite Seal (Chips) Interval (ft bgs)	: 0-2
Bentonite Seal (slurry) Interval (ft bgs)	: Not used
Formation at Screen	: Alluvium
Depth Water Encountered when Drilling (ft bgs)	: 1.5
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: NA
Backfill (ft bgs)	: NA
Steel Casing Depth (ft bgs)	: NA
Pump Depth (ft bgs)	: NA
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: Ground Surface

SAMPLE DETAILS

Spring 09 Static Water Level (ft bgs)	: 0.75
Spring 09 Diss. Se (mg/L)	: <0.0005

NOTES:
Originally labeled and sampled as BH131.
Push probe used to determine water level. No sample collected from depths 1-8 ft bgs.

Well: MBW131
Elev.: 6,475 ft AMSL



RECORD OF BOREHOLE: MBW135

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: NA	Drilling Method / Rig	: Geoprobe 6620DT
Drilling Date(s)	: 5/14/2009	Drilled By	: M. Taggart (Earth Probe Env.)
Latitude	: N 42 48' 40"	Logged By	: D. Brame (MWH)
Longitude	: W 111 29' 43"	Installed By	: M. Taggart (Earth Probe Env.)
Elevation (ft) AMSL	: 6,299	Surveyed By	: D. Brame (MWH)

Water Levels
▼ Water Level Before Sampling
▽ Depth to First Water

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	1350	Silty clay (CL-ML), brown (5YR, 3/1), moist, very soft, low plasticity, contains rootlets, no HCL reaction.	Alluvium
5	2		Clay (CL), very dark gray (10YR, 3/1), moist, soft, medium plastic, no HCL reaction.	
10	3		Silty clay (CL-ML), brown (5YR, 3/1), moist, soft, low plasticity, no HCL reaction.	
15	4		Clayey gravel (GC), brown (10YR, 5/3), wet, low plasticity, weak HCL reaction.	
20	5		Silty sand (SM), reddish-brown (10R, 3/4), medium grained sand, wet, low plasticity, no HCL reaction.	
25				

Well Details

CONSTRUCTION DETAILS

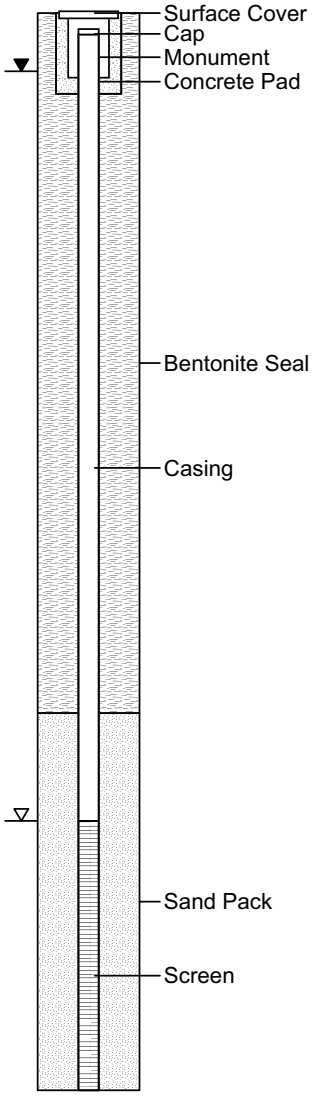
Installation Date	: 5/14/2009
Boring Total Depth (ft bgs)	: 20
Well Total Depth (ft bgs)	: 20
Casing Type	: Schedule 80 PVC
Screen Slot Size	: 0.011
Screen Length (ft)	: 5
Screened Interval (ft bgs)	: 15-20
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 13-20
Secondary Filter Interval	: NA
(ft bgs)	:
Bentonite Seal (Chips)	:
Interval (ft bgs)	: 0-13
Bentonite Seal (slurry)	: Not used
Interval (ft bgs)	:
Formation at Screen	: Alluvium
Depth Water Encountered	:
when Drilling (ft bgs)	: 15
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: NA
Backfill (ft bgs)	: NA
Steel Casing Depth	: NA
(ft bgs)	:
Pump Depth (ft bgs)	: NA
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: Ground Surface

SAMPLE DETAILS

Spring 09 Static Water Level (ft bgs)	: 1.08
Spring 09 Diss. Se (mg/L)	: 0.0008

NOTES:
Originally labeled and sampled as BH135.

Well: MBW135
Elev.: 6,299 ft AMSL



RECORD OF BOREHOLE: MBW152

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: NA	Drilling Method / Rig	: Geoprobe 6620DT
Drilling Date(s)	: 5/12/2009	Drilled By	: M. Taggart (Earth Probe Env.)
Latitude	: N 42 54' 14"	Logged By	: D. Brame (MWH)
Longitude	: W 111 29' 23"	Installed By	: M. Taggart (Earth Probe Env.)
Elevation (ft) AMSL	: 6,303	Surveyed By	: D. Brame (MWH)

Water Levels
▼ Water Level Before Sampling
▽ Depth to First Water

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	1010	Clay (CH), brown (5YR, 3/1), moist, medium soft, high plasticity, weak HCL reaction.	Alluvium
5	2		No Sample Collected.	
10				
15				
20				
25				

Well Details

CONSTRUCTION DETAILS

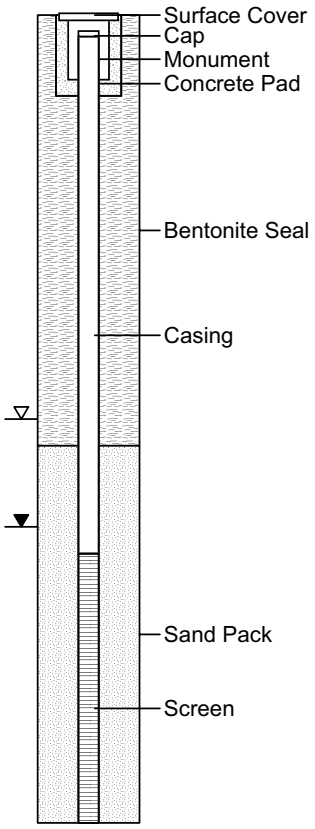
Installation Date	: 5/12/2009
Boring Total Depth (ft bgs)	: 15
Well Total Depth (ft bgs)	: 15
Casing Type	: Schedule 80 PVC
Screen Slot Size	: 0.011
Screen Length (ft)	: 5
Screened Interval (ft bgs)	: 10-15
Sand Size at Screen	: 20X40
Filter Interval (ft bgs)	: 8-15
Secondary Filter Interval (ft bgs)	: NA
Bentonite Seal (Chips) Interval (ft bgs)	: 0-8
Bentonite Seal (slurry) Interval (ft bgs)	: Not used
Formation at Screen	: Alluvium
Depth Water Encountered when Drilling (ft bgs)	: 7.5
Sump (ft bgs)	: NA
Drill Shoe Burial (ft bgs)	: NA
Backfill (ft bgs)	: NA
Steel Casing Depth (ft bgs)	: NA
Pump Depth (ft bgs)	: NA
Pump Intake Depth (ft bgs)	: NA
Height of MP (ft ags)	: Ground Surface

SAMPLE DETAILS

Spring 09 Static Water Level (ft bgs)	: 9.5
Spring 09 Diss. Se (mg/L)	: 0.0047

NOTES:
Originally labeled and sampled as BH152.
Push probe used to determine water level. No sample collected from depths 2-15 ft bgs.

Well: MBW152
Elev.: 6,303 ft AMSL



RECORD OF BOREHOLE: BH155

P4 PRODUCTION
SITE INVESTIGATION

Project No. 1005813.020101

IDWR Tag No	: NA	Drilling Method / Rig	: Geoprobe 6620DT
Drilling Date(s)	: 5/13/2009	Drilled By	: M. Taggart (Earth Probe Env.)
Latitude	: N 42 52' 07"	Logged By	: D. Brame (MWH)
Longitude	: W 111 24' 21"	Installed By	: M. Taggart (Earth Probe Env.)
Elevation (ft) AMSL	: 6,644	Surveyed By	: D. Brame (MWH)

Sample Condition: Clay, Gravel, Sand, Silt

Water Levels: Sample Level, First Water

Depth in Feet	Sample	Time	DESCRIPTION	Formation
0	1	0830	Silty clay (CL-ML), very dark grayish-brown (10YR, 3/2), moist, very soft, medium plasticity, no HCL reaction.	Alluvium
	2		Clay (CL), yellowish-brown (10YR, 5/8), dry, weak cementation, orange oxidized iron streaks, no HCL reaction.	Alluvium
5	3		Clay (CL), very dark brown (10YR, 2/2), wet, soft, high plasticity, no HCL reaction.	Alluvium
10	4		Clay (CL), brownish-yellow (10YR, 6/8), moist, hard, weak cementation, layered clay with red streaks, no HCL reaction, Dinwoody.	Dinwoody
15	5		Clay (CL), brownish-yellow (10YR, 6/8), moist, very stiff, weak cementation, low plasticity, no HCL reaction, Dinwoody.	Dinwoody
20				
25				

Borehole Details

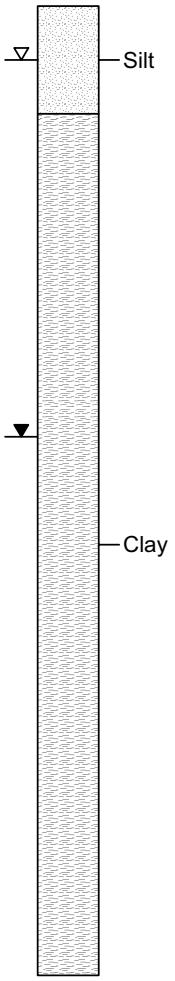
BOREHOLE DETAILS

Drilling Date : 5/13/2009
Boring Total Depth (ft bgs): 18
Depth Water Encountered when Drilling (ft bgs) : 1.0

SAMPLE DETAILS

Depth Water Sampled (ft bgs) : 8.0
Spring 09 Diss. Se (mg/L) : 0.0006

NOTES:
Archived soil sample collected from 16 ft bgs.



APPENDIX A5-6

OTHER WELLS (MPW, MAW, MDW) LOGS AND WELL COMPLETION TABLE

Form 238-7
9/82

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

WELL DRILLER'S REPORT

USE TYPEWRITER OR BALLPOINT PEN

DEC 16 1988

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

Department of Water Resources
Eastern District Office

RECEIVED
DEC 22 1988
Department of Water Resources

DW 001 or ~~MW 003~~

1. WELL OWNER

Name (b) (6)

Address HENRY, IDAHO

Owner's Permit No. 27-88-E-040

2. NATURE OF WORK

☐ New well ☒ Deepened ☐ Replacement
☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log).

3. PROPOSED USE

☐ Domestic ☐ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☒ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED

☒ Rotary ☒ Air ☐ Hydraulic ☐ Reverse rotary
☐ Cable ☐ Dug ☐ Other _____

5. WELL CONSTRUCTION

Casing schedule: ☐ Steel ☐ Concrete ☐ Other _____

Thickness	Diameter	From	To
____ inches	____ inches +	____ feet	____ feet
.250 inches	6" I.D. inches +	1 feet	109 feet
.258 inches	5" I.D. inches	97 feet	160 feet
____ inches	____ inches	____ feet	____ feet

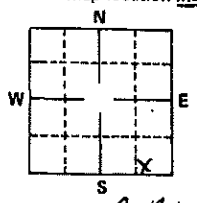
Was casing drive shoe used? ☐ Yes ☒ No
Was a packer or seal used? ☐ Yes ☒ No
Perforated? ☒ Yes ☐ No
How perforated? ☐ Factory ☐ Knife ☒ Torch
Size of perforation 3/16 inches by 12 inches

Number	From	To
60 perforations	70 feet	110 feet
33 perforations	139 feet	160 feet
____ perforations	____ feet	____ feet

Well screen installed? ☐ Yes ☒ No
Manufacturer's name _____
Type _____ Model No. _____
Diameter ____ Slot size ____ Set from ____ feet to ____ feet
Diameter ____ Slot size ____ Set from ____ feet to ____ feet
Gravel packed? ☒ Yes ☐ No ☐ Size of gravel + 1/8"
Placed from 110 feet to 20 feet
Surface seal depth 20 Material used in seal: ☐ Cement grout
☒ Bentonite ☐ Puddling clay ☐ _____
Sealing procedure used: ☐ Slurry pit ☐ Temp. surface casing
☒ Overbore to seal depth
Method of joining casing: ☐ Threaded ☒ Welded ☐ Solvent Weld
☐ Cemented between strata
Describe access port plug on cap

6. LOCATION OF WELL

Sketch map location must agree with written location.



Subdivision Name _____
Lot No. _____ Block No. _____

County CARIBOU
SE ¼ SE ¼ Sec. 18, T. 6 S, R. 43 E

7. WATER LEVEL

Static water level 13 feet below land surface.
Flowing? ☐ Yes ☒ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature 48 °F. Quality Good
Describe artesian or temperature zones below.

8. WELL TEST DATA

☐ Pump ☐ Bailer ☐ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped
30	160	3

9. LITHOLOGIC LOG

Bore Diam.	Depth From	Depth To	Material	Water Yes	Water No
			This well was drilled over 30 years ago. was just going to install a pump - but well pumped dry.		
9 7/8	90	110	Brn. Clay & gravel		X
6 3/4	110	138	" " " "		X
"	138	142	hard lava		X
"	142	150	broken limestone	X	
"	150	160	hard "	X	

10.

Work started 10-28-88 finished 11-4-88

11. DRILLERS CERTIFICATION

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Nelson Firm No. 215
Address Soda Springs Date 11-9-88
Signed by (Firm Official) R. Nelson
and
(Operator) Ray Nelson

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

Form 238-7
9/82

NELSON SAYS
His Locations
Correct HWJ

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

DW002 USE TYPEWRITER OR BALLPOINT PEN

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

1. WELL OWNER

Name (b) (6) redacted
Henry - Enoch Valley
Address Wayan, Idaho

Owner's Permit No. 27-87-E-017

2. NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement
☐ Abandoned (describe abandonment procedures such as materials, plug depths; etc. in lithologic log)

3. PROPOSED USE

☐ Domestic ☐ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☒ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED

☒ Rotary ☐ Air ☐ Hydraulic ☐ Reverse rotary
☐ Cable ☐ Dug ☐ Other _____

5. WELL CONSTRUCTION

Casing schedule: ☒ Steel ☐ Concrete ☐ Other _____

Thickness	Diameter	From	To
.250 inches	8" I.D. inches +	1 feet	19 feet
.280 inches	6" I.D. inches +	1 feet	159 feet
inches	inches	feet	feet
inches	inches	feet	feet

Was casing drive shoe used? ☐ Yes ☒ No
Was a packer or seal used? ☐ Yes ☒ No
Perforated? ☒ Yes ☐ No
How perforated? ☐ Factory ☐ Knife ☒ Torch
Size of perforation 1/4" inches by 12" inches

Number	From	To
15 perforations	20 feet	30 feet
30 perforations	160 feet	180 feet
perforations	feet	feet

Well screen installed? ☐ Yes ☒ No
Manufacturer's name _____
Type _____ Model No. _____
Diameter ____ Slot size ____ Set from ____ feet to ____ feet
Diameter ____ Slot size ____ Set from ____ feet to ____ feet
Gravel packed? ☐ Yes ☒ No ☐ Size of gravel _____
Placed from _____ feet to _____ feet
Surface seal depth 19 Material used in seal: ☒ Cement grout
☐ Bentonite ☐ Puddling clay ☐ _____
Sealing procedure used: ☐ Slurry pit ☒ ~~Temp.~~ Perm. surface casing
☒ Overbore to seal depth
Method of joining casing: ☐ Threaded ☐ Welded ☐ Solvent Weld

7. WATER LEVEL

Static water level 10 feet below land surface.
Flowing? ☐ Yes ☒ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature 48 °F. Quality Good
Describe artesian or temperature zones below.

8. WELL TEST DATA

☐ Pump ☐ Bailer ☒ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped
40		6

9. LITHOLOGIC LOG

Bore Diam.	Depth From	Depth To	Material	Water Yes
12 1/4	0	5	overburden	
"	5	19	clay	
8 1/2"	19	25	clay	
	25	40	gravel + clay	X
	40	140	" "	
	140	150	Sandstone	
	150	155	gravel	X
	155	159	hard rock	
4 3/4"	159	180	hard rock	

RECEIVED
DEC
Department of Water Resources
Eastern District Office

USE TYPEWRITER OR BALL POINT PEN

State of Idaho
Department of Reclamation

WELL DRILLER'S REPORT

State law requires that this report be filed with the State Reclamation Engineer within 30 days after completion or abandonment of the well.

K 23-6 7-23-6

DW005

1. WELL OWNER

Name (b) (6)

Address Henry, Idaho

Owner's Permit No.

2. NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement

☐ Abandoned (describe method of abandoning)

3. PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Test

☐ Municipal ☐ Industrial ☐ Stock

4. METHOD DRILLED

☒ Cable ☐ Rotory ☐ Dug ☐ Other

5. WELL CONSTRUCTION

Diameter of hole 6 inches Total depth 46 feet

Casing schedule: ☒ Steel ☐ Concrete

Thickness	Diameter	From	To
.250 inches	6 5/8 inches	top feet	46-5 feet
inches	inches	feet	feet
inches	inches	feet	feet
inches	inches	feet	feet
inches	inches	feet	feet

Was a packer or seal used? ☐ Yes ☐ No

Perforated? ☒ Yes ☐ No

How perforated? ☐ Factory ☐ Knife ☒ Torch

Size of perforation 5 inches by 1/4 inches

Number	From	To
24 perforations	40 feet	45 feet
perforations	feet	feet
perforations	feet	feet

Well screen installed? ☐ Yes ☐ No

Manufacturer's name

Type Model No.

Diameter Slot size Set from feet to feet

Diameter Slot size Set from feet to feet

Gravel packed? ☐ Yes ☐ No Size of gravel

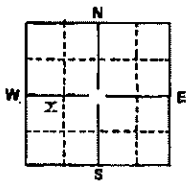
Placed from feet to feet

Surface seal? ☒ Yes ☐ No To what depth 19 feet

Material used in seal ☒ Cement grout ☐ Puddling clay

6. LOCATION OF WELL

Sketch map location must agree with written location.



County Caribou

NW ¼ SW ¼ Sec. 10, T. 6 N/S, R. 42 E/W

7. WATER LEVEL

Static water level 6 feet below land surface

Flowing? ☐ Yes ☒ No G.P.M. flow

Temperature ° F. Quality

Artesian closed-in pressure p.s.i.

Controlled by ☐ Valve ☐ Cap ☐ Plug

8. WELL TEST DATA

☐ Pump ☒ Bailer ☐ Other

Discharge G.P.M.	Draw Down	Hours Pumped
20	6 ft.	30 min.

9. LITHOLOGIC LOG 29712

Hole Diam.	Depth From	Depth To	Material	Water Yes	Water No
6 in	0	4	Clay		
	4	8	Gravel and sand		
	8	14	White loose rock	X	
	14	29	White crevised rock		
	29	38	White broken rock		
	38	46	White loose rock	X	

10.

Work started May 5, 1969 finished May 10, 1969

11. DRILLER'S CERTIFICATION

This well was drilled under my supervision and this report is true to the best of my knowledge.

Westlake Drilling 114

Driller's or Firm's Name Number

P.O.Box 40 Bennington, Idaho 83219

Address

Signed By Bert Westlake Date 7-10-69

USE ADDITIONAL SHEETS IF NECESSARY

USE TYPEWRITER OR BALL POINT PEN

State of Idaho
Department of Reclamation

WELL DRILLER'S REPORT

State law requires that this report be filed with the State Reclamation Engineer within 30 days after completion or abandonment of the well.

RECEIVED
NOV 20 1969
Department of Reclamation

AW002

1. WELL OWNER Enoch Valley Grazing Assn. Inc

Name (b) (6) [redacted]

Address Grace, Idaho

Owner's Permit No.

2. NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement

☐ Abandoned (describe method of abandoning)

3. PROPOSED USE

☐ Domestic ☐ Irrigation ☐ Test

☐ Municipal ☐ Industrial ☒ Stock

4. METHOD DRILLED

☒ Cable ☐ Rotary ☐ Dug ☐ Other

5. WELL CONSTRUCTION

Diameter of hole 6 inches Total depth 153 feet

Casing schedule: ☒ Steel ☐ Concrete

Thickness	Diameter	From	To
.250 inches	6 5/8 inches	+1 feet	153 feet
inches	inches	feet	feet
inches	inches	feet	feet
inches	Inches	feet	feet
inches	Inches	feet	feet

Was a packer or seal used? ☐ Yes ☐ No

Perforated? ☒ Yes ☐ No

How perforated? ☐ Factory ☐ Knife ☒ Torch

Size of perforation 6 inches by 1/4 inches

Number	From	To
18 perforations	142 feet	144 feet
perforations	feet	feet
perforations	feet	feet

Well screen installed? ☐ Yes ☐ No

Manufacturer's name

Type Model No.

Diameter Slot size Set from feet to feet

Diameter Slot size Set from feet to feet

Gravel packed? ☐ Yes ☐ No Size of gravel

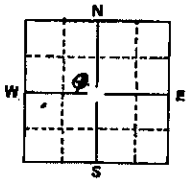
Placed from feet to feet

Surface seal? ☒ Yes ☐ No To what depth 34 feet

Material used in seal ☐ Cement grout ☒ Puddling clay

6. LOCATION OF WELL

Sketch map location must agree with written location.



County Caribou

S.E. ¼ NW ¼ Sec. 17 T. 6 S, R. 43 E

7. WATER LEVEL

Static water level 17'-7" feet below land surface

Flowing? ☐ Yes ☐ No G.P.M. flow

Temperature ° F. Quality

Artesian closed-in pressure p.s.i.

Controlled by ☐ Valve ☐ Cap ☐ Plug

8. WELL TEST DATA

☐ Pump ☒ Bailer ☐ Other

Discharge G.P.M.	Draw Down	Hours Pumped
15	4 FT	30 MIN

9. LITHOLOGIC LOG 29709

Hole Diam.	Depth From	Depth To	Material	Water Yes	Water No
6	0	8	CLAY TAN		
	8	14	" SOFT + SANDY		
	14	34	" "		
	34	63	" MEDIUM SOFT TAN		
	63	67	BLUE CLAY + GRAVEL		
	67	81	" "		
	81	86	" " + COURSE SAND		
	86	105	" "		
	105	114	" " + COURSE SAND		
	114	138	" " SHELLS		
	138	142	BLACK CINDERS + SILT		
	142	151	" "	✓	
	151	154	BLUE CLAY		

10. Work started Aug 18 1969 finished Aug 29 1969

11. DRILLER'S CERTIFICATION

This well was drilled under my supervision and this report is true to the best of my knowledge.

Bert Westlake Drilling 114
Driller's or Firm's Name Number

Bennington Idaho 83219
Address

Bert Westlake Sept 6 1969
Signed By Date

USE ADDITIONAL SHEETS IF NECESSARY

Form 238-7
9/82

NELSON SAYS HIS Location Correct. HWJ

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

USE TYPEWRITER OR BALLPOINT PEN

~~DW001 or~~ AW003

1. WELL OWNER

Name (b) (6)
Henry - Enoch Valley
Address Wayan, Idaho
Owner's Permit No. 27-87-E-017

2. NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement
☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

3. PROPOSED USE

☐ Domestic ☐ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☒ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED

☒ Rotary ☐ Air ☐ Hydraulic ☐ Reverse rotary
☐ Cable ☐ Dug ☐ Other _____

5. WELL CONSTRUCTION

Casing schedule: ☒ Steel ☐ Concrete ☐ Other _____

Thickness	Diameter	From	To
.250 inches	8" I.D inches +	1 feet	19 feet
.280 inches	6" I.D. inches +	1 feet	159 feet
inches	inches	feet	feet
inches	inches	feet	feet

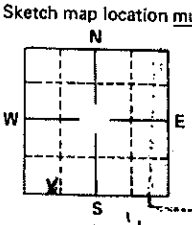
Was casing drive shoe used? ☐ Yes ☒ No
Was a packer or seal used? ☐ Yes ☒ No
Perforated? ☒ Yes ☐ No
How perforated? ☐ Factory ☐ Knife ☒ Torch
Size of perforation 1/4" inches by 12" inches

Number	From	To
15 perforations	20 feet	30 feet
30 perforations	160 feet	180 feet
perforations	feet	feet

Well screen installed? ☐ Yes ☒ No
Manufacturer's name _____
Type _____ Model No. _____
Diameter ___ Slot size ___ Set from ___ feet to ___ feet
Diameter ___ Slot size ___ Set from ___ feet to ___ feet
Gravel packed? ☐ Yes ☒ No ☐ Size of gravel _____
Placed from _____ feet to _____ feet
Surface seal depth 19 Material used in seal: ☒ Cement grout
☐ Bentonite ☐ Puddling clay ☐ _____
Sealing procedure used: ☐ Slurry pit ☒ ~~Temp.~~ Perm. surface casing
☒ Overbore to seal depth
Method of joining casing: ☐ Threaded ☐ Welded ☐ Solvent Weld
☐ Cemented between strata
Describe access port plug in cap

6. LOCATION OF WELL

Sketch map location must agree with written location.



Subdivision Name _____
Lot No. _____ Block No. _____
County Caribou
SE 1/4 SW 1/4 SW 1/4 Sec. 8, T. 6 S, R. 43 E

7. WATER LEVEL

Static water level 10 feet below land surface.
Flowing? ☐ Yes ☒ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature 48 °F. Quality Good
Describe artesian or temperature zones below.

8. WELL TEST DATA

☐ Pump ☐ Bailer ☒ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped
40		6

9. LITHOLOGIC LOG

Bore Diam.	Depth From	Depth To	Material	Water Yes	Water No
12 1/4	0	5	overburden		X
"	5	19	clay		X
8 1/4"	19	25	clay		X
	25	40	gravel + clay	X	
	40	140	" "		X
	140	150	Sandstone		X
	150	155	gravel	X	
	155	159	hard rock		X
4 3/4	159	180	hard rock		X

DEC
Department of Water Resources
Eastern District Office

10.

Work started 10-20-87 finished 11-5-87

11. DRILLERS CERTIFICATION

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Nelson Drilling Firm No. 215
Address Soda Springs, Id. Date 11-8-87
Signed by (Firm Official) R. Nelson
and
(Operator) Ray Nelson

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

rm 238-7
/82

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

USE TYPEWRITER OR BALLPOINT PEN

AW005

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

1. WELL OWNER

Name (b) (6) [redacted]

Address HAYWARD, CALIF. 94542

Owner's Permit No. _____

2. NATURE OF WORK Drill Permit 27-90-E047

☒ New well ☐ Deepened ☐ Replacement
☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

3. PROPOSED USE

☐ Domestic ☐ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☒ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED

☒ Rotary ☒ Air ☐ Hydraulic ☐ Reverse rotary
☐ Cable ☐ Dug ☐ Other _____

5. WELL CONSTRUCTION

Casing schedule: ☒ Steel ☐ Concrete ☐ Other _____

Thickness	Diameter	From	To
.250 inches	8" I.D. inches +	1 feet	20 feet
.250 inches	6" I.D. inches +	1.5 feet	239 feet
inches	inches	feet	feet
inches	inches	feet	feet

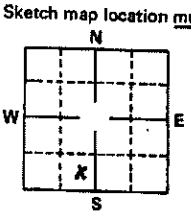
Was casing drive shoe used? ☐ Yes ☒ No
Was a packer or seal used? ☐ Yes ☒ No
Perforated? ☒ Yes ☐ No
How perforated? ☐ Factory ☐ Knife ☒ Torch
Size of perforation 3/16 inches by 12 inches

Number	From	To
60 perforations	199 feet	239 feet
28 perforations	159 feet	199 feet
perforations	feet	feet

Well screen installed? ☐ Yes ☒ No
Manufacturer's name _____
Type _____ Model No. _____
Diameter ___ Slot size ___ Set from ___ feet to ___ feet
Diameter ___ Slot size ___ Set from ___ feet to ___ feet
Gravel packed? ☐ Yes ☒ No ☐ Size of gravel _____
Placed from _____ feet to _____ feet
Surface seal depth 20 Material used in seal: ☒ Cement grout
☐ Bentonite ☐ Puddling clay ☐ _____
Sealing procedure used: ☐ Slurry pit ☒ ~~Temp.~~ Perm. surface casing
☒ Overbore to seal depth
Method of joining casing: ☐ Threaded ☒ Welded ☐ Solvent Weld
☐ Cemented between strata
Describe access port NONE - CAP Welded ON

6. LOCATION OF WELL

Sketch map location must agree with written location.



Subdivision Name _____

JUN 21 1991

Lot No. _____ Block No. _____

County CARIBOU

SE ¼ SW ¼ Sec. 26, T. 6 N/S, R. 43 E/W

7. WATER LEVEL

Static water level 220 feet below land surface.
Flowing? ☐ Yes ☒ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature 49 °F. Quality Good
Describe artesian or temperature zones below.

8. WELL TEST DATA

☐ Pump ☐ Bailer ☒ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped
10	260	3

9. LITHOLOGIC LOG 072585

Bore Diam.	Depth From	Depth To	Material	Water Yes	Water No
12¼	0	20	Blue Clay		X
7⅞	20	40	" "		
	40	90	Red "		
	90	168	Brown "		
	168	210	Red Clay		
	210	220	Hard limestone		
	220	235	Broken " 1 GPM	X	
	235	245	Hard "		X
6"	245	260	Broken " 3 GPM	X	
	260	271	Hard "		X
	271	280	Broken " 6 GPM	X	

RECEIVED
JAN 03 1991
Department of Water Resources

RECEIVED
DEC 1 2 1990
Department of Water Resources
Eastern District Office

10. Work started 11-19-90 finished 11-28-90

11. DRILLERS CERTIFICATION DL

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Nelson Firm No. 215

Address Soda Springs, Id. Date 12-1-90

Signed by (Firm Official) Ray Nelson

and

(Operator) [signature]

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

Form 238-7
9/82

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

USE TYPEWRITER OR BALLPOINT PEN

RECEIVED OCT 18 1988 Department of Water Resources

AW006

1. WELL OWNER

Name (b) (6) [redacted]

Address (b) (6) [redacted] Soda Springs Id. 83276

Owner's Permit No. 27-88-E 028

2. NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement
☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log).

3. PROPOSED USE

☐ Domestic ☐ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☒ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED

☒ Rotary ☒ Air ☐ Hydraulic ☐ Reverse rotary
☐ Cable ☐ Dug ☐ Other _____

5. WELL CONSTRUCTION

Casing schedule: ☒ Steel ☐ Concrete ☐ Other _____

Thickness	Diameter	From	To
.250 inches	8" ID inches +	1 feet	19 feet
.250 inches	6" ID inches +	1 feet	109 feet
____ inches	____ inches	____ feet	____ feet
____ inches	____ inches	____ feet	____ feet

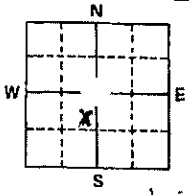
Was casing drive shoe used? ☐ Yes ☒ No
Was a packer or seal used? ☐ Yes ☒ No
Perforated? ☒ Yes ☐ No
How perforated? ☐ Factory ☐ Knife ☒ Torch
Size of perforation 3/16" inches by 12 inches

Number	From	To
30 perforations	89 feet	109 feet
____ perforations	____ feet	____ feet
____ perforations	____ feet	____ feet

Well screen installed? ☐ Yes ☒ No
Manufacturer's name _____
Type _____ Model No. _____
Diameter ____ Slot size ____ Set from ____ feet to ____ feet
Diameter ____ Slot size ____ Set from ____ feet to ____ feet
Gravel packed? ☐ Yes ☒ No ☐ Size of gravel _____
Placed from ____ feet to ____ feet
Surface seal depth 19 Material used in seal: ☒ Cement grout
☒ Bentonite ☐ Puddling clay ☐ _____
Sealing procedure used: ☐ Slurry pit ☒ Pump. surface casing
☒ Overbore to seal depth
Method of joining casing: ☐ Threaded ☒ Welded ☐ Solvent Weld
☐ Cemented between strata
Describe access port plug in cap

6. LOCATION OF WELL

Sketch map location must agree with written location.



Subdivision Name _____
Lot No. _____ Block No. _____
County Caribou
NW ¼ SW ¼ Sec. 35, T. 6 S, R. 42 E

7. WATER LEVEL

Static water level 27 feet below land surface.
Flowing? ☐ Yes ☒ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature 48 °F. Quality Good
Describe artesian or temperature zones below.

8. WELL TEST DATA

☐ Pump ☐ Bailer ☒ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped
40	110	3

9. LITHOLOGIC LOG

Bore Diam.	Depth From	Depth To	Material	Water Yes	Water No
12¼	0	4	overburden		X
"	4	17	Clay		X
"	17	19	Hard lava		X
7⅞	19	27	" "		X
	27	33	" porous lava w/cinder	X	
	33	58	" lava		X
	58	59	Clay seam		X
	59	63	Hard lava		X
	63	69	Hard broken lava	X	
	69	81	" lava		X
	81	87	Brown Clay		X
	87	102	Cinders	X	
	102	110	Hard lava		X
5"	110	120	" "		

RECEIVED OCT 4 1988 Department of Water Resources Eastern District Office

10. Work started 9-1-88 finished 9-2-88

11. DRILLERS CERTIFICATION

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Nelson Firm No. 215
Address Soda Springs, Id. Date 9-17-88
Signed by (Firm Official) R. Nelson
and
(Operator) Ray Nelson

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

Form 238-7
9/82

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

USE TYPEWRITER OR BALLPOINT PEN

RECEIVED JUL 18 1988 Department of Water Resources

AW007?

1. WELL OWNER

Name (b) (6) [redacted]

Address Soda Springs, Id. 83276

Owner's Permit No. 27-88-E-015

2. NATURE OF WORK

☐ New well ☒ Deepened ☐ Replacement
☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

3. PROPOSED USE

☐ Domestic ☐ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☒ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED

☒ Rotary ☒ Air ☐ Hydraulic ☐ Reverse rotary
☐ Cable ☐ Dug ☐ Other _____

5. WELL CONSTRUCTION

Casing schedule: ☒ Steel ☐ Concrete ☐ Other _____

Thickness	Diameter	From	To
.250 inches	8" Id inches	+ 1 feet	119 feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet

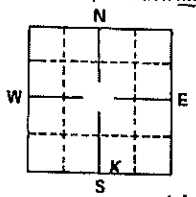
Was casing drive shoe used? ☐ Yes ☒ No
Was a packer or seal used? ☐ Yes ☒ No
Perforated? ☒ Yes ☐ No
How perforated? ☐ Factory ☐ Knife ☒ Torch
Size of perforation 3/16 inches by 12 inches

Number	From	To
45 perforations	59 feet	119 feet
_____ perforations	_____ feet	_____ feet
_____ perforations	_____ feet	_____ feet

Well screen installed? ☐ Yes ☒ No
Manufacturer's name _____
Type _____ Model No. _____
Diameter ____ Slot size ____ Set from ____ feet to ____ feet
Diameter ____ Slot size ____ Set from ____ feet to ____ feet
Gravel packed? ☐ Yes ☒ No ☐ Size of gravel _____
Placed from _____ feet to _____ feet
Surface seal depth 20 Material used in seal: ☐ Cement grout
☒ Bentonite ☐ Puddling clay ☐ _____
Sealing procedure used: ☐ Slurry pit ☒ Temp. surface casing
☒ Overbore to seal depth
Method of joining casing: ☐ Threaded ☒ Welded ☐ Solvent Weld
☐ Cemented between strata
Describe access port plug in Cap

6. LOCATION OF WELL

Sketch map location must agree with written location.



Subdivision Name _____
Lot No. _____ Block No. _____
County Caribou
SW ¼ SE ¼ Sec. 23, T. 6 ☐S, R. 42 E/☐.

7. WATER LEVEL

Static water level 60 feet
Flowing? ☐ Yes ☒ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature 57 °F. Quality Good
Describe artesian or temperature zones below.

8. WELL TEST DATA

☐ Pump ☐ Bailer ☒ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped
40	120	2

9. LITHOLOGIC LOG

Bore Diam.	Depth From	Depth To	Material	Water Yes	Water No
10"	0	4	overburden		X
10	4	10	Gray Clay		
10"	10	19	" "		
6¾	19	53			
"	53	57	Sand Stone	X	
"	57	93	Blue Clay		X
"	93	120	Hard Rock (Chert?)	X	

RECEIVED Department of Water Resources Eastern District Office

10. Work started 6-24-88 finished 6-26-88

11. DRILLERS CERTIFICATION

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Nelson Drilling Firm No. 215
Address Soda Springs Id. Date 82
Signed by (Firm Official) R. Nelson
and
(Operator) Ray Nelson

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

Form 238-7
4/92

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

RECEIVED
APR 1 8 1994
Department of Water Resources

USE TYPEWRITER OR BALLPOINT PEN

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

PW006 (2 wells)

0-7539
0-7540
C-025

1. WELL OWNER

Name Rhone Poulenc

Address P.O. Box 160 Montpelier, ID 83254

Drilling Permit No. 27-92E-~~054~~0080-000 D.W. See Remarks 9-27-95

Water Right Permit No. 27-07540

2. NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement
☐ Well diameter increase ☐ Modification
☐ Abandoned (describe abandonment or modification procedures such as liners, screen, materials, plug depths, etc. in lithologic log, section 9.)

3. PROPOSED USE

☐ Domestic ☐ Irrigation ☐ Monitor
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☒ Other Road Watering (specify type)

4. METHOD DRILLED

☒ Rotary ☒ Air ☐ Auger ☐ Reverse rotary
☐ Cable ☐ Mud ☐ Other _____ (backhoe, hydraulic, etc.)

5. WELL CONSTRUCTION

Casing schedule: ☒ Steel ☐ Concrete ☐ Other _____

Thickness	Diameter	From	To
.375 inches	10 inches	+ 1 feet	280 feet
.250 inches	8 inches	+ 18" feet	601 feet
inches	inches	feet	feet

Was casing drive shoe used? ☒ Yes ☐ No
Was a packer or seal used? ☐ Yes ☐ No
Perforated? ☒ Yes ☐ No
How perforated? ☐ Factory ☒ Knife ☐ Torch ☐ Gun
Size of perforation? ¼ inches by 2½ inches

Number	From	To
800 perforations	380 feet	280 feet
480 perforations	580 feet	520 feet
perforations	feet	feet

Well screen installed? ☐ Yes ☒ No
Manufacturer _____ Type _____
Top Packer or Headpipe _____
Bottom of Tailpipe _____

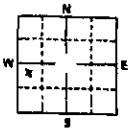
Diameter ____ Slot size ____ Set from ____ feet to ____ feet
Diameter ____ Slot size ____ Set from ____ feet to ____ feet
Gravel packed? ☐ Yes ☐ No ☐ Size of gravel _____
Placed from _____ feet to _____ feet

Surface seal depth 280 Material used in seal: ☐ Cement grout
☒ Bentonite ☐ Puddling clay ☐ _____
Sealing procedure used: ☐ Slurry pit
☒ Temp. surface casing ☐ Overbore to seal depth
Method of joining casing: ☐ Threaded ☒ Welded
☐ Solvent Weld ☐ Cemented between strata

Describe access port 1¼" Nipple w/cap

6. LOCATION OF WELL

Sketch map location must agree with written location.



Subdivision Name _____
Lot No. _____ Block No. _____
County Caribou
Address of Well Site Rassmuesen Valley (give at least name of road)
NW ¼ SW ¼ Sec. 26, T. 6 N ☐ or S ☒, R. 43 E ☒ or W ☐

MAY 0 8 1995

7. WATER LEVEL

Static water level 267 feet below land surface.
Flowing? ☐ Yes ☒ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature _____ °F. Quality _____
Describe artesian or temperature zones below.

8. WELL TEST DATA

☐ Pump ☐ Bailer ☒ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped
40	Unknown	8

9. LITHOLOGIC LOG 074862

Bore Diam.	Depth From	Depth To	Material	Water Yes	Water No
10 3/4	0	5	Top Soil		
10 3/4	5	20	Gravel		x
10 3/4	20	40	Gravel & Clay		x
10 3/4	40	60	Gravel & Clay		x
10 3/4	60	80	Gravel & Clay		x
10 3/4	80	100	Gravel & Clay		x
10 3/4	100	120	Gravel & Clay		x
10 3/4	120	140	Gravel & Clay		x
10 3/4	140	160	Gravel, Clay & Mudstone		x
10 3/4	160	180	Gravel, Clay & Mudstone		x
10 3/4	180	200	Gravel, Clay & Mudstone		x
10 3/4	200	220	Gravel, Clay & Mudstone		x
10 3/4	220	240	Gravel, Clay & Mudstone		x
10 3/4	240	260	Gravel, Clay & Mudstone		x
10 3/4	260	280	Gravel, Clay & Phosphate		x
8 5/8	280	300	Gravel		x
8 5/8	300	320	Gravel		x
8 5/8	320	340	Gravel		x
8 5/8	340	360	Gravel		x
8 5/8	360	380	Gravel		x
8 5/8	380	400	Gravel		x
8 5/8	400	420	Gravel		x
8 5/8	420	440	Gravel	x	
8 5/8	440	460	Gravel	x	
8 5/8	460	480	Sandstone		x
8 5/8	480	500	Sand & Sandstone		x
8 5/8	500	520	Sand Stone & Sand		x
8 5/8	520	540	Sand & SAndstone	x	
8 5/8	540	560	Sand & Sandstone	x	
8 5/8	560	580	SAnd & Sandstone		x
8 5/8	580	590	Limestone		x
8 5/8	590	600	Limestone		x
8 5/8	600	630	Pink Sandstone		x
8 5/8	630	650	Sandstone, & Gravel		x

Wells

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RECEIVED APR 2 5 1994 Department of Water Eastern District Office

10.

Work started 2-11-93 finished 8-9-93

11. DRILLER'S CERTIFICATION

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Thomas Drilling, Inc. Firm No. 390
Address Rt. 1 Afton, WY 83110 Date 1-27-94
Signed by Drilling Supervisor _____
and
(Operator) _____ *(If different than the Drilling Supervisor)*

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

Form 238-7/1
4/92

C

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APR 1 8 1994
Department of Water Resources

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

USE TYPEWRITER OR BALLPOINT PEN

PW006 (2 wells)

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

1. WELL OWNER

Name: Rhone Poulenc

Address: P.O. Box 160 Montpelier, ID 83254

Drilling Permit No. 27-92E-054-000 Correct #

Water Right Permit No. 27-07540

2. NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement
☐ Well diameter increase ☐ Modification
☐ Abandoned (describe abandonment or modification procedures such as liners, screen, materials, plug depths, etc. in lithologic log, section 9.)

3. PROPOSED USE

☐ Domestic ☐ Irrigation ☐ Monitor
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☒ Other Road Watering (specify type)

4. METHOD DRILLED

☒ Rotary ☒ Air ☐ Auger ☐ Reverse rotary
☐ Cable ☐ Mud ☐ Other _____ (backhoe, hydraulic, etc.)

5. WELL CONSTRUCTION

Casing schedule: ☒ Steel ☐ Concrete ☐ Other _____

Thickness	Diameter	From	To
.375 inches	10 inches	+ 1 feet	150 feet
.250 inches	6 inches	+ 18" feet	390 feet
_____ inches	_____ inches	_____ feet	_____ feet

Was casing drive shoe used? ☒ Yes ☐ No
Was a packer or seal used? ☐ Yes ☐ No
Perforated? ☒ Yes ☐ No
How perforated? ☐ Factory ☒ Knife ☐ Torch ☐ Gun
Size of perforation? ¼ inches by 2½ inches

Number		From	To
80	perforations	90 feet	80 feet
320	perforations	385 feet	350 feet
_____	perforations	_____ feet	_____ feet

Well screen installed? ☐ Yes ☒ No
Manufacturer _____ Type _____
Top Packer or Headpipe _____
Bottom of Tailpipe N/A

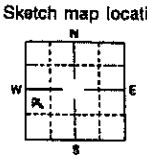
Diameter ____ Slot size ____ Set from ____ feet to ____ feet
Diameter ____ Slot size ____ Set from ____ feet to ____ feet
Gravel packed? ☐ Yes ☐ No ☐ Size of gravel _____
Placed from _____ feet to _____ feet

Surface seal depth 150 Material used in seal: ☐ Cement grout ☒ Bentonite ☐ Puddling clay ☐ _____
Sealing procedure used: ☐ Slurry pit ☒ Temp. surface casing ☐ Overbore to seal depth
Method of joining casing: ☐ Threaded ☒ Welded ☐ Solvent Weld ☐ Cemented between strata

Describe access port 1¼" Coupling w/ plug

6. LOCATION OF WELL

Sketch map location must agree with written location.



Subdivision Name _____
Lot No. _____ Block No. _____
County Caribou
Address of Well Site Rasmuessen Valley (give at least name of road)
NW ¼ SW ¼ Sec. 26, T. 6 N ☐ or S ☒, R. 43 E ☒ or W ☐

7. WATER LEVEL

Static water level 32 feet below land surface.
Flowing? ☐ Yes ☒ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature _____ °F. Quality _____
Describe artesian or temperature zones below.

8. WELL TEST DATA

☐ Pump ☐ Bailer ☒ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped
40	Couldn't tell	7

9. LITHOLOGIC LOG 074861

Bore Diam.	Depth From	Depth To	Material	Water Yes	Water No
10	0	3	Top soil		x
10	3	35	RedClay		x
10	35	45	Tan Clay & Gravel		x
10	45	48	Gravel	x	
10	48	70	Tan Clay & Gravel		x
10	70	80	Tan Clay		x
10	80	90	Gravel	x	
10	90	100	Gravel	x	
83/4	100	130	Gravel & TanClay		x
8 3/4	130	150	Tan Clay, Mud Stone		x
8 3/4	150	230	Tan Clay, Mud Stone		x
8 3/4	230	240	Tan Shale, Mud Stone		x
8 3/4	240	250	Tan Shale, Mud Stone		x
8 3/4	250	260	Tan Shale, Mud Stone		x
8 3/4	260	270	Tan Shale, Mud Stone		x
8 3/4	270	280	Black Shale		x
8 3/4	280	300	Black Shale		x
8 3/4	300	350	Black Shale		x
8 3/4	350	360	Black Shale, Interbed Lime Stone	x	
8 3/4	360	370	Black Shale, Interbed Lime Stone	x	
8 3/4	370	380	Black Shale, Interbed Lime Stone	x	
8 3/4	380	390	Black Shale, Interbed Lime Stone	x	

PPC

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APR 25 1994
Department of Water Resources
Eastern District Office

RECEIVED
OCT 21 1994
Department of Water Resources

10. Work started 9-26-92 finished 6-17-93

11. DRILLER'S CERTIFICATION

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Thomas Drilling, Inc. Firm No. 390
Address Rt. 1 Afton, WY 831 Date 1-27-94
Signed by Drilling Supervisor _____
and
(Operator) _____ *(If different than the Drilling Supervisor)*

RECEIVED
MAY 08 1995

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Form 6/89

RECEIVED
AUG 24 1990
Department of Water Resources

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

USE TYPEWRITER OR BALLPOINT PEN

PW 19

1. WELL OWNER

Name Diamond Soda Springs, Monsanto
Box 975
Address Soda Springs, Id, 83276

Owner's Permit No. _____

2. NATURE OF WORK Drill Permit # 27-90-E-023

☒ New well ☐ Deepened ☐ Replacement
☐ Well diameter increase
☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

3. PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED

☒ Rotary ☒ Air ☐ Hydraulic ☐ Reverse rotary
☐ Cable ☐ Dug ☐ Other _____

5. WELL CONSTRUCTION

Casing schedule: ☐ Steel ☒ Concrete ☐ Other _____

Thickness	Diameter	From	To
.250 inches	16 inches +	1 feet	20 feet
.250 inches	10 inches +	2 feet	225 feet
inches	inches	feet	feet
inches	inches	feet	feet

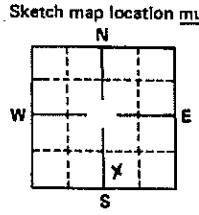
Was casing drive shoe used? ☐ Yes ☒ No
Was a packer or seal used? ☐ Yes ☒ No
Perforated? ☒ Yes ☐ No
How perforated? ☐ Factory ☐ Knife ☒ Torch ☐ Gun
Size of perforation 4 inches by 12 inches

Number	From	To
120 perforations	175 feet	235 feet
perforations	feet	feet
perforations	feet	feet

Well screen installed? ☐ Yes ☒ No
Manufacturer's name _____
Type _____ Model No. _____
Diameter ____ Slot size ____ Set from ____ feet to ____ feet
Diameter ____ Slot size ____ Set from ____ feet to ____ feet
Gravel packed? ☒ Yes ☐ No ☐ Size of gravel 3/8" -
Placed from 235 feet to 35 (10 yd) feet
Surface seal depth 20 Material used in seal: ☐ Cement grout ☒ Bentonite ☐ Puddling clay ☐ _____
Sealing procedure used: ☐ Slurry pit ☒ ~~Temp.~~ Perm. surface casing ☒ Overbore to seal depth
Method of joining casing: ☐ Threaded ☒ Welded ☐ Solvent Weld ☐ Cemented between strata
Describe access port PLUG IN CAP

6. LOCATION OF WELL

Sketch map location must agree with written location.



Subdivision Name _____
Lot No. _____ Block No. _____
County _____
SW ¼ SE ¼ Sec. 21, T. 6 N ☐ S ☒ R. 43 E ☒ W ☐

7. WATER LEVEL

Static water level 137 feet below land surface.
Flowing? ☐ Yes ☒ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature 50 °F. Quality Good
Describe artesian or temperature zones below.

8. WELL TEST DATA

☐ Pump ☐ Bailer ☒ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped
300	135	8

9. LITHOLOGIC LOG 072583

Bore Diam.	Depth From	Depth To	Material	Water Yes	Water No
20"	0	11	Fill		X
"	11	20	Clay		X
15"	20	96	"		X
"	96	108	" + Rock		X
"	108	189	"		
"	189	217	Broken Rock - May be BASALT	X	
"	217	230	Hard Rock	X	
"	230	234	" Broken Rock	X	
9 7/8	234	255	Hard Rock	X	

RECEIVED
JUN 22 1990
Department of Water Resources
Eastern District Office

10. Work started 5-21-90 finished 6-1-90

11. DRILLERS CERTIFICATION DL

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Nelson Drilling Firm No. 215
Address Soda Springs Date 6-16-90
Signed by (Firm Official) R. Nelson
and
(Operator) R. Nelson

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

Form 290
6/88

RECEIVED
AUG 24 1990
Department of Water Resources

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

RECEIVED
MAY 28 1990
Department of Water Resources
Eastern District Office

PW 20

1. WELL OWNER Monsanto

Name Diamond Soda Springs
Box 975
Address Soda Springs, Id, 83276

Owner's Permit No. 27-07452

2. NATURE OF WORK Drill Permit # 27-90-E-001

☒ New well ☐ Deepened ☐ Replacement
☐ Well diameter increase
☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

3. PROPOSED USE

☐ Domestic ☐ Irrigation ☐ Test ☐ Municipal
☒ Industrial ☐ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED

☒ Rotary ☐ Air ☐ Hydraulic ☐ Reverse rotary
☐ Cable ☐ Dug ☐ Other _____

5. WELL CONSTRUCTION

Casing schedule: ☒ Steel ☐ Concrete ☐ Other _____

Thickness	Diameter	From	To
.250 inches	16 inches +	1 feet	22 feet
.250 inches	12 inches +	2 feet	461 feet
inches	inches	feet	feet
inches	inches	feet	feet

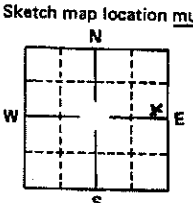
Was casing drive shoe used? ☐ Yes ☒ No
Was a packer or seal used? ☐ Yes ☒ No
Perforated? ☒ Yes ☐ No
How perforated? ☐ Factory ☐ Knife ☒ Torch ☐ Gun
Size of perforation 1/4 inches by 12" inches

Number	From	To
120 perforations	401 feet	461 feet
perforations	feet	feet
perforations	feet	feet

Well screen installed? ☐ Yes ☒ No
Manufacturer's name _____
Type _____ Model No. _____
Diameter ____ Slot size ____ Set from ____ feet to ____ feet
Diameter ____ Slot size ____ Set from ____ feet to ____ feet
Gravel packed? ☐ Yes ☒ No ☐ Size of gravel _____
Placed from ____ feet to ____ feet
Surface seal depth 22 Material used in seal: ☒ Cement grout
☒ Bentonite ☐ Puddling clay ☐ _____
Sealing procedure used: ☐ Slurry pit ☒ ~~Temp~~ Perm surface casing
☒ Overbore to seal depth
Method of joining casing: ☐ Threaded ☒ Welded ☐ Solvent Weld
☐ Cemented between strata
Describe access port plug in cap

6. LOCATION OF WELL

Sketch map location must agree with written location.



Subdivision Name _____
Lot No. ____ Block ____

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JUN 27 1991

County Caribou
SE ¼ NE ¼ Sec. 21, T. 6 N ☐ S ☒, R. 43 E ☒ W ☐

7. WATER LEVEL

Static water level 260' feet below land surface.
Flowing? ☐ Yes ☒ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature 49 °F. Quality Good
Describe artesian or temperature zones below.

8. WELL TEST DATA

☐ Pump ☐ Bailer ☒ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped
100-150	460	6

9. LITHOLOGIC LOG 072584

Bore Diam.	Depth From	Depth To	Material	Water Yes	Water No
20"	0	10	Clay		X
"	10	22	Clay + overburden		X
15"	22	50	" "		X
"	50	100	Dgnwoody		X
"	100	160	" + Clay		X
"	160	320	"		X
"	320	440	Cherty Shales		X
"	440	510	Hard porous Chert	X	
12"	510	720	Shales + Phosphate		X
"	720	722	Void	X	
"	722	726	Broken limestone	X	
"	726	800	Hard limestone		X
"	800	810	Sandy lse losing H_2O		X

10. Work started 4-4-90 finished 5-16-90

11. DRILLERS CERTIFICATION DL

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Nelson Drilling Firm No. 215
Address Soda Springs, Id, Date 5-21-90
Signed by (Firm Official) R. Nelson
and
(Operator) Ray Nelson

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

Form 238-7

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

USE TYPEWRITER OR BALLPOINT PEN

~~PW 023~~ ?
PW 022 ?

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

1. WELL OWNER

Name Monsanto Hole #504

Address Soda Springs, Idaho

Owner's Permit No. _____

2. NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement
☐ Abandoned (describe method of abandoning) _____

3. PROPOSED USE

☐ Domestic ☐ Irrigation ☒ Test ☐ Municipal
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED

☒ Rotary ☐ Air ☐ Hydraulic ☐ Reverse rotary
☐ Cable ☐ Dug ☐ Other _____

5. WELL CONSTRUCTION

Casing schedule: ☒ Steel ☐ Concrete ☐ Other _____

Thickness	Diameter	From	To
.250 inches	6 inches +	1 feet	151 feet
.250 inches	8 inches	1 feet	19 feet
inches	inches	feet	feet
inches	inches	feet	feet

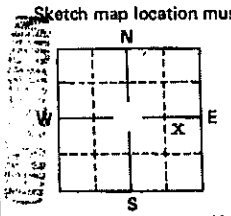
Was casing drive shoe used? ☒ Yes ☐ No
Was a packer or seal used? ☐ Yes ☒ No
Perforated? ☐ Yes ☒ No
How perforated? ☐ Factory ☐ Knife ☐ Torch
Size of perforation _____ inches by _____ inches

Number	From	To
perforations	feet	feet
perforations	feet	feet
perforations	feet	feet

Well screen installed? ☐ Yes ☒ No
Manufacturer's name _____
Type _____ Model No. _____
Diameter ____ Slot size ____ Set from ____ feet to ____ feet
Diameter ____ Slot size ____ Set from ____ feet to ____ feet
Gravel packed? ☐ Yes ☒ No ☐ Size of gravel _____
Placed from _____ feet to _____ feet
Surface seal depth 18' Material used in seal: ☐ Cement grout
Bentonite ☒ Puddling clay ☐ Well cuttings
Sealing procedure used: ☐ Slurry pit ☐ Temp. surface casing
☒ Overbore to seal depth
Method of joining casing: ☐ Threaded ☒ Welded ☐ Solvent Weld
☐ Cemented between strata
Describe access port _____

6. LOCATION OF WELL

Sketch map location must agree with written location.



Subdivision Name So. Henry Mine

Lot No. _____ Block No. _____

County Caribou

NE ¼ SE ¼ Sec. 30, T. 6 N/S, R. 43 E/W

7. WATER LEVEL

Static water level 63' feet below land surface.
Flowing? ☐ Yes ☒ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature ____ °F. Quality Good

8. WELL TEST DATA

☐ Pump ☐ Bailer ☐ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped

9. LITHOLOGIC LOG

Hole Diam.	Depth From	Depth To	Material	Water Yes	Water No
8	0	5	Soil		x
8	5	122	Gummy Clay and Gravel		x
8	122	125	Soft Shale-Greenish Gray	x	
8	125	150	Soft Shale " "		x

RECEIVED JAN 23 1981 Department of Water Resources Eastern Region

10. Work started 3-20-80 finished 3-26-80

11. DRILLERS CERTIFICATION CbdL

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Andrew Well Drilling Contr. Firm No. 5
Address 1269 East 17th Street Date 5-8-80
Idaho Falls, Idaho 83401
Signed by (Firm Official) [signature]
and
(Operator) [signature]

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

EXISTING WELLS IN THE VICINTY OF THE BALLARD, HENRY AND ENOCH VALLEY SITES
MONITORING WELL DRILLING AND CONSTRUCTION DETAILS

Mine or Well Type	Well ID	Well Location / Name	Completion Date	Total Depth (ft-btoc)	Casing Depth (ft-bgs)	Depth Water Encountered while drilling (ft-bgs)	Perforation Intervals (ft-bgs, log description)	Formation	Water Level Spring, Fall (ft-btoc)	Total Se[g]- Ave/Range (mg/L)
Enoch Valley Mine	MPW006N (A)	Southeast corner of EVM South Dump (MWD092) (Agrium Production wells)	1993	650	650	420-460, 520-560	280-380, gravel; 520-580, sand/sandstone	Phosphoria and Wells	267[b]	0.00035
	MPW006S (B)	Southeast corner of EVM South Dump (MWD092)(Agrium Production wells)	1992	390	390	45-48, 80-100, 350-390	80-90, gravel; 350-385, black shale/interbedded limestone	Alluvium and Phosphoria	32[b]	0.00035
	MPW019	EVM shop/office	1990	255	235	189-255	175-235, clay/hard rock/broken rock	ND	137[b]	0.00059 / 0.00035-0.00082
	MPW020	Southwest, down structural dip, from eastern ridge of EVM pit MMP045	1990	700 (drilled to 810, backfill to 700))	461	440-510, 720-726 (constructed to 700)	401-461, cherty shales/phosphate	Phosphoria	260[b]	0.00035
Henry Mine	MMW003 (Abandoned)	South of Henry Mine north pit (MMP043)	ND	140	34	No log	No screen	ND	8.27, 51.2	0.032[d]
	MMW004	North of Henry Mine north pit (MMP043)	ND	77	55	No log	No screen	ND	35.41, 45.21	0.00050
	MPW022	South Henry Pit dewatering well	1980	165	Steel to 151	122-125	No screen	ND	72.23, 76.34	0.00050
	MPW023	Center Henry Pit dewatering well	ND	312	160	No log	No screen	ND	32.72, 40.8	0.00050[d]
Ballard Mine	MMW001	East side of West Ballard pit (MMP035)	1992	450	Steel to 271[c]; PVC to 450	170-190, 212-265	Steel casing perforation 191-271 ,phosphate; PVC screen 420-450, hard limestone	Phosphoria and Wells	268.87, 287.8	0.069
	MMW002 (Abandoned)	West side of West Ballard pit (MMP035)	1992	350	Steel to 20; PVC to 348	270-282, 286-330	288-308 med. Limestone; 328-348 hard limestone	Wells	221.53, 223.8	0.022
	MW-15A	West Ballard Mine near MST068	2006	46.5	PVC to TD	ND	31.5-41.5	Alluvium	22.83, 20.71	1.11/0.81-1.99
	MW-16A	Southwest Ballard Mine near MST069	2006	36.8	PVC to TD	ND	21.8-31.8	Alluvium	10.10, 6.71	0.071/0.049-0.11
Agricultural Wells	MAW001[f]	School Bus Well	ND	ND	ND	No log	ND	ND	ND	0.00050
	MAW002	Sharp Field Well	1969	154	153	142-153	14-146, clay, coarse sand	Alluvium[e]	17.6[b]	0.00050
	MAW003	(b) (6) Field Well	1987	180	180	25-40, 150-155	20-30 gravel, clay, 160-180 hard rock	Thaynes[f]	10[b]	0.00050
	MAW004[f]	(b) (6) Field Well	ND	ND	ND	No log	ND	ND	ND	0.00050
	MAW005	(b) (6) Windmill Field Well	1990	280	239	220-235, 245-260, 271-280	159-199 clay, 199-239 hard, broken limestone	Alluvium, Wells[e]	220[b]	0.00050
	MAW006	(b) (6) Field Well West	1988	120	109	27-33, 63-69, 87-102	89-109, hard lava	Basalt[e]	27[b]	0.00050
	MAW007	Field Well North	1988	120	119	53-57, 93-120	59-119 sandstone, clay	Alluvium[e]	60[b]	0.00050
Domestic Wells	MDW001	(b) (6) House Well	1988	160	160	142-150, 150-160	70-110 clay , gravel; 139-160 hard lava, hard, broken limestone	Travertine[e]	13[b]	0.00050
	MDW002	(b) (6) House Well	1987	180	159	25-40, 150-155	20-30 clay, gravel; 160-180 hard rock	Alluvium, Thaynes[e]	10[b]	0.00050
	MDW003[f]	(b) (6) House Well	ND	ND	ND	No log	ND	ND	ND	0.0020
	MDW004[f]	(b) (6) House Well	ND	ND	ND	No log	ND	ND	ND	0.00050
	MDW005	Cedar Bay RV Park Well	1969	46	46	8-14, 28-46	40-45, white loose rock	Alluvium, Travertine[e]	6[b]	0.00050
	MDW006[f]	(b) (6) House Well	ND	ND	ND	No log	ND	ND	ND	0.00050

Notes:

a. Wells MPW006 (A) and MPW006 (B) are pumped into one line and are not sampled individually.

b. Static water level (ft-bgs) noted on well log.

c. MMW001 steel casing is perforated from 191-271 ft-bgs within Phosphoria Formation. The perforated steel area is in contact with gravel pack from 191' to 210' and bentonite seal from 210' to 271'.

d. Filtered Se result reported. Unfiltered Se data is not available for the sampling station.

e. Formation was interpreted from logs and geologic maps, so some wells may be open to multiple formations.

f. Well logs were not found for these agricultural and domestic wells, so construction information is limited.

g. As reported in MWH (2007a).

ND - Not Determined. ft-bgs - feet below ground surface. ft-btoc - feet below top of casing

APPENDIX A5-7

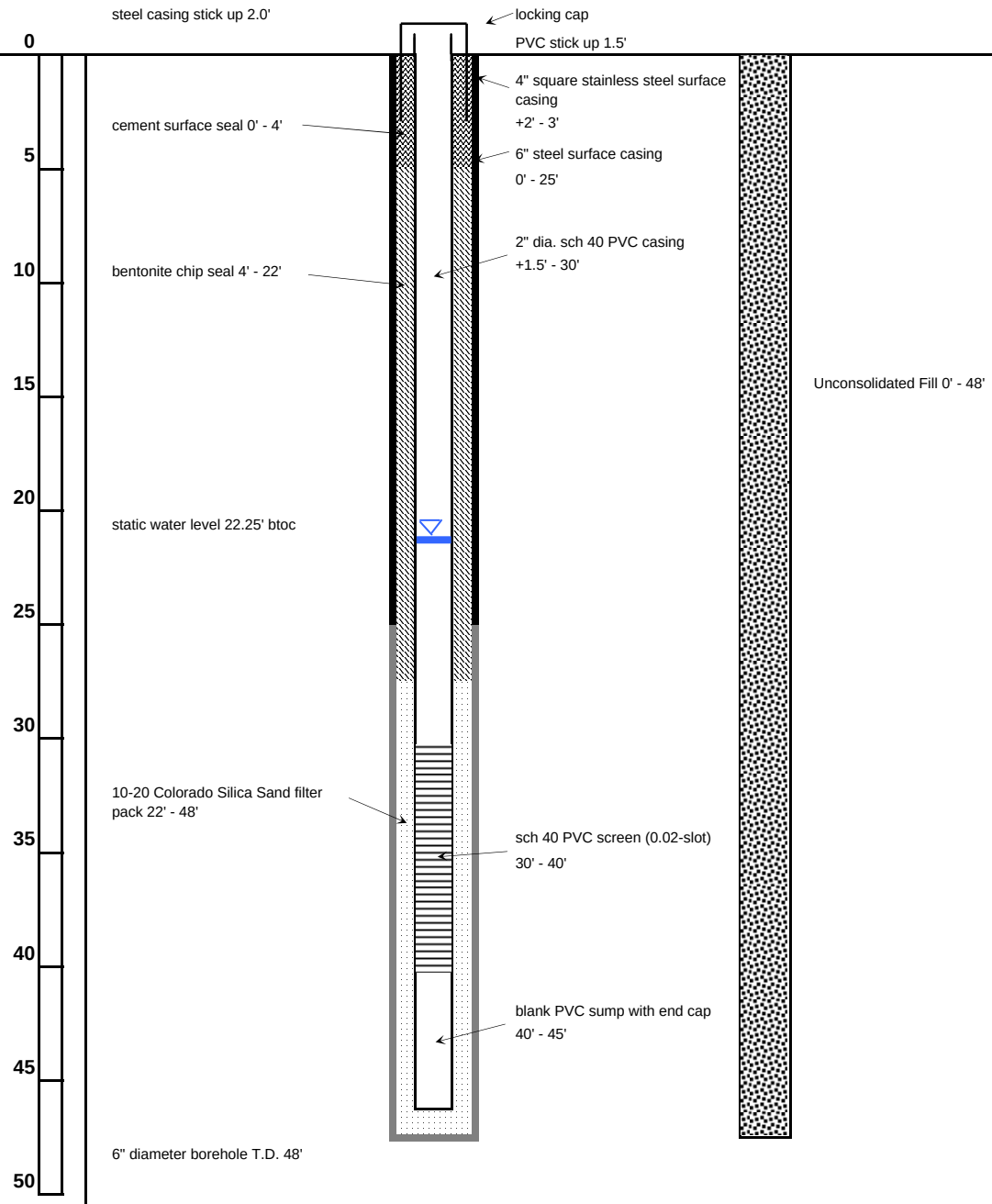
BLACKFOOT BRIDGE EIS MONITORING WELL (MW-15A/MW-16A) LOGS

BLACKFOOT BRIDGE PROJECT

CONSTRUCTION DIAGRAM FOR MONITORING WELL MW-15A

Owner:	Monsanto	**Completion Date:**	11/9/2006
Northing:	423,580.11	**Driller:**	AK Drilling - Ramsey, Montana
Easting:	836,763.92	**Hydrogeologist:**	T. Anderson, Whetstone Associates
Ground Elevation:	6,364.41	**Screen Interval:**	30' - 40'
Casing Elevation:	6,365.91	**Formation:**	Unconsolidated Fill

Depth (feet)	Well Completion	Lithology



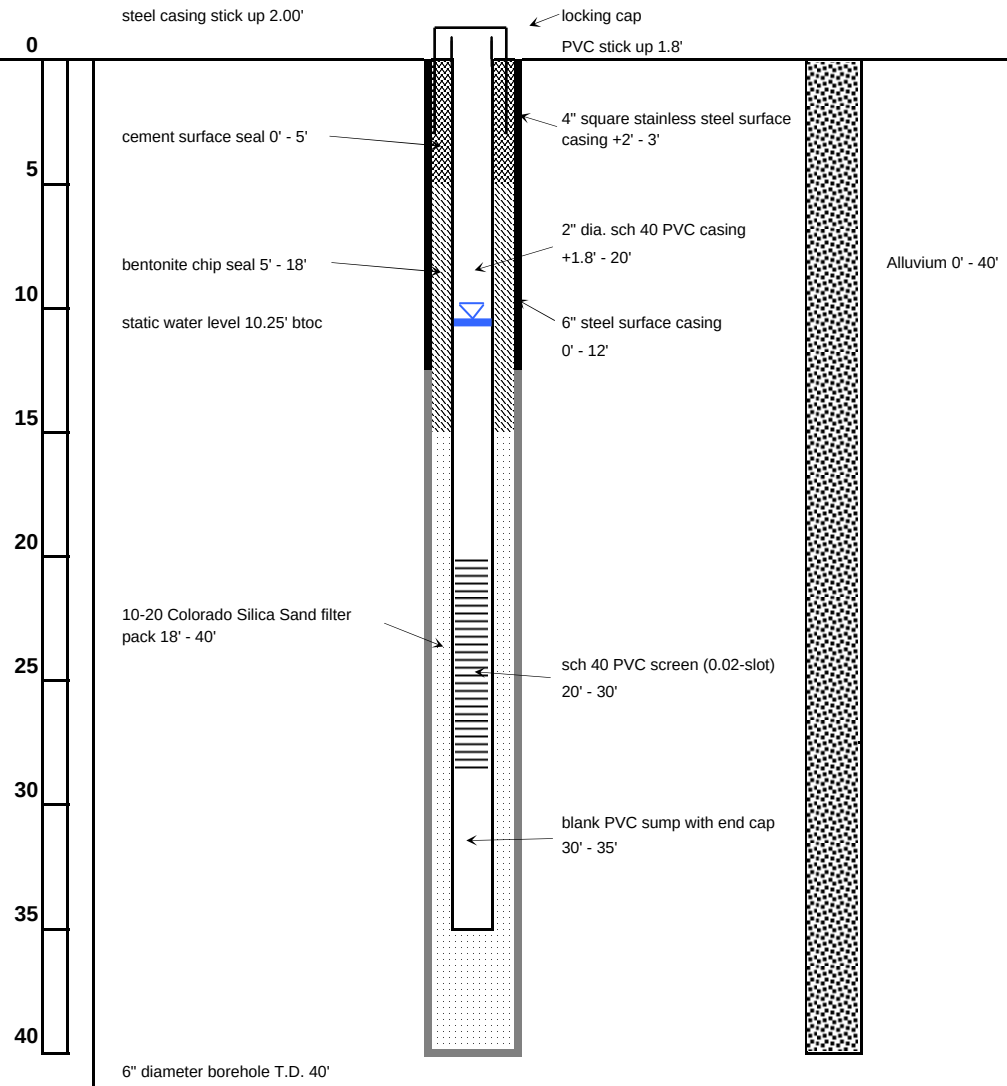
All depths below ground surface unless otherwise noted (not to scale)

BLACKFOOT BRIDGE PROJECT

CONSTRUCTION DIAGRAM FOR MONITORING WELL MW-16A

Owner:	Monsanto	**Completion Date:**	11/8/2006
Northing:	420,701.93	**Driller:**	AK Drilling - Ramsey, Montana
Easting:	838,024.32	**Hydrogeologist:**	T. Anderson, Whetstone Associates
Ground Elevation:	6,340.57	**Screen Interval:**	20' - 30'
Casing Elevation:	6,342.37	**Formation:**	Alluvium

Depth (feet)	Well Completion	Lithology



All depths below ground surface unless otherwise noted (not to scale)